

Synamedia Edge Media Streamer

Synamedia Edge Media Streamer offers service providers a cost-effective, open, and scalable Content Delivery Network for streaming Live, VOD, TSTV, and CDVR Adaptive Bit Rate (ABR) video.

Demand for online video continues to grow dramatically across connected devices. By 2020 we will have 11 billion connected video devices, and 82 percent of IP traffic will be video (Cisco Visual Networking Index). To meet that demand, today's content delivery network (CDN) infrastructure must evolve to scale cost-effectively, accelerate feature velocity, and deliver simplified and open management tools. By adopting cloud architecture and agile software development methodology and using best-in-class open-source software, Synamedia® Edge Media Streamer provides an open and flexible CDN platform that delivers the multiscreen Internet video quality that consumers expect and service providers can deploy.

The Edge Media Streamer content delivery platform is designed to deliver immersive multiscreen video experiences to managed and unmanaged devices across telco, cable, and mobile access networks. The Edge Media Streamer scales cost-effectively to distribute terabits per second (Tbps) of live, on-demand, and time-shifted video. It enables service providers to compete with over-the-top (OTT) video offerings and generate revenue from wholesale CDN services within their infrastructure. Edge Media Streamer is part of the Synamedia Open Media Distribution (OMD) suite of products. OMD includes the Media Broadcaster solution to enable cost-effective scaling of Live ABR streaming using a Service Provider's Multicast enabled network.

Synamedia Edge Media Streamer Overview

Edge Media Streamer caches and delivers web content, software, and streaming media with support for media players using Apple HTTP Live Streaming (HLS), Microsoft HTTP Smooth Streaming (HSS), Adobe HTTP Dynamic Streaming (HDS), and MPEG Dynamic Adaptive Streaming over HTTP (MPEG-DASH) HTTP streaming protocols. Edge Media Streamer supports video on demand (VoD), live video, time-shifted TV (TSTV), progressive download, secure download, and small object caching from a common high-performance HTTP cache. Edge Media Streamer performs sophisticated algorithms for cache selection based on client location, cache availability, cache load, and content requested.

Edge Media Streamer software applications are installed on high-performance Synamedia content delivery engines (CDEs) and Intel x86-based commercial off-the-shelf (COTS) servers, providing a flexible and cost-effective solution. Edge Media Streamer software components can be virtualized with VMware or OpenStack kernel-based virtual machines (KVMs) and operate on a cloud platform deployed with COTS servers. Figure 1 illustrates a typical Edge Media Streamer CDN deployment.

Synamedia Edge Media Streamer Advantage

Edge Media Streamer offers the following advantages:

Openness and extensibility:

- CDN that integrates qualified open-source applications using continuous community development
- Massive scalability with proven deployment by leading service providers with Tbps of edge caching
- Support for leading adaptive bit rate (ABR) protocols for streaming live, VoD, TSTV, and cloud DVR
- Open interfaces, cache-plug-in architecture, with an array of open-source server plug-ins
- Robust security to protect content and CDN systems
- Powerful Synamedia developed CDN analytics with more than 100 dashboards
- CDN solution for both wholesale and retail markets

Operational simplicity:

- Efficient capacity management to easily expand edge caching capability
- Cloud-based CDN management platform to simplify day-to-day CDN operations
- Continuous enhancement for safe and rapid deployment of vital security patches
- Simplified operations and reduced OpEx through the use of sophisticated management tools
- Synamedia 24-hour-a-day support and remote operate services every day

Cost-effective scalability:

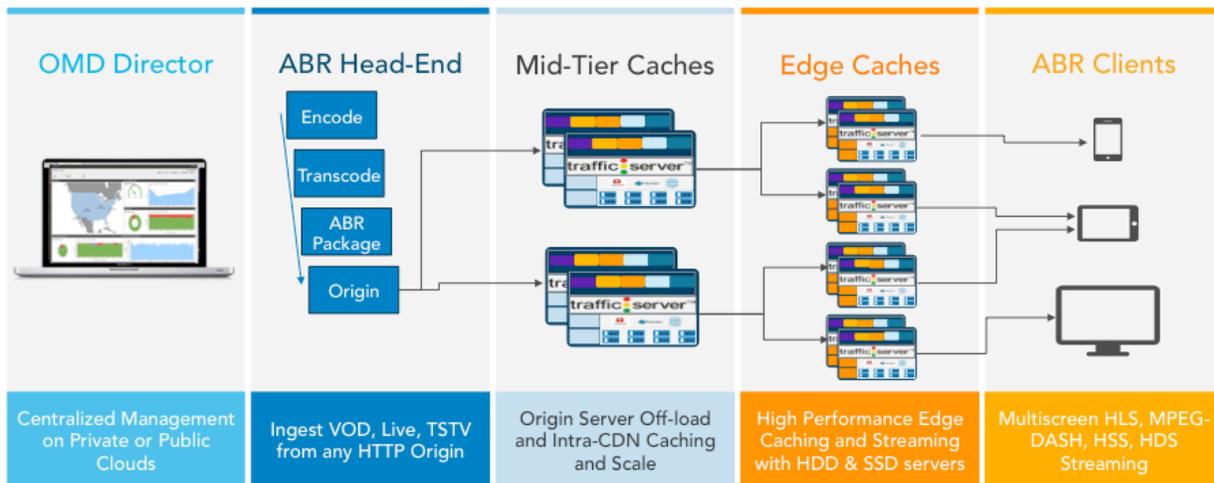
- Support for millions of subscribers with scalable architecture
- Flexible deployment models licensed for virtual machines and bare-metal servers
- Foundational architecture leading the CDN transformation to cloud and NFV architecture
- Simplified commercial model with quarterly support subscription

Solution architecture

Synamedia Edge Media Streamer architecture enables highly distributed caching with complete fault tolerance and system redundancy. The OMD Media Director provides a GUI based centralized provisioning, monitoring, and analytics element management system for both Edge Media Streamer (CDN) and Media Broadcaster (Multicast ABR). Media Director is typically deployed in a virtualized infrastructure, either private cloud or public cloud. Mid-Tier Caches are deployed to shield the video head-end Origin Server from cache-fill requests, thus providing an additional level of CDN scaling. Edge Caches are deployed either in centralized data centers for smaller CDN's, or highly distributed in edge POP's. Edge Caches provide content delivery to clients, either Live, VOD, TSTV, Software Download, or Cloud-DVR.

Edge Media Streamer interoperates with the ABR Video Head-End, as show below, but it is not part with Edge Media Streamer CDN.

Figure 1. Synamedia Edge Media Streamer Typical Deployment



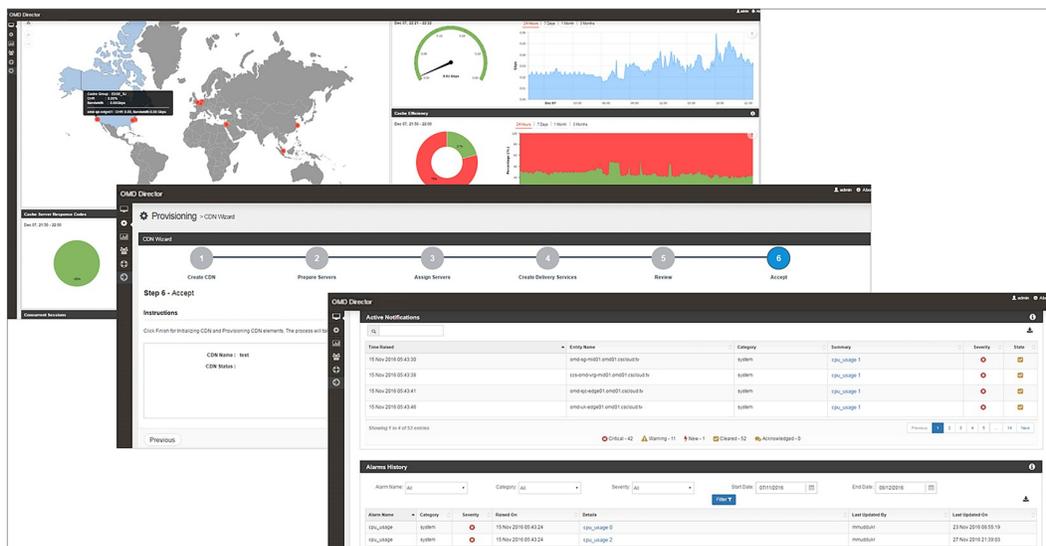
Centralized Element Management

Centralized element management capabilities are supported by the Synamedia Open Media Distribution Suite Director module. The OMD Director is cloud-based CDN management system providing integrated provisioning, monitoring, analytics, alerting, and role-based management. Synamedia OMD Director is implemented to be

virtualized and further optimized with microservices in containers: Synamedia OMD Director supports and provides:

- **Cloud infrastructure:** Can be deployed on private or public clouds running OpenStack or VMware
- **KPI dashboards:** Provides quick views of capacity utilization, cache efficiency, and streaming concurrency with threshold crossing alerts. (See Figure 2.)
- **CDN wizard:** Includes a simple six-step GUI tool to accelerate day-zero provisioning of distributed cache servers, including remote software deployment, which eliminates onsite software installation requirements.
- **OMD Insights:** Provides in-depth CDN analytics with graphs and reports for capacity utilization, viewer distribution, content popularity, streaming protocol distribution, device types, ISP networks, and many other metrics.
- **Server monitoring:** Provides in-depth server monitoring, threshold crossing, and alarming based on CPU utilization, port utilization, temperature, disk I/O, and other detailed server metrics.
- **Request routing:** Provides client request routing to cache servers based on proximity, content affinity, and server load.
- **Alerting:** Supports configuration of threshold crossing policy on KPIs and analytics and includes server monitoring to provide SMS and email notification of minor, critical, and major alarms.

Figure 2. Synamedia OMD Director Dashboards



CDN Analytics

The OMD Insights dashboards within OMD Director provides essential CDN analytics (Figure 3). It provides comprehensive CDN operational analytics, including analysis of throughput, utilization, and efficiency of video content delivery. With real-time data operations team can:

- Proactively monitor activity and take action before problem can be observed by consumer,
- View dashboards and trending reports
- Capture valuable information for CDN Capacity planning and delivery optimization
- Gain insight to viewership trends

OMD Insights is powered by Splunk, and includes Splunk universal forwarders in the Edge Media Streamer Mid-Tier and Edge caches to monitor log files and forward log events in real time to the highly resilient Splunk indexers. Edge Media Streamer analytics platform provides scorecards, lean forward analytics, trend analysis, reports, custom dashboards, custom reports, content-based analysis, sessions-based analytics, near-real-time monitoring, and more.

Figure 3. Synamedia Open Media Distribution Insights



Product Specifications

Edge Media Streamer product specifications are summarized in Table 1.

Table 1. Synamedia Edge Media Streamer Product Specifications

Description	Specification
Content types and formats	HTTP image files (for example, HTML and JPEG) MPEG1, MPEG2, and MPEG4 H.264 HEVC
Delivery protocols	Web content through HTTP and HTTPS
Ingest protocols	HTTP HTTPS
HTTP ABR streaming support	Apple HLS Microsoft HSS Adobe HDS MPEG-DASH
Centralized Element Management	Virtualized cloud-hosted centralized management system Configuration of caches and creation of delivery services and cache groups Secure, browser-based GUI over HTTPS Provisioning of VoD and live delivery services Monitoring of traffic statistics
Request Routing Control Plane	Uses open-source load balancer that optimally redirects HTTP client requests to an edge cache: HTTP 302 redirection Domain Name Service (DNS) A and AAAA record response Health-based and load-based edge-cache selection Client-location-based cache selection Delivery-service-aware and content-aware routing
CDNAnalytics	Dashboards for content, user, and operational insights built on Splunk and based on processing traffic server HTTP transaction log data
Internet video back-office integration interfaces	Support for integration with entitlement services, digital rights management, and Internet publishing tools Representational state transfer (REST) APIs
Content security	URL signing/tokenization HTTPS/SSL support DNSSEC support SSL key vault to secure API, tokenization, SSL, and DNSSEC credentials
Hardware support	Synamedia Content Delivery Engines (CDE) Intel x86-based COTS servers
Operation System & Virtualization	Operating System: CentOS Supported hypervisors: VMware and OpenStack KVM Support for VMware ESXi, vSphere, and vCenter

Ordering Information

Table 2. Ordering Information for Synamedia Edge Media Streamer

Product ID	Description
R-OMD-PRCL-K9	Open Media Distribution Software (Edge Media Streamer and/or Media Broadcaster)
L-OMD-MGM-SW-PSS	OMD Director Management & Control, Perpetual
L-OMD-CACHEC10G-P	SW LIC, Edge or Mid-Tier Cache, Perpetual
L-OMD-TR-GEODB-P	SW LIC, OMD Traffic Router Geo-Lookup Database
L-OMD-TR-ANONDB-P	SW LIC, Anonymous IP Database for OMD
L-OMD-CAP1GBPS-P	SW LIC, 1 Gbps Peak Delivery Capacity, Perpetual
L-OMD-ANL-10GLD-P	SW LIC, Analytics Capacity, 10 Gbyte Log/Day, Perpetual
L-OMD-ANL-100GLD-P	SW LIC, Analytics Capacity, 100 Gbyte Log/Day, Perpetual

Services

Synamedia offers a wide range of service programs to accelerate customer success. These innovative service programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Synamedia Services help you protect your network investment, optimize network operations, and prepare your network for new applications to extend network intelligence and the power of your business. For more information about Synamedia Services, contact your Synamedia representative or authorized channel partner.

About Synamedia Open Media Distribution Suite

Synamedia Open Media Distribution portfolio is ideal for any PayTV operator or media company that is offering a multi-screen experience to the consumer. Our solutions includes everything you need to provision, distribute, monitor, and analyze IP media flows for high quality and efficient delivery of service. The Synamedia Open Media Distribution portfolio provides comprehensive IP unicast and IP multicast solutions to distribute IP video to any screen.

For more information

For more information about the Synamedia video solutions, visit www.synamedia.com, contact your Synamedia sales representative or Synamedia channel partner.

Synamedia

Global Headquarters
Synamedia
One London Road
Staines, United Kingdom TW18 4EX

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