CryptoGuard

– Protect your content –

Pay-TV Content Protection

Conditional Access & Subscriber Management System

Card based & Cardless Solution

Excellence in Content Protection – Since 2007

About CryptoGuard

CryptoGuard is a global provider of Pay-TV content protection such as Conditional Access (CAS) and Digital Rights Management (DRM) for any platform DVB, IPTV and OTT. CryptoGuard's solutions are flexible, scalable, cost-effective and support an attractive 'pay-as-you-grow' business model, ideal for any size of network and operator.

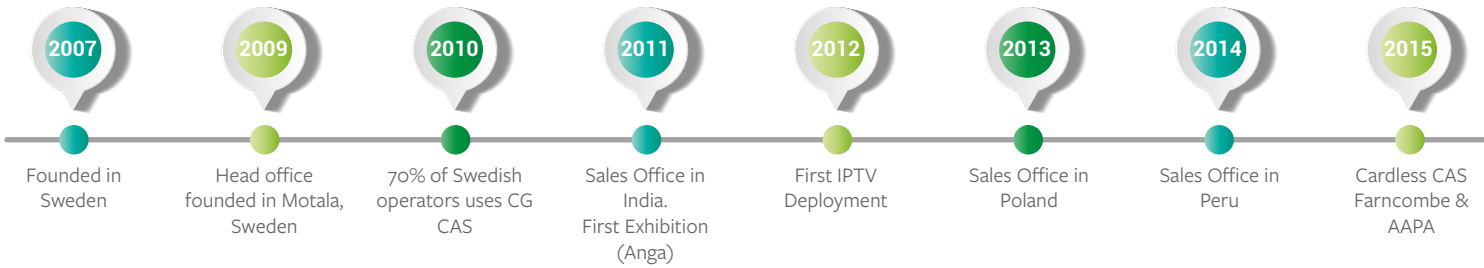
The successful journey began in 2007 when CryptoGuard was founded in Sweden and launched its CAS, tailored for the Swedish Cable-TV market. Due to the analogue switch-off, regulations required cable operators to encrypt their content and numerous small operators faced serious concerns as the existing CAS alternatives were very expensive.

CryptoGuard CAS proved to have the right pricing, high security level and scalability for any size of network which resulted in 70% of Swedish cable operators using CryptoGuard CAS in 2010. The successful introduction in Sweden lead to CryptoGuard's expansion into the international market and continued product development to meet the demands from major operators and broadcasters worldwide.

Today the company's solutions have been deployed by 250+ operators in 50+ countries worldwide, with a number of national TV broadcasters selecting CryptoGuard as its security partner. CryptoGuard is well positioned with sales offices on three continents and with an extensive partner ecosystem bringing world-class solutions to the market.

In recent years, CryptoGuard has expanded its product portfolio with an End-to-End OTT solution CryptoLITE™ which includes everything needed to set up an OTT service – processing and distribution of streams, management system, DRM content protection and user's apps. The cost-effective, quickly installed and scalable system enables operators of all sizes to start their OTT services, even with low number of users.

THE CRYPTOGUARD TIMELINE:



Turn-key CAS & SMS Solution

Choosing the right Conditional Access System (CAS) is essential to ensure that only paying subscribers are getting access to the content and to be able to get premium content from content providers. CryptoGuard CAS utilizes advanced security and is constantly improved with the latest innovations in encryption, software obfuscation and hardening security. CryptoGuard are also actively fighting piracy through the Audiovisual - Anti Piracy Alliance (AAPA).

CryptoGuard CAS is ideal for any size of operator and can scale up to millions of subscribers. It supports any business model and facilitates DRM and OTT for anywhere, -any device viewing experience.

Advanced Security

CryptoGuard CAS is utilizing security modules on the head end side, with the most secure hardware. On the STB and CAM side, CryptoGuard CAS has always used secure pairing with link protection to avoid control word sharing. CryptoGuard CAS is utilizing advanced security embedded in DVB chipsets from the major chipset vendors for both Cardless and Smartcard based solutions. In addition to storing secrets in highly secure chipsets, software obfuscation and the strongest encryption technology is used to avoid device cloning, control word sharing or any other piracy threats.

AUDIOVISUAL ANTI-PIRACY ALLIANCE

CERTIFIED EAL5+ STATE OF THE ART

CryptoGuard Smartcards always use the most secure chips available on the market. These chips are state-of-the-art EAL5+ certified and rigorously tested.

2016 First DRM Deployment

2017 First CryptoLITE Deployment

2018 50+ Deployments across 4 continents

2019 First Cardless CAM Farncombe Audit. Sales Office in Singapore

Di Gasell 2017 & 2018

AAA® Cryptoguard AB Highest credit worthiness © Bisnode 2020

VA Bisnode SUPER FÖRETAGEN

FARNCOMBE SECURITY AUDIT®

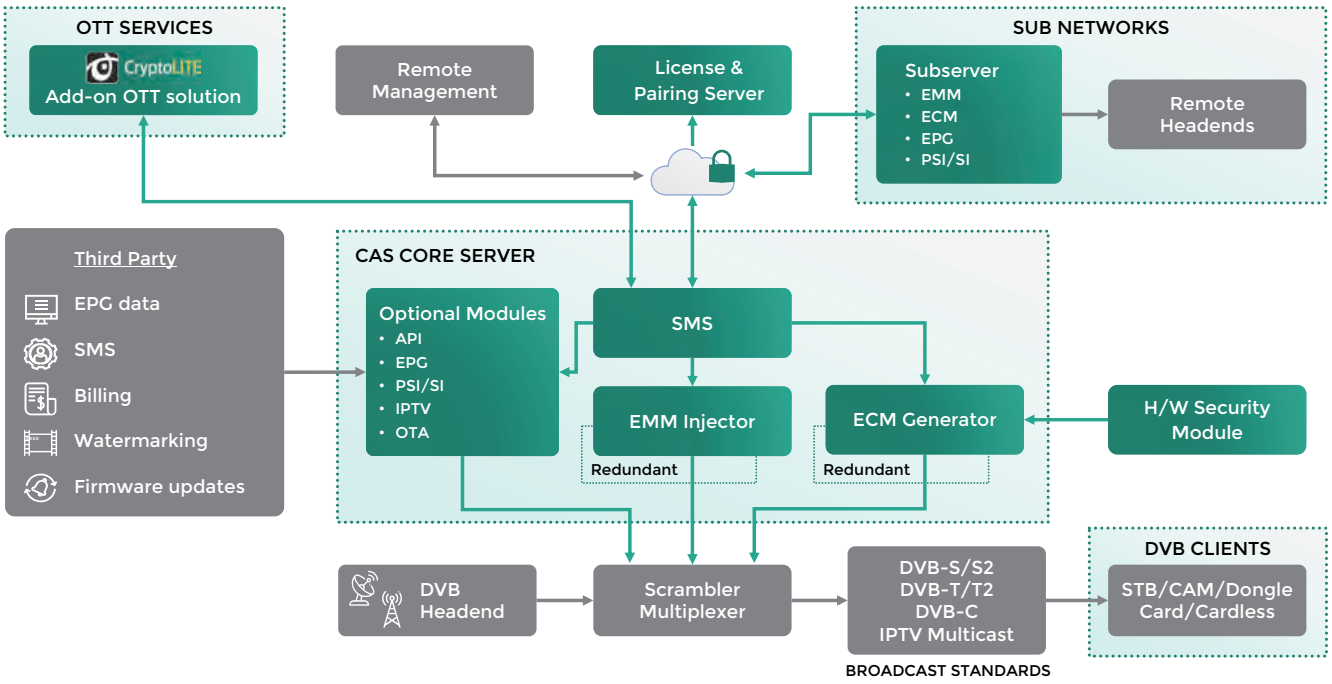
Company	CRYPTOGUARD
Product	CRYPTOGUARD CAS
Date	MARCH 2020

Cartesian, Inc.

CryptoGuard CAS has completed Farncombe Security Audit® trusted by Hollywood studios.

Core server

- CryptoGuard CAS can run all of its core applications on one single server and can easily be scaled up for very large operations by connecting more sub servers with optional redundancy.
- CryptoGuard CAS can be configured to support any topology of network.
- One central CryptoGuard CAS Core Server can control many ECM Generators and EMM Injectors that are placed in different locations. Thereby, cable networks in different locations or different satellite uplinks can be centrally operated as one system from one CryptoGuard CAS Core Server



Optional modules

- **API** – for 3rd party system integration
- **EPG** – Collects and sends EPG data to users. The EPG module can be used in sub server or as a separate unit in any DVB network. The EPG module is also available for stand-alone EPG Server for CATV Headends with support for both DVB and ISDB-Tb (Brazil) standard.
- **IPTV** – For cost effective DVB-IPTV system. Provides CAS and basic middleware EPG / Channel list to IPTV STB's. No need for costly 3rd party middleware.
- **PSI/SI** – Configure TV channels in e.g. sub networks where local head ends are used with different configuration. Generates and inserts NIT, SDT, SDT other, TDT, TOT, CAT, PAT, BAT and EIT tables for configuration of channel lists, frequency tables and the program guide (EPG).
- **OTA Player** – Allows "Over-The-Air" firmware upgrade of Set Top Boxes, CA modules and Dongles

SMS – Web interface for control of CAS/DRM and OTT

The SMS allows you to manage subscribers, client devices, content, ordering, customer care, billing etc. The architecture is open, based on a MySQL database and Linux, and there is a full set of APIs available for integration with third party systems. CryptoGuard CAS can be extended with the CryptoLITE OTT solution and DRM security. All DVB and OTT subscribers and client devices are seamlessly managed via the CAS core server.

CAS

- Subserver and redundancy management
- Subscriber management
- Content management
- Client device management, STBs, CAMs and dongles
- Fingerprinting EMM & ECM
- STB force tuning and messaging
- Module settings: API, PSI/SI, EPG, OTA and IPTV

OTT system and DRM

- Subscriber management
- Content management
- User device control: Mobiles, SmartTVs and STBs
- DRM settings: Content rights, Device count, Geo-blocking

Customers/Devices	Access criterias	Products	Reports	Configuration
Manage customers	Manage access criterias	Channel packages	Activation history	Backup
Manage devices	Manage access criteria profile	Services	Active devices	EMM fingerprinting
Advanced search	PPV programs	Customer groups	Broadcaster report	EMM OTA trigger
Reseller customer form	PPV program manager	Articles	Card statistics	Force tuning
File import		Manage price changes	Card versions	IP setup
		Reseller package group names	Channel statistics	Manage networks
		Broadcasters	Customer definition channel stat's	Messages
			EMM statistics	Multicast EMM
			Ended subscriptions	OTA Player
			Generate card numbers	PDF contract template
			Inactive customers	Process control
			Invoice list	Router setup
			Message queues	Simulcrypt ECM
			Package statistics	Simulcrypt EMM
			Paired STB's	System setup
			PPV order history	
			Subscriber list	
			Valid subscriptions	

PSI/SI insert	Log files	DRM/OTT	Administration
EIT containers	Alarm log	Encryptor services	Manage users
IPTV channel list	System log	Geo filters	Manage roles
PSI/SI	User log	Stream profiles	IP access list
	IP EMM log	Assets	

Sub network

- Networks extended over a larger geographic area with different frequency tables or having several head-ends, it can be necessary to separate components from the main server. An example is an additional PSI/SI server, ECM or EMM server.
- The EPG module can be installed separately on a sub server and it can also be used as a stand-alone EPG server in TV head-ends supporting both DVB and ISDB-Tb (Brazil) standards.

CryptoLITE OTT & DRM

- CryptoGuard CAS can also be extended with the cost-effective CryptoLITE end-to-end OTT Solution containing OTT Server, Transcoder, Origin Server, CDN Servers and apps for iOS, Android, Smart TVs and STBs.
- CryptoLITE solution also includes CryptoGuard DRM where the Pay TV operator can manage content and subscribers from the CAS core server.
- CryptoGuard DRM supports the most popular formats Widevine, FairPlay and PlayReady enabling a highly secure content delivery. These DRMs are natively supported by the majority of client devices and are approved by major studios.

Redundancy

- CryptoGuard CAS can be configured to support any topology of network and one central CAS Server can control many ECM Generators and EMM Injectors (CryptoGuard Sub-Servers).
- ECM generator can be separated from the main server and installed on a sub-server, which communicates with the main server. This can be done to enhance performance, since ECM generation is the heaviest and most sensitive part of a CAS system.
- A second ECM server may also be installed out of redundancy reasons, where the head-end scrambler detects if one ECM server goes down, to automatically connect to second one.
- EMM can also be installed on a separate sub-server to ease the burden of the main server.
- With this concept it's possible to add several CryptoGuard Sub-Servers to achieve the needed performance. By adding more CryptoGuard CAS Core Servers and CryptoGuard Sub-Servers, CryptoGuard CAS can scale up to very large numbers of subscribers.

Technical Specification

Number of supported subscribers	Any size, virtually unlimited
Supported Business Models	Subscription, Pay Per View and Events
Supported Transmission	DVB-C, DVB-T/T2, DVB-S/S2, IPTV
Multi Network Support	One CryptoGuard CAS Server can support many sub servers
Multi Operator Support	One CryptoGuard CAS Server can serve many operators
Simulcrypt version	ETSI TS 103 197 V 1.2.1 and V 1.3.1 (Simulcrypt 2 and 3)
Subscriber managing system, SMS	An SMS to control subscribers in the CryptoGuard CAS system is included
API for 3rd party billing / SMS	Yes
Cardless and Smart Card control	Customer, network owner, program supplier
Subscription sales	Customer service, subscriber log-in with PIN code, prepaid activation codes, retailer login
PPV and VOD	Yes
DRM	Yes, supported through CryptoGuard DRM
Multi DRM support	Google Widevine, Apple FairPlay and Microsoft PlayReady
Activation technology	Tags and program numbers. Last expiry date, positive control and negative control
Database and redundancy	MariaDB (Earlier MySQL) supports master slave and Galera cluster
Administrator privileges	System access can be defined per user and customized roles can be created
PSI/SI-play out	NIT, SDT, SDT actual/other, CAT, TDT, TOT, Private Sections
Supported Servers	Intel 64 bit, 8G Ram and 400G of disk. Various Head Ends and Raspberry Pi for small nets
CAM Support	Consumer CAMs for both CI and CI+. Professional CAMs for 4, 8, 16 or 25 channels
Pairing	Yes, on both Standard and Advanced Security Controlled at channel level
Control word sharing protection	Yes, on both Standard and Advanced Security
# Channels/channel package/MUX	Unlimited, defined on order. Standard is 512 tags. Several channels can have the same tag
Supported STBs	A separate list of tested STBs is available
Over the Air upgrade of STBs	Yes, supported for both STB middleware and the CryptoGuard Cardless CAS client
Update/new releases	All operators paying for SLA will continuously get server upgrades
Text messages to users	Messages up to 2048 characters
Fingerprinting	Group, individual, set position and moving position
Forced tuning	Yes
Reports	Standard and custom reports
Quick installation	Yes, through kick starter
OTT	Yes, CryptoLITE supports full end to end OTT solution

Words from our customers

Ready TV | Jamaica

We chose to go with CryptoGuard due to the company's unparalleled performance and scalability (supporting both cardless and card-based solutions simultaneously). As a television service provider, you have to be certain that only paying customers are able to view your TV-channels and content.

CryptoGuard uses a high-grade encryption scheme that can be used for satellite TV, cable TV, terrestrial TV and IPTV. The CryptoGuard services can easily evolve to support Multi-DRM solutions for protecting content on mobile devices, tablets, PC/MAC and Smart TVs in the CryptoLITE™ end-to-end OTT Solution.

Chris Dehring, CEO of ReadyTV

Digiana | India

CryptoGuard CAS is one of the most reliable and stable CA Systems. Also providing high quality product and user- friendly interface. This is why CryptoGuard has been our first choice for secured CA System.

Sukhdev Singh, Managing Director Digiana

Satcon | Congo, Gabon, Liberia, Sierra Leone

We have chosen CryptoGuard CAS in comparison with the majority of other competitors. The cooperation with CryptoGuard is amazing. CryptoGuard is a flexible, cost-effective and reliable CAS alternative in the market.

Bassam Fahs, IT and Technical Manager Satcon

Sappa | Sweden

The deciding factor for choosing CryptoGuard was the low entry costs and ready to use SMS. CryptoGuard is a stable, future-proof and well-functioning system, but still flexible enough to give us many opportunities for customization.

The company consists of competent staff with high sense of service that are always quick to give feedback and to solve any problems that might occur.

Hasse Svensson, CEO Sappa

Radijus Vektor | Serbia

Radijus Vektor has chosen CryptoGuard CA system because of cost-effective business model which is based on affordable TCO. We can use CryptoGuard CAS for any Pay TV service, e.g. DVB-C and IPTV - single encryption server for many kinds of encrypted services. Wide range of STB and CAM module Partners give us flexibility to choose the best CPE for us. Final reason is good and fast support.

Miroslav Stantic, Executive Director for Network

Kopernikus | Serbia

Kopernikus chose CryptoGuard's CAS system because of the good conditions, high quality, flexibility, user friendly customer interface regarding work on the system and complete integration of all needed functionalities.

Stevan Mićašević, CTO in Kopernikus

CryptoGuard CAS – Deployed by 250+ operators in 60+ countries

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