



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

Verimatrix, Inc.
6825 Flanders Drive
San Diego, CA 92121, USA
Telephone: +1-858-677-7800
Fax: +1-858-677-7804
www.verimatrix.com

Copyright © 2010-2013 Verimatrix, Inc. All rights reserved.
Specifications and product availability are subject to change without notice

VCAS™ – Beyond Content Protection to Revenue Security™

The Verimatrix Video Content Authority System (VCAS™) provides the tools and support digital TV operators require in order to address the new opportunities arising from the accelerating convergence of video delivery over various types of networks – whether managed or unmanaged – to a multitude of devices. This convergence must encompass a proactive revenue protection and enhancement approach that enables service operators to cast a much wider net with their service offerings. As a consequence, the 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 to turn these new challenges into opportunities for growth by:



- Extending the operator brand and subscriber relationship beyond the living room screen.
- Addressing the competitive impact and opportunities of the Internet TV/OTT and mobile video.
- Providing personalized choices and viewing models across growing number of devices.
- Enabling service delivery and content monetization spanning multiple networks and geographies.
- Assuring subscriber loyalty, enhanced average revenue per user (ARPU), and new revenue streams via self-management services, innovative online applications, targeted advertising, etc.

VCAS – Deployment Versatility and Opportunities

VCAS is the realization of the Verimatrix 3-dimensional digital-TV security strategy, which extends beyond the legacy conditional access (CA) approach in order to protect pay-TV services delivered to *any screen over any network* while combating *any threat*. VCAS enables a number of network specific solutions built on a common platform with modular extensions per market segment. It implements a single security authority for multiple networks and devices, supporting various video and DRM formats while providing a harmonized cross-network entitlement rights management, for these market segments:

- **VCAS for IPTV**, securing managed networks, including IP hybrid networks and receivers, further enhanced by secure Wholesale/Retail content distribution, and a Hospitality-optimized version.
- **VCAS for Internet TV**, proving enhanced HTTP Live Streaming (HLS) for over-the-top (OTT) services.
- **VCAS for DVB**, securing “one-way” broadcast networks (cable, satellite and terrestrial).
- **Verimatrix MultiRights** (multi-DRM support), currently Microsoft PlayReady and Marlin DRMs.
- **VideoMark™** and **StreamMark®** user-specific forensic video watermarking.

It is ideally suited for operators engaged in or planning:

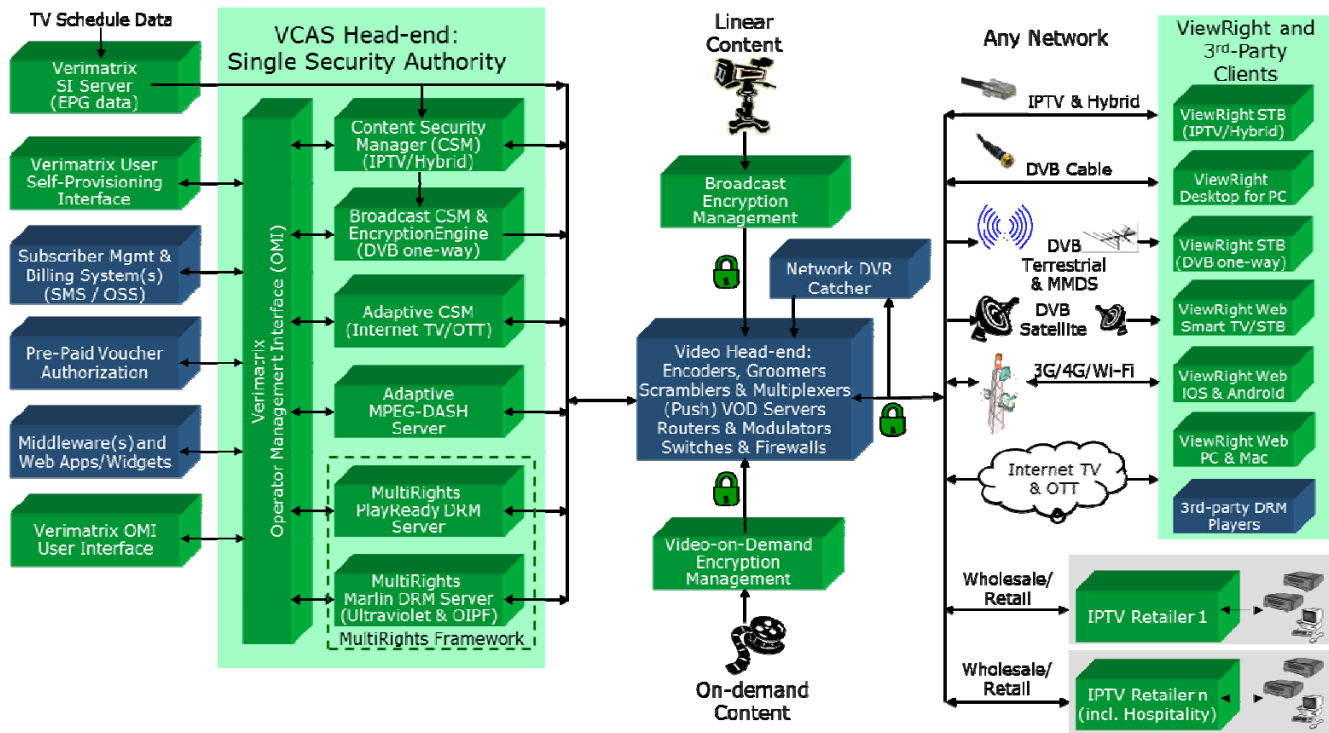
- “Walled garden” IPTV and DVB services over managed networks: telco, satellite, cable, terrestrial.
- Hybrid services, extending linear DVB or IPTV services with IP-based on-demand services and v.v.
- Internet TV, OTT and mobile services implementing adaptive rate streaming protocols such as HLS, Smooth Streaming and MPEG-DASH.
- Wholesale-retail content distribution: a centralized, hosted service with local control options.
- Harmonized rights management across heterogeneous networks and devices.
- Legacy CA system replacement with cardless security for all types of networks and devices.

Based on a highly modular system architecture and efficient form factor, VCAS is inherently cost effective for the smallest deployment while scaling easily to operations with millions of subscribers.

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.

VCAS – System Architecture, Key Components and Features

The VCAS head-end consists of a number of server components to address IPTV, DVB, 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 digital rights management (DRM) formats while providing a coherent user rights management.



VCAS End-to-End Multi-network Architecture

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.

Uniquely, 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, DVB, HLS or third-party DRM clients managed under the MultiRights framework.
- Content Security Manager (CSM)** – Head-end component for managed IPTV and IP hybrid networks to manage authentication, key distribution and user control.
- Broadcast Content Security Manager (BCSM) and EncryptionEngine™**– Head-end components for one-way DVB networks, incorporating DVB Simulcrypt compatible ECM and EMM generation.
- Verimatrix SI Server** – DVB server feeding Electronic Program Guide (EPG) data to DVB STBs.
- Adaptive CSM (ACSM) and Adaptive MPEG-DASH** – Head-end components for networks implementing HLS and MPEG-DASH adaptive rate streaming protocols for over-the-top (OTT) video services. These components manage authentication, key distribution and user control.
- MultiRights™** – The MultiRights framework is an enabler of the single content authority for multi-network and multi-DRM support, including PlayReady and Marlin DRMs. It provides harmonized device and service management, and subscribers enjoy transparent usage rights management.

- **Broadcast Encryption Manager (BEM):** 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 IP streamers supporting DVB Simulcrypt for IPTV networks.
 - **MultiCAS™/DVB** – DVB Simulcrypt compliant ECM generation for DVB hybrid networks.
- **VOD Encryption Manager (VEM)** – Supports manual or automated offline workflow, with faster than real-time AES-128 encryption of VOD assets, in conjunction with middleware and VOD servers.
- **ViewRight® STB for IPTV/Hybrid** – A robust package of embedded code that implements VCAS security functions within each IP/hybrid STB without the need for smart cards.
- **ViewRight® Desktop for PC** – A self-contained and highly secure player that turns any broadband-connected PC into full-function IPTV clients including digital video recording (DVR) capability.
- **ViewRight® STB for DVB** – Multi-level client security that can be mixed in the same broadcast network: Software client; secure system-on-chip (SOC) client; and optional smart card-based security.
- **ViewRight® Web** – A software-based client for devices supporting HLS, including iOS and Android based tablets and smart phones, smart TVs and other devices.
- **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™ and StreamMark®** (not shown) – Patented technology for user-specific forensic tracking, inserts an invisible yet robust watermark in the video stream, either in the STB prior to output to the rendering device, or in the head-end or CDN/edge device.

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
- **Video encoding:** MPEG-2, MPEG-4/H.264, etc (format independent)
- **Video encapsulation:** MPEG-2 Transport Stream/HTTP Live Streaming/Smooth Streaming
- **Content encryption:** 128-bit AES. 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:** DVB 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 VideoMark™ and StreamMark® user specific watermarking implementations