

ENTERPRISE VIDEO DISTRIBUTION: SIMPLIFY THE COMPLEX WEB



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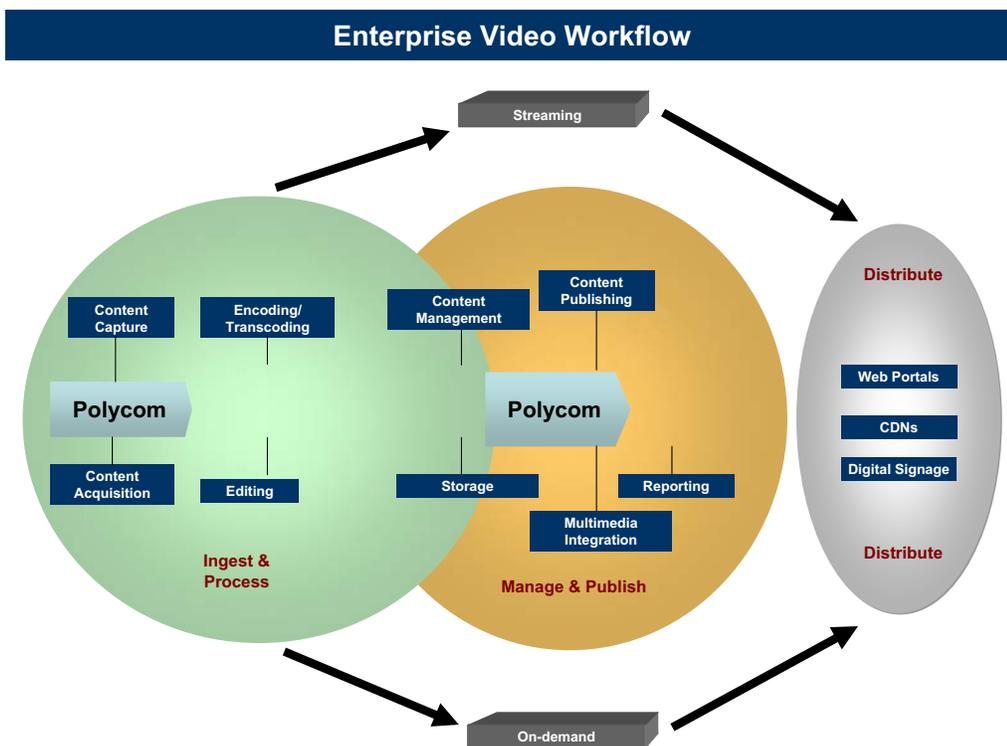
The use of video in the enterprise segment is very different from that of traditional media and entertainment delivery. It is most often used as an integrated asset in communication initiatives across the disparate segments such as education, corporate, government, retail among others.

An enterprise-wide business video strategy may include live video webcasting, video on-demand, and digital signage/syndication capabilities, all functioning transparently on an organization's existing IT infrastructure. For all of these applications, enterprises need to effectively create or acquire multimedia content, manage and distribute those assets through a single platform with the ability to have live interaction with the audience.

Not only does an enterprise customer need to identify the backend ecosystem for its video integration and delivery needs, but also have an efficient underlying system to tie them together, thus enabling optimal use of assets throughout the organization without redundancies.

Vendors today offer well-integrated comprehensive platforms that glue together the components required from content ingest to management to delivery over the Intra/Internet. For this paper we will look at the enterprise video infrastructure and applications that span the ecosystem and using Polycom as an example, illustrate how the vendor community provides the technology glue to enable the enterprise video ecosystem.

Through its wide network of technology partners, Polycom provides enterprise customers a flexible set of solutions with quick implementation capabilities and enables compatibility through the IT workflow of the organization.



ENTERPRISE VIDEO INFRASTRUCTURE

In order to create and deliver video content with security and scalability, a number of key infrastructure components must be managed effectively, including: encoding and transcoding, streaming servers, content delivery networks, and storage systems.

Encoders/Transcoders

Encoding is the process of taking analog media, in the form of audio or video, and converting it into digital format. Transcoding is the process of taking digitized audio/video and encoding it in a different format. By encoding in digital formats, enterprises are able to take a compressed form of video that takes less bandwidth to distribute and playback. Encoding, and optionally transcoding, is important to enable streaming video over private or public networks. In the case of studio-based live event webcasts, the ability to configure a system with multiple encoder failover is a critical requirement.

Streaming Servers

A streaming platform over an IP network is defined as a software system with a server component and a client component that allows rich media to be delivered over private or public networks. Streaming servers deliver content over the network through the server component and allow users to watch dynamic media content via client component media players residing on their desktops.

Content Delivery Networks (CDNs)

The content delivery market is defined as the technology and services that enable the rapid and uninterrupted flow of content from the origin server to the end user. A CDN is a service that increases the web and streaming content sites' performance by pushing frequently requested content to the edges of the network, positioning it closer to end users and thereby reducing wait time by avoiding overly crowded areas in the Internet cloud that can lead to packet loss. This is accomplished through a system of computers networked together across the Internet that work in conjunction seamlessly to deliver content to end users. An investment in CDN infrastructure is key for companies desiring to deliver live event webcasts and/or distribute video-on-demand to large audiences.

Depending on the size of audiences, need for scalability and geographic distribution, a customer will require to unicast or multicast a live event. Typically an enterprise can multicast an event through WAN or LAN if the viewers are limited to the enterprise network. This requires equipment to route the feed simultaneously to multiple media player/ receiving equipment at different points in the network. The viewers can access the replicated streams. This environment enables bandwidth optimization and seamless delivery.

However in the present IP scenario, for large audiences distributed across different regions, live webcasts are still distributed through unicast streaming either by the self hosted website or via a content delivery network (CDN) with its largely distributed server network.

Media Asset Management

Media asset management solutions enable the ingest, archiving, management, and delivery of media. Products that come within the scope of this space are used in the management of digital content, which includes various file types such as audio, video, graphics, animation and images, among others. Solutions in this area generally enable the ingest, archiving, indexing, search and retrieval, browsing, repurposing, display and transport of digital media. The key to effective media asset management starts primarily through different forms of metadata capture and categorization.

There are a number of asset management requirements that are unique to video, due to the nature of the content and its use in the enterprise. Typically, a given enterprise video event will consist of a video stream - with Microsoft PowerPoint or other presentation materials synchronized with it – that is stored as a file and grouped with other downloadable collateral related to the enterprise video event. This grouping of event and downloadable files is often referred to as a “program bundle”, which is then published (sometimes via categories or “channels”) to a portal or other user interfaces. The association of metadata at the program, file, and streaming file time interval is also a feature set unique to the universe of media asset management.

ENTERPRISE VIDEO APPLICATIONS

Ingest and Processing

Video may be created and/or captured through various means within an organization. Video events may include live event webcasts, video conferences, classroom training programs, corporate and investor relations video presentations, and marketing/promotional collateral.

The proliferation of video production has led to adoption beyond the traditional studio-based, highly produced live event webcast to the “democratization” of video creation in meeting rooms, classrooms, and to events produced from an individual’s office. A true Enterprise Video solution must be able to support the corporate communications requirement, where executive presentations are delivered live to large audiences, and the application supports a separate moderator user interface to enable slide advancement, and interactive Q&A. Given the level of senior management exposure and target audience size typical of this use case, it is important to have a stable application and supporting infrastructure in place to avoid event failure and/or partial delivery to the

viewer audience.

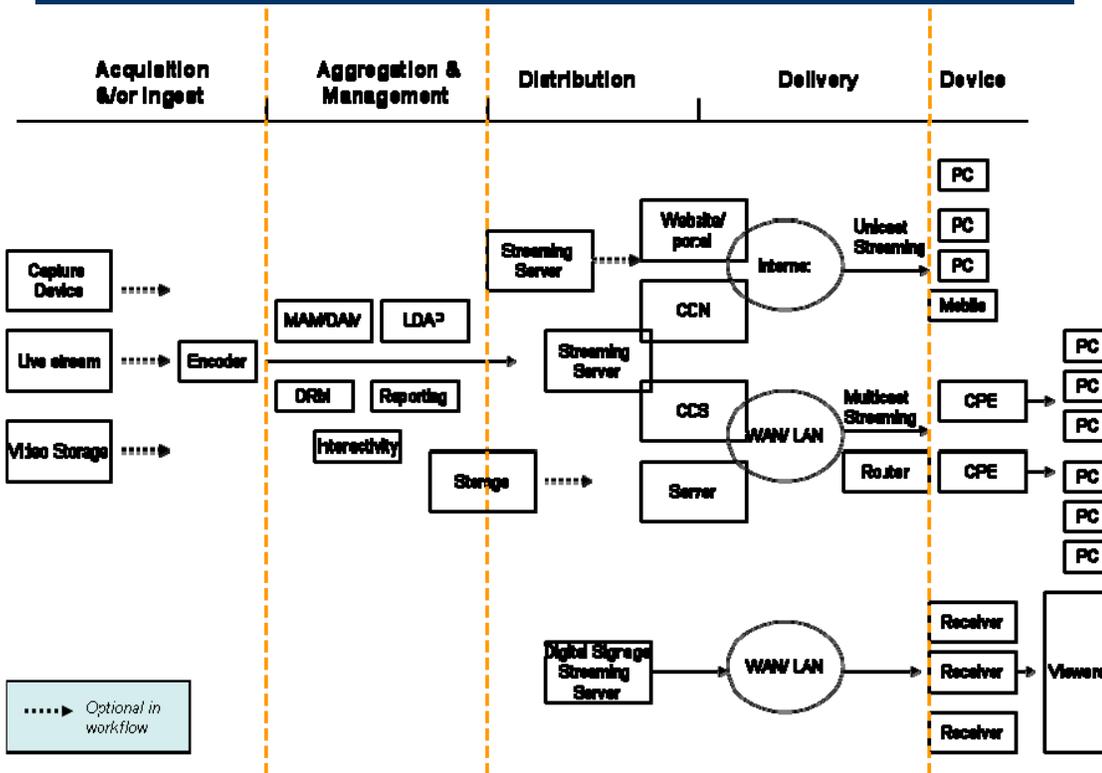
While the studio-based, corporate communications use case is critical, the system must also be able to support more distributed, lower “production value” creation scenarios; conference room webcasting, classroom-based video training, or in-office podcasting. In order to encourage the adoption of video communications while minimizing the resource allocation, product maintenance, support and training burden, it is important to select a single platform that offers applications targeted to each of the use cases that are of interest within a given organization.

As a compliment to live event creation, a complete enterprise video solution must have video on-demand (VOD) capabilities that not only facilitate the conversion of live event webcasts to archive, but also provide stand-alone video editing capabilities for previously recorded or uploaded content. VOD editing capabilities include video event trimming (where the delay at the front or back-end of a video is deleted), chaptering, metadata editing, categorization and indexing. Another key trend in the enterprise video market is the demand for integrated solutions that allow archiving and playback of video conferencing sessions. With the introduction of technologies that enable conversion of video conferencing content to IP format, this high ROI requirement is no longer a “leap of faith” but a tangible reality.

Polycom’s solution

Polycom offers its RSS™ 2000 recording and streaming server that can capture live video and publish it automatically or route it to the value chain for creating customized video-on-demand. Polycom also enables the import of other sources of live or stored video and audio through any of its partner solutions (Qumu, VBrick, Viewcast). With the encoding and transcoding capabilities of its partner solutions, content in an enterprise can be processed in a number of formats required for distribution over the Web.

Enterprise Video Network Architecture



Manage and Publish

Enterprise web-based communication in today's environment has to be as effective as a real-life face to face audience interaction. To enable this, knowledge workers need to collaborate with each other using video presentations and multimedia tools such as slides. Based on bandwidth demands, an IP based media platform has to enable quick integration of elements of a presentation from various live and stored sources and drive delivery in a cohesive manner with no time latency.

The increasing use of live presentations with instant engagement with the audiences enforces the demand for an interactive IP platform and a viewership tracking solution. In large-scale enterprise video communications deployments where users may be accessing video programs around the clock, it is essential to have systems in place to monitor and report on video usage. Knowing what unique users are viewing video programs, when they are viewing them, and what type of programs are most often accessed is valuable information that can aid in planning video communications more effectively.

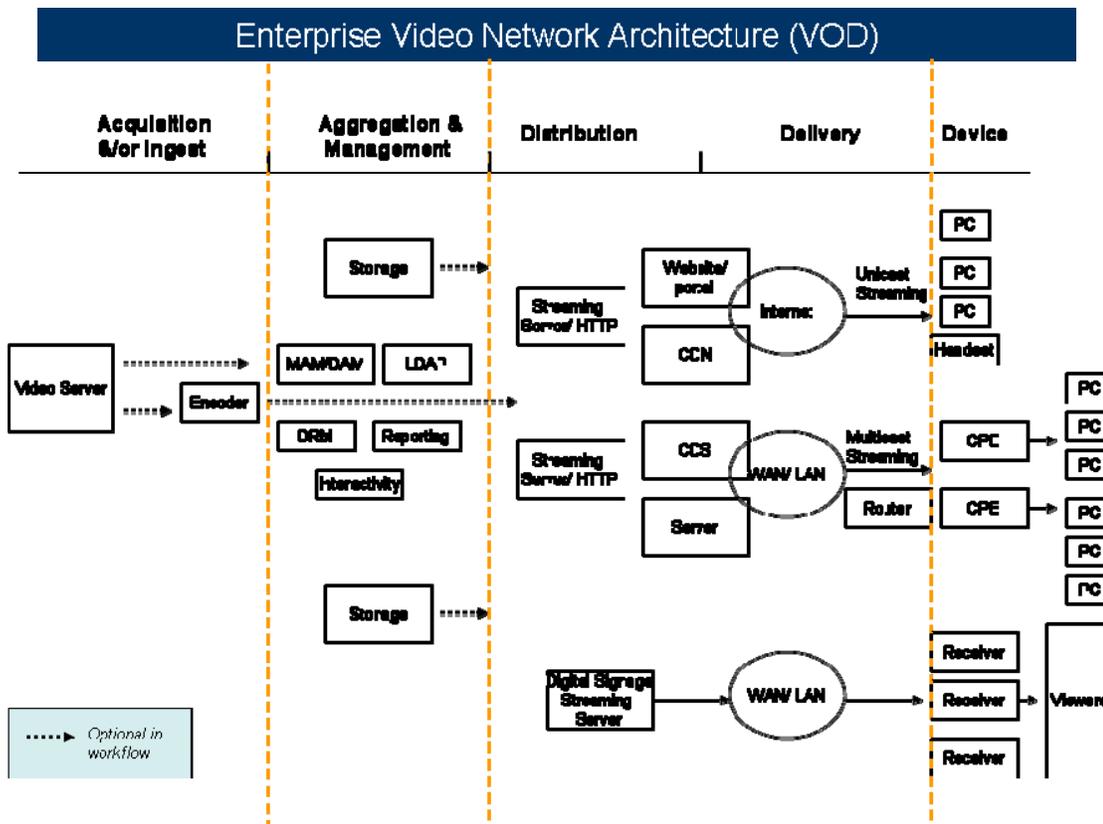
Tracking usage on an individual user basis for required program completion also ensures compliance. Reports should be available for both live and on-demand. For live video communications, an event manager should be able to run a report to see how many

viewers are online at any given moment during an event. Additionally, streaming server connections should be monitored during events so that any dropped connection can be immediately detected and re-routed.

Question submittal is also a key component for live events, and allows real time interaction with the viewing audience. This type of dynamic interaction enhances video communications in a way that parallels face-to-face communication. Video communications solutions should provide the most common report types in easy to use browser-based reporting applications. However, it is important to ensure that the system uses a database to store all user information for maximum reporting flexibility. This allows third party reporting tools to extract customized report data at any time.

Polycom's solution

Polycom offers the VMC 1000 solution that cohesively integrates the acquisition, security and delivery pieces of the ecosystem. The VMC 1000 can enable highly interactive features such as scheduling, advance viewer question submittal and slide management via moderator/presenter functions. The Polycom VMC 1000 solution enables enterprises to seamlessly enlist their video conferencing and network infrastructures for enterprise video production, delivering a cost-effective method for organizations to communicate via video and control this increasingly vital enterprise asset.



Once content is uploaded or transferred to the VMC 1000 server, it is secured with flexible access controls which integrate with existing enterprise security and authentication standards using corporate databases. Content is delivered via unicast, multicast or via content distribution solutions. Consolidated detailed reports allow managers to track viewership, content popularity and user statistics.

Distribute

Distribution is varied for various enterprise applications. Based on the audience size a customer targets, it will need to stream high quality video and multimedia in real time. The customer requires an efficient media platform that can flexibly route content through unicast, or multicast to private or public audiences.

While some presentations are delivered by an enterprise customer using an in-house streaming server, many are increasingly distributed using an enhanced content distribution system installed over the private networks, or public content delivery networks.

Two key applications that are increasingly used in today's environment include:

- Communication webcasts through regional or global portals: this sometimes requires the media platform to efficiently distribute content with no time latency to an external CDN and enable instant reporting.
- Digital signage: Digital signage can be defined as a network of displays that can be remotely managed and whose business model revolves around messaging, merchandising or advertising. Digital signage technology is comprised of centrally managed playback devices that serve content to displays. The media players receive and store video, audio, graphic and text via an IP Network and display the content according to a pre-defined playlist.

Till now the end-user market has been characterized by point solution purchases creating breaks and bottlenecks in the transition from live event creation, to video on-demand, to digital signage. These breaks in the "video value chain" have lead to significant head-aches for IT and dissatisfaction within the user community. Given the growth in usage across live, VOD, and signage, it is essential that organizations migrate to a common platform that supports all three usage scenarios seamlessly.

Polycom's solution

The VMC 1000 solution leverages IP network infrastructures for content ingestion and network-based storage. The VMC 1000 supports multiple distribution modes – Unicast for Video on Demand, Multicast and Content Distribution options for streaming to thousands of viewers.

VIDEO COMPONENT SUMMARY

The scope and complexity of software and infrastructure components outlined in the previous section might sound like a handful, but business and IT managers should not be alarmed due to two recent developments which together have made delivery of video across the enterprise feasible and cost effective:

- The maturation of the component technologies, and their ability to scale individually, has improved exponentially.
- The advent of comprehensive, enterprise video solutions that manage all of the infrastructure components under a single platform has simplified the video event execution for IT and business users alike.

The latter point is critical, as enterprise video solutions not only provide a unified management console for IT, but also free-up business users to create and deliver video events with minimal IT intervention.

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