CryptoGuard — *Protect your content*

END-TO-END OTT SOLUTION

AN AFFORDABLE AND COMPLETE

Statistics are showing that more and more consumers watch their favorite TV programs when they can through catch-up. Also start-over and network recordings have become popular. Consumers want such OTT services not just in their home but also on their tablets and smartphones wherever they are. Pay TV operator without OTT services in markets where, competitors offer OTT services, faces a serious churn. Establishing such services is therefore a necessity for most Pay TV operators; however, consumer's willingness to pay for such services is very low. As OTT solutions till now has been complex and expensive it has been a challenge for Pay TV operators to fulfill consumer's expectations and stop churn.

CryptoGuard s CryptoLITE is the first *complete* *end-to-end OTT solution making it* *affordable* *to establish advanced OTT services for Pay TV operators.*

CryptoLITE is a complete OTT solution containing transcoders, packagers, origin server, content delivery network, OTT head end server, applications for smartphones, tablets and middleware for Set Top Boxes. CryptoLITE in combination with CryptoGuard CAS, DRM and Subscriber Management System is the first complete and highly affordable OTT solution on the market.

THE CRYPTOGUARD OTT SOLUTION

The CryptoGuard OTT solution is a modern, advanced solution that makes it possible to offer catchup, start over TV, network PVR, linear TV and video on demand on any devices such as smartphones, tablets, Set Top Boxes, Apple TV and Smart TVs. It supports any Android, iOS, Microsoft and Linux devices as well all popular browsers. For linear content, DVB-S, DVB-C, DVB-T and IPTV are all supported. Native DRMs like Microsoft PlayReady, Apple FairPlay and Google Widevine are supported.

These DRMs are approved by all content providers and inexpensive to use for Pay TV operators.

The advanced EPG offers a timeline where you can go to the past or in the future. If you go to the past the content will automatically show in catch-up mode, and if you go in the future you will be offered to record the content in the network or be notified when it starts.

The below picture show the CryptoGuard OTT solution on a high level.

Content arrives to the CryptoLITE Transcoder to be transcoded into different bit rates. This means that for example 4 Mbps Live TV stream is transcoded to one 500 kbps stream, one 1 Mbps, one 2 Mbps stream and one 4 Mbps stream. The reason for this is that each user device can change from one stream to another on the fly in case the network speed is not stable. This is Adaptive Bit Rate (ABR). This is needed for example when using WiFi or Mobile data. The result is that the movie will not stop while watching it.

The CryptoLITE Transcoder will also contain a packager. The purpose of the packager is to chop the video stream into smaller packages.

Digital broadband communications

The purpose of the CryptoGuard Encryptor is to encrypt the content with AES keys, and deliver the encrypted movie files to the CryptoLITE Origin Server. Both HLS and MPEG-Dash are supported. The CryptoLITE Origin Server will receive all these small movie packages and make them available to the client devices.
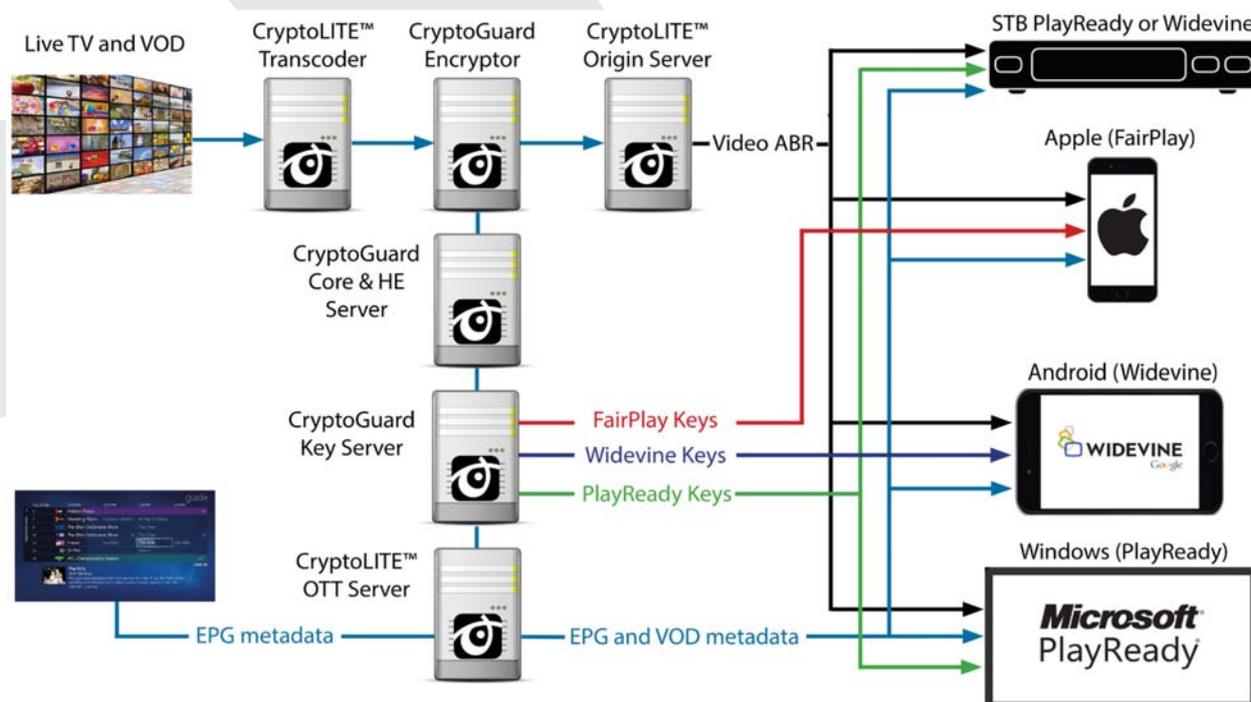
The purpose of the CryptoLITE OTT Server is to feed all clients with texts, images, trailers and metadata for all content so the user can browse between live TV channels, catch-up and video on demand. The CryptoLITE OTT Server also performs login and authentication of users. When a user has selected a live TV channel or a movie to watch, the user device will request the decryption key for that content on behalf of the logged in user. The CryptoGuard Key Server will verify this request and send the appropriate key to the user device for decryption of the content.

All user devices need to connect to the CryptoLITE OTT Server, the CryptoGuard Key Server and the CryptoLITE Origin Server. The CryptoGuard Key Server can handle huge amounts of user devices, but we recommend two CryptoGuard Key Servers for redundancy purposes. One CryptoLITE OTT Server can handle 50 000 active users simultaneously, but again we recommend two for redundancy. In case there are 200 000 simultaneous users, five CryptoLITE OTT Servers would be needed. The CryptoLITE Origin Server requires the highest bandwidth. In case 3 000 devices are using 2 Mbps stream each, this server will provide 6 Gbps. This would also be the requirement of the Internet capacity from the head end. As 3 000 viewers is not much, scaling an OTT system is therefore depending on using a content delivery network.

A content delivery network is simply a huge amount of streaming servers on different geographic locations. The viewers in a town can then easily connect to a local server rather than going all the way back to the operator. The CryptoLITE Origin Server at the operator will only feed the servers of the content delivery network, which requires less Internet bandwidth into the head end.

A content delivery system can be the Pay TV operator's own system or a solution from a CDN provider. The CryptoLITE CDN servers are ideal in case the Pay TV operator wants to build his own network. The CryptoLITE solution also supports CDN providers like Akamai, Limelight, Amazon and others.

THE CRYPTOGUARD DRM APPROACH

New movies in HD are available on Apple devices protected by Apple's FairPlay. When you watch content from Netflix or HBO on your Microsoft device it is protected by Microsoft PlayReady. On Android devices you can watch movies protected by Google Widevine. This means that content providers are accepting these "native" DRM systems. The beauty of these DRM systems is that they are inexpensive to use for content providers, Pay TV operators and technology vendors.

As Apple FairPlay, Google Widevine and Microsoft PlayReady are inexpensive to use and approved by studios, the CryptoGuard DRM approach is to support these DRM systems from a unified head end.