



Frustration free video delivery "from cloud to subscriber"

DELIVERING GREAT QUALITY OF EXPERIENCE TO SUBSCRIBERS AND PROVIDING WHOLESALE SERVICES TO CONTENT PROVIDERS WHILE MANAGING COSTS AND ACCELERATING ROI.

"The Cloud" has become synonymous with rapid, scalable and flexible delivery of immense computing power. It is the powerhouse of the Internet and can allow operators to harness huge resources to offer exciting new products and services to subscribers.

However, with video services, especially monetizable, long form and high definition services, the delivery and distribution network is key to delivering a "frustration free" Quality of Experience to the subscriber.

Quality of Experience is key to the delivery and profitability of a video based service. Whether it is a TV through a set top box in a managed IPTV network or delivering to a wide variety of devices in a multiscreen over the top (OTT) environment, Edgeware has the solution with its Distributed Video Delivery Network technology (D-VDN), architecture and products.

But Edgeware goes even further. By delivering a unified and highly integrated system, it is now possible, for the first time to use the same technology to deliver a consistent service across cable, telco (IPTV) and web TV/OTT topologies to all of the devices your customers want to use. This allows the development of a CDN wholesale video delivery system enabling the further monetization from content providers looking to deliver high quality video to their customers over the operator's network.

Who is Edgeware?

Edgeware is the leader in distributed video and on-demand TV delivery. By combining video/TV distribution and networking capability and expertise, Edgeware provides a unique, powerful and highly scalable solution that allows providers to provide, scale, maintain and add new video based services to their subscribers.

Who should read this?

This document is for anyone who is trying to understand how to successfully implement a video on demand (VOD), IPTV or WebTV (Over the Top) service to a large number of subscribers and wishes to make that service successful, widely used and profitable

Customer Quotes

"Following a competitive market review, Edgeware stood out as the most scalable solution, offering the only video delivery platform that could be cost-efficiently distributed across our fibre network."

*Aage Kudsk, CTO, Waoo!
(former Smile Content),
Denmark*

"By working closely with Edgeware and our integration partner, Smartlabs, it has been possible for COMSTAR to evaluate, deploy and now launch its initial service of Pause Live-TV easily and rapidly to its customer base in Moscow."

Victor Belov, director, service platforms and networks for COMSTAR, Russia

"An important factor for Stofa has been to build an IP-based infrastructure that can be up-scaled when the customer base is expanding. We think that the Edgeware Orbit-2X server system fulfil our demand for a flexible solution."

Thomas Helbo, development manager at Stofa, TeliaSonera's Danish cable TV provider

"The Edgeware solution is very easy to deploy and offers the full range of time-shift TV and on-demand functionalities within one extremely powerful box."

Tomaž Stegel, IPTV project manager of Amis Amis Telekom, Slovenia and Croatia

"With the Edgeware platform, we know that we can deliver reliable QoS and can scale this economically."

J-P Hela-Aro, Development Manager at Maxisat Ltd, Finland

Why Edgeware?

FOUNDED IN 2004, EDGEWARE FROM THE OUTSET SOUGHT TO IMPLEMENT AN INNOVATIVE APPROACH TO THE DISTRIBUTION OF VIDEO AND TV ACROSS THE INTERNET TO ANY DEVICE, ANYWHERE, AT ANY TIME.

Questioning the Conventional Thinking

The opportunity that the Edgeware team identified was that, with the explosion of video being streamed across the operator network, there is a huge opportunity to reduce cost while introducing new video based retail and wholesale services.

However to achieve this required a change to the conventional thinking.

Instead of video streams being transmitted from huge data centers in the cloud, being propagated by CDNs and then send blindly across the operator networks, the operator should be able to offer premium video and on-demand TV services based on a higher Quality of Experience. They should then be able to provide wholesale services to content providers who wish to access that subscriber base thus ensuring a high quality experience.

To achieve this, and to limit the impact of so much traffic growth on the operator infrastructure, Edgeware developed a range of technology that can be deployed deep into the operator infrastructure, effectively cache the video and TV traffic and dramatically accelerate the ROI (return on investment) to the operator.

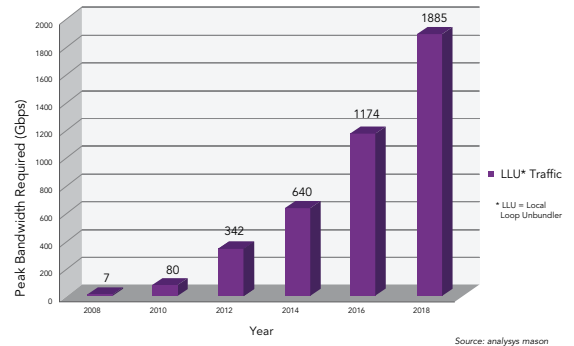
In short, this gives the operator additional revenue opportunities:

Providing retail video services to subscribers

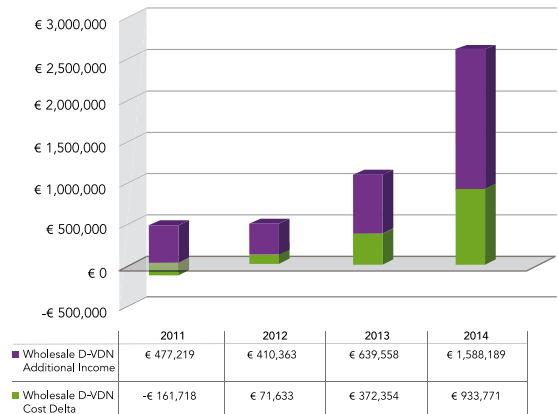
Providing wholesale video delivery services to content providers

So... in summary, Edgeware has become the leader in providing technology, products and solutions that allow operators to monetize video... and this has lead to successful deployments in every main geography allowing operators to realize the true value and opportunity of video and on-demand TV whether it is their own IPTV or Cable infrastructure or offering advanced multiscreen services to mobile, tablet, game console or connected TV based subscribers.

UK Broadband Video Traffic Growth Forecast



Example Operator D-VDN ROI



The Edgeware D-VDN

THE EDGEWARE DISTRIBUTED VIDEO DELIVERY NETWORK (EDGEWARE D-VDN) IS MADE UP OF 2 MAIN COMPONENTS, WHICH ARE CLOSELY INTEGRATED TO FORM A COHERENT AND INTEGRATED ARCHITECTURE: THE ORBIT HARDWARE PLATFORM, AND THE CONVOY VDN DISTRIBUTED ASSET PROPAGATION AND MANAGEMENT SYSTEM.

Orbit hardware platform

By designing a purpose built system Edgeware has been able to build a platform that meets and exceeds the most stringent requirements for distributed implementation in a carrier or operators network infrastructure. The Orbit hardware platform is delivered in three distinct product sets at this point: Orbit 3020, Orbit-2X and WTV-2X.

Orbit 3020

Orbit 3020 is designed to offer simultaneous support for managed and unmanaged environments, delivering a full suite of protocol support in retail and wholesale applications.

Orbit-2X

This product set is focused on providing Video on Demand, IPTV with Time-shift TV and n-PVR type services primarily to cable and telco operators. Orbit-2X provides 20 Gbps of output streaming (sustained) for very high scalability and capacity.

WTV-2X

This product provides a focused solution for:

- multi-media content providers to offer over the top (OTT) services to subscribers using a broadband internet connection
- network operators looking to offer premium Web TV services to their subscribers
- network operators looking to offer video based CDN capabilities to content providers within the operators' own network

WTV-2X provides 20 Gbps of output streaming (sustained) for very high scalability and capacity.

HTTP Adaptive Streaming Support

- Microsoft® IIS Smooth Streaming
- Apple HTTP Live Streaming
- Adobe® HTTP Dynamic Streaming
- Widevine Adaptive Streaming

Convoy VDN Distributed Asset Propagation and Management System

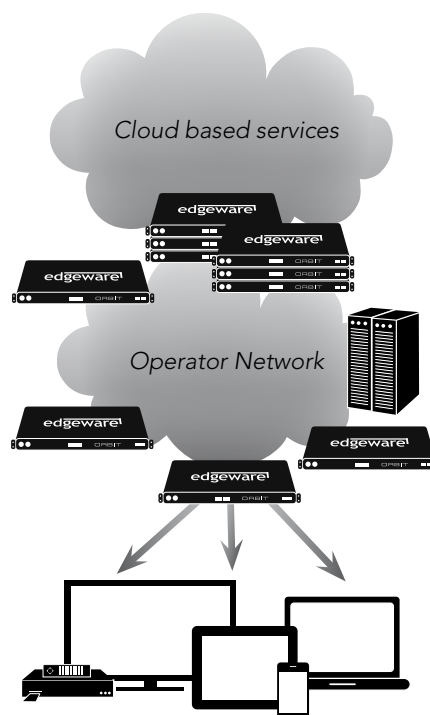
Convoy is a fully distributed asset propagation and management system that is an integral part of each Edgeware server. Each server in the network collects usage statistics based on the request entering that specific server. This information is then used to decide which content should be available locally. When popular content is not available in the local content repository, it is automatically downloaded from the central server, while the least popular content is removed.

When an edge server receives a request for content not currently available locally, the request is forwarded to the central server through the use of standard RTSP/HTTP signalling.

Orbit Hardware

- highly scalable capacity for both storage and forwarding capacity that far exceeds more generic hardware based systems
 - 2-20Gb output streaming sustained
 - over 16,000 or 32,000 concurrent streams per unit depending on application and bandwidth of stream
 - extremely low power consumption
 - 85W peak power consumption at full configuration, max load
 - high capacity, high reliability storage
 - solid state NAND Flash storage from 256 GB to 6 TB (Orbit-2X/WTV-2X) or 24 TB (Orbit 3020)
 - the full range of on-demand capabilities within the same box
- ...and all of this implemented in a 1RU 19 inch, half depth rack unit.

Distributed Video Delivery "from Cloud to Subscriber"



OTT services, content libraries, CDNs, live TV feeds, connected through wholesale operator services

Very long tail (hard drive storage):

- nPVR (> 10TB)

Long tail at network center:

- Single servers or logical clusters for central streaming (~5-10TB storage)
- CDNs, OTT operators, telco/cable core networks

Short to mid tail close to subscribers:

- Distributed servers (~1TB storage)
- Telco/cable metro & access networks

Subscribers

- TV sets
- Computers
- Mobile devices



It's not just about delivery of video or on-demand TV, it's about breadth and scalability

- Edgeware provides the leading solution to the "invest ahead" problem in the data center and core network.
- Edgeware makes it possible to justify, deploy and make money from on-demand TV and video services to hundreds of thousands of subscribers with "invest when ready" and "scale when needed".
- Edgeware provides a unified approach to the deployment of advanced video based services irrespective of topology type. Whether you are a cable operator, telco, or are deploying an OTT service, Edgeware provides a common solution and product set that can be easily redeployed as your topology evolves.

Key Benefits of Deploying on-demand TV and video services:

- Reduction of churn in the subscriber base by offering new and compelling services to multiple screens - TV, computer and mobile device
- Monetization of the video traffic generated by "Over The Top" services being offered by content providers by offering in-network content delivery network capabilities.

Convoy VDN Management System

The Convoy Management System extends the Convoy distributed asset propagation system by providing:

- A Session gateway for centralized session establishment
- A Content gateway for centralized content management
- Usage analytics and monitoring

As part of the Edgeware Distributed Video Delivery Network, the Convoy management system supports both managed delivery of local content to the network provider's subscribers, as well as wholesale of video delivery capacity to external content providers.

Session Gateway

The Session gateway is the initial client endpoint into an Edgeware VDN. The most suitable delivery server will be selected using criteria like geographic location, IP range mappings, content/server availability and load. It is also possible to block clients based on location or IP address, provision the use of the VDN per content provider and prioritize delivery of certain content, such as live events.

Content Gateway

The Content gateway provides interfaces for managing all content to be delivered by the VDN, both live and VOD content. It is also possible to schedule recordings of live streams, for NPVR or catch-up services. APIs allow for easy integration with third-party CMS systems. When the VDN is used to offer whole sale services, each content provider can manage their own content through dedicated APIs and extract usage data.

Analytics and Monitoring

A key advantage for a network provider offering VDN services is the ability to offer higher quality of experience, than can be offered using non-managed OTT delivery. The Convoy management system offers advanced analytics tools to show the quality of delivery as well as detailed monitoring of the network and server utilisation.

Fast Channel Change

Fast channel change overcomes the issues of channel change times of 2-8 seconds caused by using H.264 encoding. Edgeware solves this problem using dedicated FCC application software that is deployed into any of the Orbit family. The standards based solution makes use of inherent multicast ingest capability that can also be used to deliver different types of Time Shift TV services in the same multi-service appliance. Licensed separately

Retransmission

In many networks high loss DSL lines can preclude the deliver of video services to subscribers situated too far away from the CO. Edgeware provides additional capabilities for retransmission of packets within a UDP based network to allow further reach to these subscribers. Licensed separately.

Multicast to Unicast Conversion

In some networks the implementation of multicast for live TV can mean a significant upgrade to the network infrastructure. Using an Edgeware Video Delivery Network, multicast based channels on a backbone can easily be converted to unicast channels delivered over TCP with the added benefit of being able to immediately implement profitable additional services such as time shift TV or Network PVR adding new services without the need for major network infrastructure upgrades.

Playout Management Tool

Maximum utilization of available assets is key to enhancing profitability. Edgeware provides sophisticated tools for the creation of virtual channels using existing assets from an EPG.

Ad Insertion

Using this capability of providing a unique video stream to each user, commercial content can be tailored for individual users based on different criteria. Edgeware's sophisticated virtual asset handling allows playlists to be created from existing assets and be used to create virtual assets and new channels as well as managing insertion into existing streams.

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