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# Conax Xtend Multiscreen™ with Harmonic ProMedia™ Transcoding Solutions



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Solution Paper  
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## Introduction

As the television landscape is rapidly changing and pay-TV subscribers are expecting more sophisticated services, operators need to focus on service innovation. Especially in advanced TV markets, offering compelling new services and a high quality of experience is becoming crucial to increase ARPU and reduce churn.

Multiscreen services and OTT content delivery paves the ground for generating new revenue streams. In addition to launching new and compelling services, these new services can be offered without initial deployment of STBs. In this way operators can maximize revenues on costly content investments by also selling to non-subscriber households. It is also an effective tool to attract new subscribers. Another opportunity is to overcome limited network reach and offer services to household not connected to the operator's network. A local cable operator can for example achieve full national coverage.

*Conax Xtend Multiscreen™* - a joint solution with partners Cubiware, MPS Broadband, and Harmonic – is a complete OTT and multiscreen solution that gives operators a low-threshold entry into a world of new and exciting business opportunities. It is pre-integrated, thereby reducing time and risk related to launching multiscreen and OTT services as an addition to regular broadcast services. It is ideally suited to enable broadcast operators to expanding their service offering with a minimum of investments.

## Multiple Possibilities

With Conax Xtend Multiscreen™, operators can provide access to the same content across all devices, regardless of how the content is delivered. Operators can monetize the OTT scenario and offer all the rich possibilities of OTT services including:

- Video on demand: Video on demand (VOD) services give subscribers the opportunity to view content when they want to view it. With VOD via OTT and multiscreen services, viewing content is no longer limited to the living room TV and fixed schedules. Content can be viewed while lying in bed or riding the bus to and from work or during a long flight.
- Catch-up TV: Sometimes it is not possible to watch certain TV programs during their scheduled broadcast times, for example when a subscriber has to attend a work or family event. With catch-up TV, subscribers are still able to watch their favorite programs without having to pre-record them. TV programs are collected to create a VOD-like service that allows consumers the opportunity to “catch up” on already broadcasted programs. As opposed to VOD in general, there is usually a time limit to when catch-up programs can be viewed.
- Live TV: While traditional broadcast to the living room TV is still the most popular way to view real time programs and events, some subscribers may want to watch these programs and events on other devices, especially when they are on the go. Conax Xtend Multiscreen™ enables viewing of live TV on all supported devices as a part of an operator's subscription services.

## A Complete Ecosystem

Conax Xtend Multiscreen™ adds support for multiscreen and OTT services to an existing broadcast operation using Conax Contego Unite™. The solution is ready-to-use, reducing total integration costs and enabling operators to realize their business models right away.

Through open interfaces, Conax Xtend Multiscreen™ enables easy integration with operators' existing infrastructure. Conax Xtend Multiscreen™ is flexible and scalable, allowing an operation to change over time based on the needs of subscribers, the need to keep up with competitors, and the business in general. Conax Xtend Multiscreen™ also allows for different sales modes, from subscription to rental and combinations of these.

Conax Xtend Multiscreen™ is a joint solution between Conax and Conax partners Cubiware and MPS Broadband. It is made up of the following key components.

- Conax Contego Unite™:** *Conax Contego Unite™* enables access to the best content by ensuring the strongest content protection available to the market. Conax Contego Unite™ handles content protection consistently across all kinds of consumer devices and includes multi-DRM support, ensuring the best suited security solution for each consumer device. A wide range of business models ensure your revenue streams. Unparalleled scalability, robustness and ease of use save operational costs and training.
- Cubiware CubiTV:** CubiTV Middleware provides an intuitive user experience that gives a consistent look and feel across all consumer device platforms. The Middleware consists of a Portal Server and Clients. The Portal offers product interface to devices. It is also the main integration point for the operator's SMS and billing systems. The middleware client implements the user interface and client functionality on various client platforms.
- MPS Publishing Platform:** *MPS Publishing Platform®* (MPP) is a full end-to-end content management system for managing, publishing, and distributing live and on demand video services. MPP controls content and metadata workflows.
- Harmonic:** Harmonic is a leading provider of multiscreen transcoding and streaming solutions. The company's *ProMedia™* family of integrated software applications and hardware appliances include solutions for both file-based and real-time transcoding, supporting live, VOD and time-shift TV OTT services.

The following figure shows the high-level system architecture.

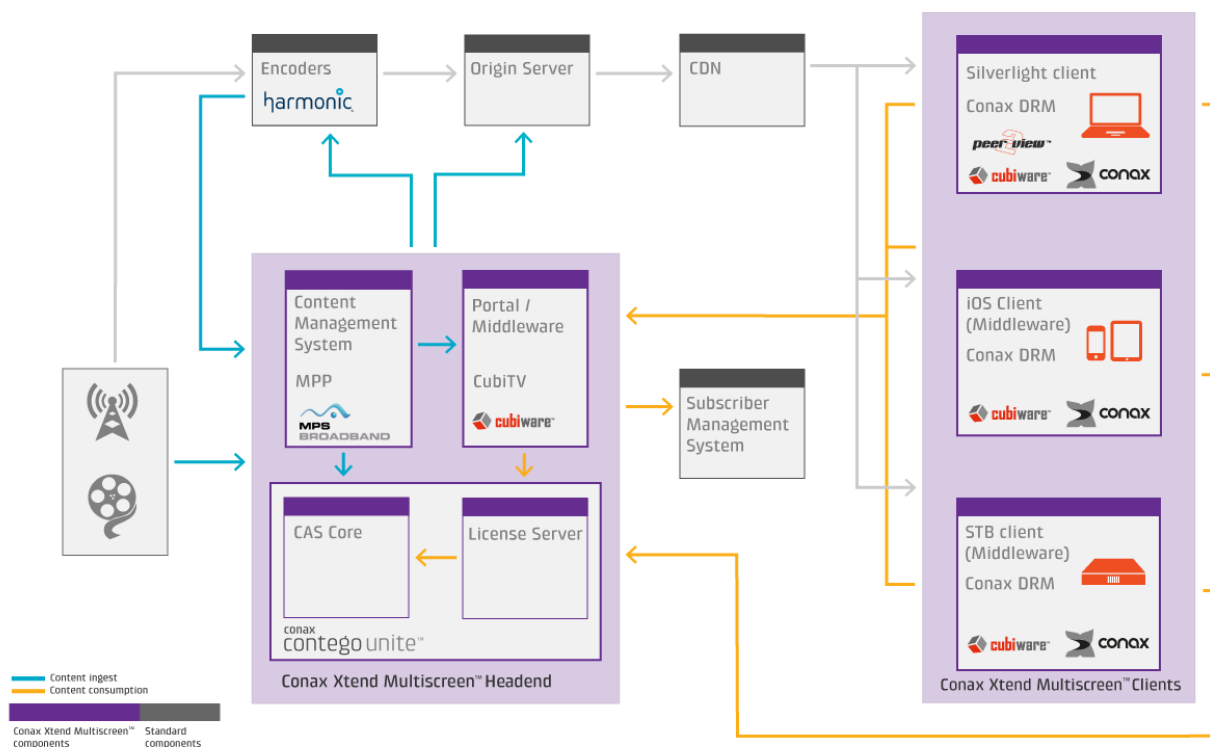


Figure 1 Conax Xtend Multiscreen™ high-level architecture

## Functions

Conax Xtend Multiscreen™ covers all aspects of a complete OTT and multiscreen operation, providing the necessary functions for deployment of multiscreen services.

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### Content Ingest and Metadata Handling

Content ingest and metadata handling are controlled by the Content Management System (CMS) from when content is received from content owners until content and metadata are published on the Content Portal. This includes handling business rules and lifetime handling of content, as well as recording and scheduling of catch-up content. The CMS adds content and products towards Conax Contego Unite™, creating products and publishing content and EPG data towards the Content Portal.

MPP allows metadata to be imported, validated, transformed, and exported using XML and XSL transformations. CableLabs VOD metadata and MPEG 7 metadata are supported out of the box in addition to the internal MPP XML metadata format, and other formats can be added as needed.

For VOD, ingest of MPEG-2/TS and MP4 content and metadata is file-based. Catch-up assets from live TV streams (MPEG-2/TS) are ingested automatically; assets are identified based on EPG or other metadata.

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### Transcoding and Encryption

Transcoding is controlled by the Content Management System; files are encoded and published to the origin server. Encryption is handled by the Encoder; the keys are delivered from Conax Contego Unite™. The Encoder is integrated with both Contego Unite™ and the Content Management System.

Conax Xtend Multiscreen™ is pre-integrated with ProMedia transcoding solutions from Harmonic. For high-volume VOD applications, the Harmonic WFS™ file-based workflow engine enables control of multiple ProMedia Carbon and Harmonic ProMedia Xpress nodes. These software-based transcoders support streaming profiles and protocols, encrypt content, and apply DRM rules. Content is encrypted and transcoded to adaptive streaming format with both MS Smooth Streaming and HLS output.

Harmonic's ProMedia Live is used for real-time OTT services. It is a real-time video processing and encoding system that can transcode SD, HD, MPEG-2, and MPEG-4 content to multiple H.264 streams optimized for adaptive bitrate delivery. The carrier-grade software platform can be integrated with ProMedia Package for encapsulation and delivery to a variety of target ecosystems and formats.

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### Content Delivery

Conax Xtend Multiscreen™ is built to support most CDN service providers and most CDN component providers. Only the CDN communicates with the origin server. The CDN pulls content when a request is received from the client.

For optimal delivery of content, Conax Xtend Multiscreen™ uses adaptive streaming. Playback is based on the native player in the different devices; HTTP Adaptive streaming (HLS) is used for iOS devices, while MS Smooth Streaming is used for STBs and Silverlight devices (PC and Mac).

Harmonic's ProMedia Origin is an HTTP streaming video server for hosting a broad range of multiscreen services on a scalable, enterprise-class platform. Leveraging industry-standard streaming protocols, ProMedia Origin enables pay-TV services such as VOD, catch-up TV, start-over TV and nDVR to

connected devices. The application ensures maximum interoperability with Conax-supported target devices via HLS and Smooth Streaming. (Origin also supports Adobe HDS and MPEG-DASH.) ProMedia Origin is optimized to work with the Harmonic MediaGrid shared storage system and can scale to support thousands of simultaneous streams.

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### **Content Consumption**

All content is authorized on a per-account basis. Operators can decide how many devices are allowed for a specific account, and all content on an account can be viewed on the devices associated with the account as long as the content is made available for the device type.

All content is presented to the subscriber through the middleware, the Content Portal, and the client. In order to access the Content Portal, the subscriber must log in to the Portal, where part of the login process is an authentication of the subscriber towards Contego Unite™. When logged in, devices are added and removed automatically in accordance with the operator's rules. Devices are managed by Contego Unite™ via the Content Portal.

Content can be searched and selected in the Portal either by the different catalogs presented in the Portal or through the EPG, for live and catch-up content. For catch-up content, there is a backward EPG option.

Subscribers can buy access directly from the consumer device. Sales modes are flexible, with subscription, rental or combination services available for VOD and catch-up services and subscription and event PPV for live TV.

## **Features**

Conax Xtend Multiscreen™ offers a rich feature set, adding real value to a combined broadcast and broadband operation.

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### **Multi-Device Support**

Today there are a multitude of consumer devices – from smart phones to tablets to game consoles to PCs – that can be used to view video content. Consumers can be very particular about their devices and brand loyalty can be fierce. It must therefore be possible to cover as many devices as possible in order to serve these consumers. However, content owners are reluctant to allow content viewing on certain devices due to fears of piracy. Conax Contego Unite™ serves as a common CAS/DRM, ensuring the strongest content protection available to the market for a wide range of devices, and thus enabling access to the best content.

Conax Xtend Multiscreen™ can be used with hybrid STBs, iOS devices, and Silverlight devices. It will be possible to add other devices in the future.

- Hybrid STBs: Conax has developed a security-hardened PlayReady implementation as the OTT DRM for hybrid (DVB/IP) STBs. The PlayReady implementation is integrated with Cubiware middleware. In addition, the hybrid STB also supports Conax smart cards for Live TV through DVB.
- iOS: Conax Xtend Multiscreen™ can be used for popular iOS devices such as the iPad and the iPhone. The middleware for iOS devices runs on a Cubiware app integrated with Conax' security-hardened PlayReady implementation. The PlayReady implementation utilizes the native player on the iOS device for better video and battery performance and supports VOD, catch-up, and Live TV via OTT, using HLS as the streaming protocol. The operator is responsible for registering the app on AppStore.
- Silverlight devices (PC and MAC): Conax Xtend Multiscreen™ has a Web browser application for PCs and MACs based on HTML5, CSS, JS, and Silverlight 4. No installation is needed; the

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security plugin is automatically installed by the Content Portal. The application supports VOD, catch-up and Live TV via OTT and uses Microsoft Smooth Streaming.

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### **Follow Me**

There are times when it is necessary or even desirable to switch from watching a program on one device to watching the same program on another device. For example, a subscriber starts watching a film on his smartphone on the train ride home from work and wants to continue watching the same film on his big screen TV when he returns home. With Conax Xtend Multiscreen™, subscribers can seamlessly move one viewing session to another screen. They just pause, switch devices, and then continue playing.

Follow me is supported only for VOD and catch-up content.

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### **Smart Remote Control**

In order to improve user experience, Conax Xtend Multiscreen™ enables companion devices such as smart phones and tablets to be used as a remote control. Conax Xtend Multiscreen™ supports basic remote control functions such as browsing VOD or catch-up content catalogs or EPG/channel line-ups and triggering playback or a channel change on the TV.

The smart remote control function can also be used for remote PVR management, where subscribers can schedule a PVR recording on the STB via their companion devices and then watch the recording later.

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### **Peer2View®**

Peer2View® is a distribution solution for video streaming of live events and linear TV over the Internet, enabling large scale, live video broadcasts. Peer2View® uses available capacity in the network nodes and greatly reduces the CDN traffic. Each Peer2View® client acts as a network proxy between the local video player and the Peer2View® network. If no other peers are available the client will fall back to the CDN. By reducing the traffic towards CDN, operators will save CDN cost and maintain stable operation, especially in case of big TV events that generate large amount of traffic. Peer2View® scales very well and is network friendly.

Conax Xtend Multiscreen™ supports Peer2View® for PC and Mac for the first release and will support other devices in future releases. The Peer2View® client must be installed on a computer that is part of the Peer2View® distribution network. The installation is available on the Content Portal.

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### **Consistent User Experience**

Today's pay-TV subscribers want a personalized viewing experience that fits their own preferences. This means, for example, that the appearance and the navigation principles of the user interface are the same regardless of device.

Conax Xtend Multiscreen™ allows operators to abstract from consumer devices and network infrastructure, giving subscribers a similar experience when accessing services no matter which device they are using and regardless of network infrastructure in use. Operators are also able to customize the look and feel by applying skins with their own colors and logos.

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### **Consistent Handling of Rules**

Conax Xtend Multiscreen™ enables consistent handling of usage rule information (URI) across all devices, independent of the device's own DRM and security mechanisms. With help of usage rules, the operator can decide what subscribers are allowed to do with specific content. This includes copy control settings, where content can be made available or unavailable for specific device types depending on content rights; this is often a requirement from content owners. Conax Xtend Multiscreen™ enables parental control settings across all devices, as well as control of analog and digital output on all devices.

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## Summary

OTT and multiscreen services can give operators exciting new business opportunities, but implementing these services is not without risks. With world class components from Conax, Cubiware and MPS Broadband, Conax Xtend Multiscreen™ provides all the necessary functions and features necessary for a successful OTT and multiscreen operation, enabling operators to easily implement secure and reliable OTT and multiscreen services right away.

The all-encompassing and ready-to-use Conax Xtend Multiscreen™ solution reduces the threshold for entering the OTT and multiscreen arena by removing the complexity, costs and risks involved. Conax Xtend Multiscreen™ enables the advanced services that subscribers want, on the devices of their choice.

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### About Conax

Conax is a global leader in content protection technology, with over 25 years of proven experience. As an independent content protection provider, Conax focuses fully on content protection and can develop the best solutions that prevent piracy and revenue loss.

Pay-TV operators can rely on Conax to work with best of breed partners and provide advanced solutions for your digital TV operation. To learn more about how Conax can support your pay-TV operation, contact Conax at [info@conax.com](mailto:info@conax.com)

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### About Cubiware

Cubiware is an innovative provider of software for digital TV services and systems. Cubiware products include market-proven IPTV/OTT/DVB/IP hybrid middleware and Software Development Kit for developing client service applications. Cubiware's CubiTV is a flexible Middleware solution targeted to cable, satellite, terrestrial TV operators and telcos willing to introduce advanced TV services to their network. It leverages Cubiware's software technology to deliver a wide range of interactive services and provide a stunning user experience to subscribers. Support for a variety of Internet standards and high customizability enables rapid and cost effective service deployment.

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### About MPS

MPS Broadband is a digital media technology company with offices in Sweden, the United Kingdom and the United States. Founded in 2003, MPS is committed to developing and delivering state of the art solutions that address the rapidly growing online video market. Created to meet the needs of content owners, aggregators, operators and corporations alike, core product offerings include:

- Peer2View® a cutting edge solution that enables large scale, live video broadcasts over the Internet and over corporate networks.
- The MPS Publishing Platform® (MPP) an online video platform for publishing and managing video content.

Both are built on cloud based technology and are offered through an extensive network of partners and resellers around the world.

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### About Harmonic

Harmonic is the worldwide leader in video delivery infrastructure for emerging television and video services. The company's production-ready innovation enables content and service providers to efficiently create, prepare, and deliver differentiated services for television and new media video platforms. Harmonic solutions power everything from emerging HD encoding schemes to cutting-edge multiscreen environments, simplifying workflows and making every type of media accessible on every type of screen. From blazing transcoding performance to MPEG-DASH for OTT delivery, Harmonic's technology portfolio offers solutions for an increasingly complex video world.