



Verimatrix VCAS™:
Content and Revenue Security for
Multi-Network, Multi-Screen Video Services
Solution Brief

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VCAS™ – Beyond Content Protection to Revenue Security™

Today's video service operators face a vastly expanded scope of delivery challenges in order to maintain their position on the competitive frontier. The challenges come from a number of technical and commercial directions, but at the top of the list may well be:

- Consumer expectation of services delivered in seamlessly to a vastly expanded range of device types.
- Delivery over multiple network types: cable, broadband and mobile, using a mix of protocols and bitrates.
- A much broader range of content value points, including premium UHD/4K offerings.
- A demand for more dynamic business and presentation models that address new user expectations and service usage trends.

The Verimatrix Video Content Authority System (VCAS™) architecture uniquely provides the security infrastructure, tools and support today's video operators require in order to address these challenges and seize new opportunities. As a consequence of the changing landscape, our central value proposition for the pay-TV enterprise shifts beyond that of traditional, single network content protection alone, towards the broader perspective of *multi-network revenue security*. Verimatrix helps operators turn these challenges into opportunities for growth by:



- Extending the operator brand and subscriber relationship beyond the traditional big screen with truly multi-network and multi-screen services.
- Personalized choices and viewing models across all device types including hybrid STBs.
- Enabling service delivery and content monetization spanning multiple networks and geographies.
- Fully addressing the security requirements for UHD/4K video service including integration of forensic watermarking.
- Assuring subscriber loyalty, enhanced average revenue per user (ARPU), and new revenue streams via self-management services, innovative online applications, etc.

VCAS – Deployment Flexibility and Versatility

VCAS is the realization of the Verimatrix 3-dimensional digital TV security strategy, which extends the domain of security beyond a legacy conditional access (CA) approach in order to protect pay-TV services delivered to *any screen* over *any network* while combating *any threat*. The VCAS architecture combines a number of network specific security solutions built on a common platform. VCAS is fundamentally based around cardless client implementations, integrating the best hardware security subsystems of the client devices with robust, renewable software architectures. It implements a single security authority for multiple networks and devices, supporting various video and digital rights management (DRM) formats while providing a harmonized cross-network entitlement management.

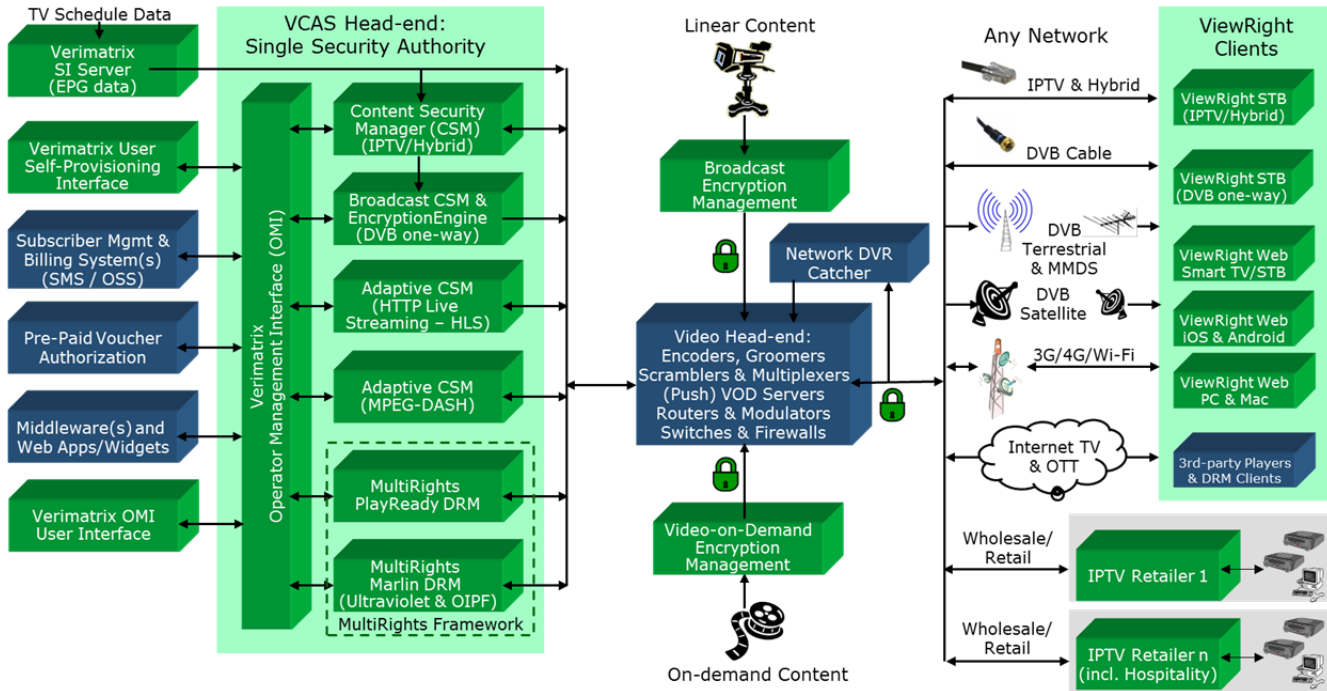
VCAS has been deployed widely, including proven configurations that secure services of the following types:

- **IPTV / Telco TV**, securing large scale IP managed network services using Multicast and VOD protocols, further enhanced by secure Wholesale/Retail content distribution options.
- **Hospitality-optimized IPTV**, offering solutions for small to large scale hotels, resorts and cruise ships.
- **Internet TV**, providing enhanced HTTP Live Streaming (HLS) security for live and on-demand OTT services to the broadest range of device types.
- **DVB Broadcast**, securing “one-way” networks: cable, satellite and DVB/ISDB-T terrestrial.
- **Broadcast-Hybrid**, combining Multicast and/or RF broadcast with Internet TV to provide a highly effective architecture for modern cable deployments that includes integrated forensic watermarking.
- **Online Video Publishing with Multi-DRM support**, featuring harmonized rights management for streaming that uses enhanced HLS security, MPEG-DASH, Microsoft Smooth Streaming/PlayReady and Marlin DRMs.

Based on a highly modular system architecture and efficient multi-server form factor, VCAS is inherently cost effective for the smallest deployment with field-proven scaling to Tier 1 operations with millions of subscribers.

VCAS – System Architecture, Key Components and Features

The VCAS head-end consists of a number of server components to address IPTV, Broadcast, Internet TV/OTT (adaptive rate streaming protocols), hybrid network and device combinations, and associated content rights management. The resulting solution is a *single security authority* for multiple networks and devices, supporting various video and DRM formats while providing a coherent user rights management.



VCAS Key Components

- Operator Management Interface (OMI)** – The core administrative component of VCAS to address multiple pay-TV networks and device types through a single security authority. It provides the common management interface and entitlement database that harmonizes all VCAS solutions, featuring APIs to manage entitlements, messages, devices, content and configurations.

OMI features domain-based entitlement management across VCAS and third-party DRMs (VCAS *Super Domains*), enforcing domain size or explicit device membership rules. Specifically, when content is entitled to a domain (as opposed to a device), it is automatically available to all the domain's devices, whether IPTV, broadcast, OTT or third-party DRM clients managed under the MultiRights framework.
- Content Security Manager (CSM)** – Head-end component for managed IPTV networks to manage authentication, key distribution and user control.
- Broadcast Content Security Manager (BCSM) and EncryptionEngine™**– Head-end components for one-way broadcast networks, incorporating Simulcrypt compatible ECM and EMM generation.
- Verimatrix SI Server** – DVB server feeding Electronic Program Guide (EPG) data to STBs.
- Adaptive CSM (ACSM) and Adaptive MPEG-DASH** – Head-end components for networks implementing HLS and MPEG-DASH adaptive rate streaming protocols for OTT video services. These components manage device authentication, key distribution and user control.
- MultiRights™** – The MultiRights framework is an enabler of the single security authority for multi-network and multi-DRM support, including Microsoft PlayReady DRM and Marlin DRM. It provides cross-DRM device and service management, and subscribers enjoy transparent usage rights management.
- Video-on-Demand Encryption Management** – Manual or automated offline workflow, with faster-than-real-time AES encryption of VOD assets, in conjunction with middleware and VOD servers.

- **Broadcast Encryption Management:** Three optional components for linear content encryption:
 - **Real-Time Encryption System (RTES)** –128-bit AES or RC4 multicast stream encryption.
 - **MultiCAS™/IP** – An alternative to RTES, MultiCAS™/IP generates ECMs in conjunction with third-party, high-performance AES scrambler supporting Simulcrypt.
 - **MultiCAS™/DVB** – DVB Simulcrypt compliant ECM generation for Broadcast-Hybrid networks.
- **ViewRight® STB for IPTV** – A robust package of embedded code that implements VCAS security functions within each IP-STB without the need for smart cards.
- **ViewRight® STB for DVB** – Multi-level client security to match STB technology and ARPU potential: Software client; secure system-on-chip (SOC) client; and optional smart card security.
- **ViewRight® Web** – A software-based client for devices supporting HLS, including iOS and Android based tablets and smart phones, smart TVs, etc. Can be combined with DVB and IPTV clients.
- **IPTV Retailers** – Secure, multi-level content distribution to last-mile service providers, with several options for local content insertion, subscriber management, middleware and VOD asset management.
- **VideoMark™** (not shown) – Patented technology for user-specific forensic tracking, it inserts an invisible yet robust watermark in the video stream in the STB prior to output to the display.

VCAS Key Features

- ✓ **Platform OS:** Red Hat Enterprise Linux 6.3
- ✓ **Database:** Oracle 11g Enterprise Edition
- ✓ **Digital certificates:** X.509 compliant PKI signature hierarchy
- ✓ **GUI:** Flexible Java-based secure administrative functions via OMI component
- ✓ **Monitoring and logging:** Comprehensive and secure
- ✓ **Scalability:** From trial system to millions of subscribers as proven in the field
- ✓ **Video encoding:** MPEG-2, MPEG-4/H.264, HVEC/H.265, etc. (format independent)
- ✓ **Video encapsulation:** MPEG-2 Transport Stream/HTTP Live Streaming/Smooth Streaming
- ✓ **Content encryption:** 128-bit AES by RTES, or AES and DVB-CSA by third-party scrambler
- ✓ **Network management integration:** SNMP v1, v2c, v3
- ✓ **VOD content ingestion:** Manual or automated with flexible workflow
- ✓ **Streamer/mux interface:** Simulcrypt: ETSI TS 103 197, ECMG and EMMG (v2, v3)
- ✓ **Head-end integration:** Open, SOAP-based API via OMI for rapid integration
- ✓ **Hierarchical distribution:** Multi-level content delivery without intermediate re-encryption
- ✓ **Client flexibility:** Choice of broadcast/hybrid STBs, mobile devices, smart TVs, and PC/Mac platforms
- ✓ **Clone detection:** Revenue protection through monitoring techniques and reporting
- ✓ **Watermarking:** Robust tracking of illegitimate content copies through patented user specific watermarking implementations, including support for 4K/UHD security requirements.

Vast Partner Ecosystem

Thanks to a vast Verimatrix partner ecosystem, operators can choose from a wide variety of pre-integrated components, such as middleware/subscriber management systems (SMS) and video-on-demand (VOD) servers, and hundreds of receiver models, including DVB, IPTV and hybrid set-top boxes, Windows and Mac OS computing platforms, iOS and Android smart phones and tablets, smart TVs, and gaming consoles.

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