



Viewpoint Video Quick Reference Guide

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Viewpoint Video Overview

Viewpoint Media Player has always delivered the highest quality graphical content to the largest audiences possible. Now, the newly released Viewpoint Video component extends the Viewpoint Media Player video delivery architecture, making it the most versatile, cost effective, and robust video and graphics player in the market today.

Because Viewpoint Video, also referred to as Viewpoint AirTime™, is an integrated component of Viewpoint Media Player, the video playback can be composited and combined with other media technologies, including vector graphics (for example, SVG and Flash), true animated 3D content, and even user interface elements, all of which can provide interactive overlays and triggers to the video stream.

Key Features

Viewpoint Video delivers the following advantages:

- Cost savings via client-side content delivery
- Immediate streaming or cached video delivery, determined during authoring, which virtually eliminates buffering delays
- High compression rates for .avi and .wav files with minimal file degradation
- Seamless component installation and updating
- Dynamic Stream Switching™ (stream switching) for managing compressed video files
- Supports all web browsers on Windows- and Macintosh-based operating systems
- Effective Digital Rights Management and reuse of video assets across multiple channels

Viewpoint Media Player System Requirements:

Windows Operating System	Macintosh Operating System
<ul style="list-style-type: none">• Microsoft® Windows® 98, Windows 2000, Windows Millennium Edition, Windows NT® 4.x, or Windows XP• Netscape Navigator® 7.x , Microsoft® Internet Explorer 5.x or AOL 7.0• 64MB RAM• Pentium® II 300 MHz processor	<ul style="list-style-type: none">• Apple® Macintosh® Jaguar™ 10.2• Safari™ 1.2 or Microsoft® Internet Explorer 5.2• 128 MB RAM• PowerPC G3®

To download the most current version of Viewpoint Media Player:

- 1 Go to <http://developer.viewpoint.com>.
- 2 Locate and click the **Download Viewpoint Media Player** button.
- 3 Review and select the download option most appropriate for your operating system.
- 4 Follow the installation instructions.

Technical Architecture

The Viewpoint Video technical architecture is based on the following principles:

- **Viewpoint Distributed Content Network** — Viewpoint Video leverages the client-side technology of Viewpoint Media Player to become the first truly distributed content network. The Viewpoint proprietary network resolves the video delivery and rendering bottlenecks inherent to the server architecture of both the streaming infrastructure and the network connecting users to servers.
- **Optimized Video Rendering** — Viewpoint Video improves the compression and quality of video and other media files for mass distribution, dramatically increasing Viewpoint content's rendering speed.
- **Dynamic Stream Switching** — The Viewpoint Video component enables Viewpoint Media Player to determine a user's bandwidth speed automatically and in real time. Once Viewpoint Media Player determines a user's bandwidth speed, it delivers an initial version of video content, constantly monitors the download stream, and instantly improves the quality of the delivered video content.

Viewpoint Distributed Content Network

The Video component of Viewpoint Media Player, a client-side rendering engine, detects the speed of a user's network and then delivers appropriate, high-quality video content in real time. In this manner, Viewpoint Video substantively outperforms video delivery methods that utilize server-side technology.

Client-Side Video Delivery Method

Viewpoint Media Player delivers content via client-side technology, enabling Viewpoint Video to be deployed without sophisticated server-side software. "Serverless," or client-side deployment means that Viewpoint Video does not require special streaming media servers or other configurations. Therefore, Viewpoint's video files can be uploaded to a standard web server from where it can be cached by a CDN without quality degradation.

Other benefits from client-side delivery include:

- Cost savings
- Content caching
- Real-time synchronization

Cost Savings

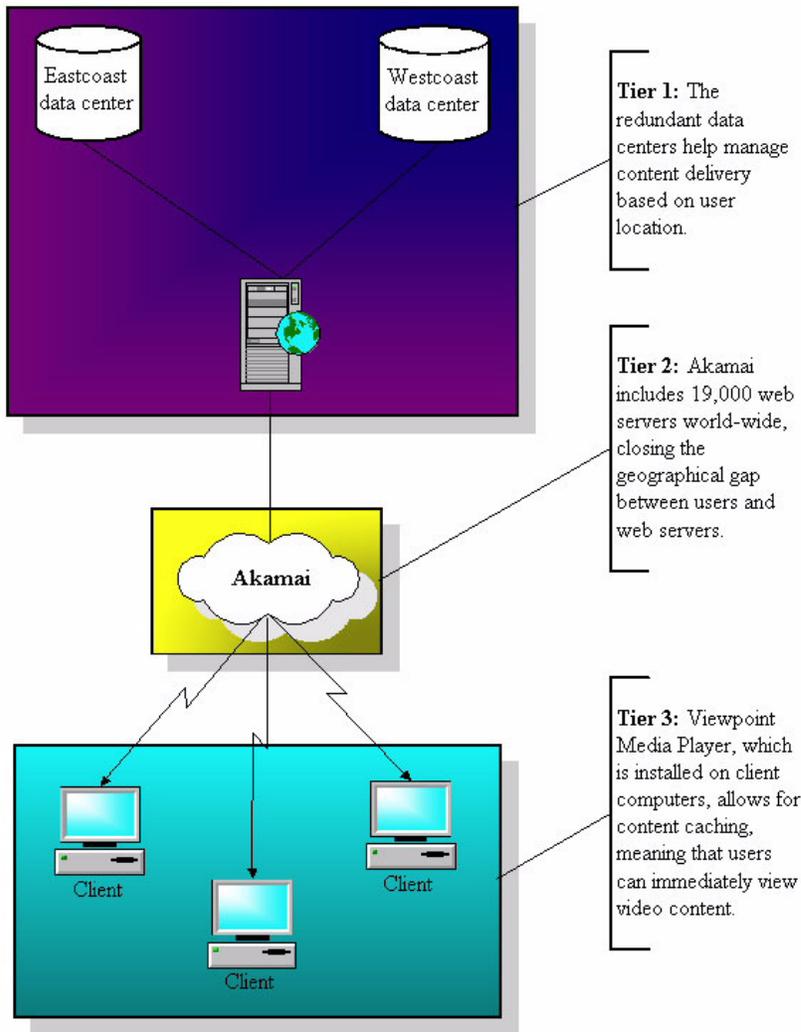
Client-side technology allows Viewpoint content to be hosted on any standard web server and to be served to any source without special server-side software. This structure eliminates the high costs of maintaining and implementing application software or server set-up.

Viewpoint Media Player not only manages video file playback, but it also acts as a low-priority download control for providers that push large volumes of video files. This file prioritization control, along with content caching functionality, reduces spikes in bandwidth that create the high bandwidth costs typically associated with video.

Content Caching

Viewpoint has partnered with IBM, Cable & Wireless, and Akamai to create a three-tiered infrastructure (illustrated below) that, in part, relies on redundant data centers and edge serving, allowing Viewpoint to send video content directly to the user via the shortest geographical route.

Additionally, this three-tiered infrastructure leverages client-side caching technology. Content caching enables the user to immediately receive and play videos.



Real-Time Synchronization

Once video content loads on the client machine, it is cached locally for replay and real-time synchronization. Real time content synchronization means that Viewpoint Video plays multiple media files cohesively, from the same starting and stopping points.

Because Viewpoint Video is an integrated part of Viewpoint Media Player, the video playback can be composited and combined with other rich media technologies, including vector graphics (for example, SVG and Flash), animated 3D content, and even user interface elements, all of which can provide interactive overlays and triggers to the video stream.

Optimized Video Rendering

Viewpoint has partnered with video CODEC design leader, On2, to build the compression capabilities of Viewpoint Video. The On2 CODEC delivers the highest quality, lowest CPU usage video delivery technology on the market.

Viewpoint Video utilizes the On2 VP5 CODEC, whose performance, both in terms of compression and processor utilization, is superior to MPEG-4, as well as the latest video CODECs in Window[®] Media Player[®] 8, RealOne Player[®], and QuickTime[®]. This optimized video rendering functionality provides superior bit rate control, which enables high compression rates without sacrificing quality.

Bit Rate Control

The Viewpoint Video bit rate requirements outperform the most widely deployed video standards, such as MPEG-2 and any of the Java-based video technologies, such as those offered by EyeWonder. The On2 VP5 CODEC enables Viewpoint Media Player to deliver video content at data bit rates of 15% to 50% less than those required by competing video technologies, including MPEG-4, without sacrificing quality.

The On2 encoder compresses video to a size that is one tenth or less than that of the original file. Such impressive video compression decreases the cost of hosting while enabling a mass audience to receive and interact with high-quality video content, even via a dial-up connection.

Seamless and Instant Installation and Updating

Only the Viewpoint component delivery system can ensure seamless and instant component installation and updating across the widest range of platforms and machines, through either background or on-demand updating.

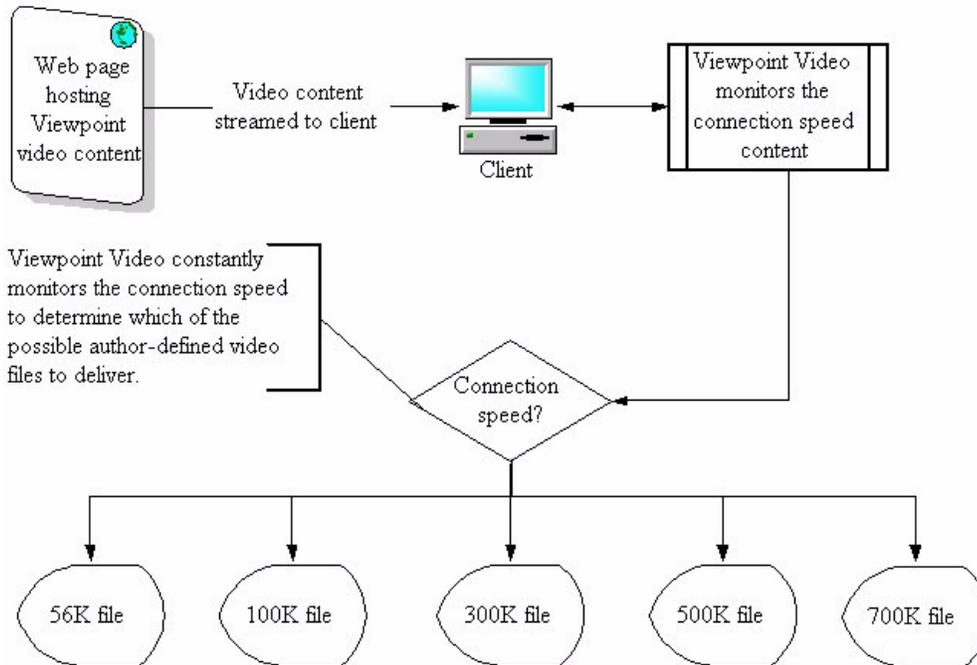
Dynamic Stream Switching

Viewpoint has developed the market's first real-time file switching architecture for managing large video files on a standard web server. Viewpoint Media Player determines a user's bandwidth speed using proprietary algorithms and then dynamically switches to different versions of the video content based on the quality of the download stream.

For example, depending on how a piece of video content is authored, when a user's machine begins playing Viewpoint Video content, Viewpoint Media Player can initially deliver the content in a format that is appropriate for a 56k connection.

Following the initial content delivery, Viewpoint Media Player can automatically deliver a higher quality version of the video content if the Viewpoint Video component determines that the user's bandwidth speed is DSL quality.

Viewpoint's dynamic stream switching process ensures that, regardless of the bandwidth speed, users view high-quality video content without frame degradation or clipped audio.



Competitive Analysis

Viewpoint Video clearly outperforms competing video delivery technologies, including those using server-side delivery methods and inferior optimization methods.

Server-Side Video Delivery Methods

Technical limitations in video delivery have forced users to wait during prolonged periods for content to download and play. In response, two principal server-side video content delivery methods evolved:

- Streaming web servers
- Java-based content deployments (via Java applets or Active X controls)

Streaming Web Servers

To improve the user's experience, many video distribution services use widely marketed streaming web servers to buffer content. For example, QuickTime, RealOne Player, and Windows Media Player each have default buffer settings of three seconds.

Java-Based Deployments

In a further attempt to accelerate a user's access to video content and to reduce latency, video distributors now package java applets together with streamed content. The java applets help distributors manage the content's source while leveraging the benefits of server-side technology.

Deficiencies in Server-Side Video Deployment

Despite the positive, though limited impact of server-side video delivery, such video rendering continues to provide low-quality video content and small ("postage stamp") video unit sizes.

In addition, the video distributors that utilize these technologies require publishers and marketers to invest and expend capital to build and maintain growing serving infrastructures, which include the network of web servers located in many geographical areas to enhance performance.

Competing Optimization Methods

CODEC technology, which effectively refers to video compression or video coding, dictates the quality of optimization in video delivery methods. Current video CODEC technologies, such as those operating in Flash 6, RealOne Player, and QuickTime, offer approximately the same quality level of the video coding standard H.263.

The H.263 standard, published by the International Telecommunications Union (ITU), supports video compression (coding) for video-conferences and video-telephony applications.

Currently, H.264-level CODECs are in development and deployment phases (for example in Windows Media Player 9).

Deficiencies in Competing CODEC Technology

The H.263 and H.264 CODECs do not rival Viewpoint's and On2's VP5 CODEC technology, meaning that these competing CODECs:

- Typically require four to eight times more CPU power to decode their video streams than Viewpoint Video's VP5 CODEC
- Deliver comparable video quality to Viewpoint Video but at bit rates between 15% and 50% higher

Conclusion

The Viewpoint Video architecture has been built from the ground up to deliver the fastest and highest performing video content for large marketers, such as CBS Sportsline, IBM, HP, and Kimberly Clark.

Viewpoint Video positions Viewpoint Media Player as the best delivery medium of high-quality video, audio, 3D, and 2D content on the market.

Authoring Viewpoint Video

Follow these steps to create high-quality, interactive video content with your existing compressed or uncompressed .avi video files and .wav audio files:

- 5 Preparation — Viewpoint Video functions with Viewpoint Media Player. Download the latest version of Viewpoint Media Player by going to <http://viewpoint.com/dc> and click the **Download Player** button in the left navigation bar.
- 6 Compression — Principally, Viewpoint Video can compress .avi video files and .wav audio files. Once compressed, these files take Viewpoint's proprietary .mts file extension.
- 7 Integration — The resulting compressed files carry the Viewpoint .mts and .mtx file extensions, which can be integrated with HTML (to create a user interface) and any Viewpoint-supported media file, including vector graphics (Flash and SVG), animated 3D, and 2D files.
- 8 Utilization — Viewpoint Video content can be manipulated, morphed, and graded as a true texture within your standard or advertising scene. Also, Viewpoint Video content can be applied to any texture or layer, and render with HyperView (full screen). Lastly, Viewpoint Video can be used solely for audio effects.

Compressing Viewpoint Video Files

Currently, Viewpoint's video compression utility is not fully available to the public, but can be accessed on a trial basis to convert a limited number of video and audio files for free from Viewpoint Developer Central. To compress and assemble video advertising content, known as AirTime™, you must acquire access to Viewpoint Creative Innovator. Full public access from the **Tools** tab of [Viewpoint Developer Central](#) is coming soon.

The Viewpoint video compression utility:

- Processes non-compressed digital video files at a higher quality than already-compressed files.
- Supports the .avi and .wav file formats only, meaning you must convert other file formats to .avi before sending them to Viewpoint for compression. This can be done via:
 - Adobe® Premiere® 6.0
 - Free conversion software on the web (for example, the mov2avi command line utility)
- Allows you to specify, among other things, what and how many bit rate files you want generated and whether to drop frames from your files or not.

Viewpoint video can be compressed for video and audio uses. Before compressing and converting these files to the Viewpoint .mts and .mtx formats, we recommend you either:

- Upload uncompressed .avi video or .wav audio files

- Upload video .avi files with Cinepak[®] compression
- Upload audio .avi files with Microsoft[®] ADPCM[®] compression at 22 KHz.

For more information on how to compress your video files, contact sales@viewpoint.com.

Integrating and Using Viewpoint Video

Integrate Viewpoint Video with other Viewpoint-supported media types, such as Flash, SVG and 3D animations. To do this, familiarize yourself with the suite of Viewpoint XML attributes that corresponds to the Viewpoint animation loader type, `iVideo`. The video XML suite is written in the Viewpoint scene .mts file, and therefore is known as MTX code.

Introducing iVideo

Like all Viewpoint animators, `iVideo` pertains to the `MTSTimeElem` element and is declared within MTX code in the same manner as all `MTSTimeElem` animator types.

For example, in MTX code, introduce Viewpoint Video as follows:

```
<MTSTimeElem Name="mov" Type="iVideo"  
  Path="http://viewpoint.com:/movies/Honda_Mill_Wide-56.mts">  
</MTSTimeElem>
```

Using the iVideo Type

You can use the `iVideo` type to:

- Apply video as a texture or a lightmap
- Use video in a scene fore or background
- Composite video with a texture
- Assign events to video files
- Use audio in a scene without video content

Tip: To synchronize Viewpoint Video files with other media files in your scene, use the event, `VideoStart`, as a trigger for the other content.

Using Viewpoint Video Tags and Properties

The Viewpoint Video component introduces a new suite of Viewpoint MTX tags, properties, and events that enable you to fully utilize the component's functionality.

Tip: You can find detailed information on `iVideo` type tags and properties in the *Viewpoint XML Reference Guide* (searchable by “iVideo”) available from the Reference tab of [Viewpoint Developer Central](#).

The following MTX tags are key to using the video technology:

- `<MTSTimeElem Type="iVideo">` — The `iVideo` animation type integrates video content into your Viewpoint scene.
- `Path` — Specifies the base name for video .mts files on a server. The base name can reflect these features:

- Stream-switching playback — Enables multiple or single video files to be played and stream switched in a Viewpoint scene.
- Single-file playback — Specifies one single video .mts file to play for the user for its entire duration, regardless of the user's connection speed.
- UseLeadSwitching — Enables multiple file stream switching, a video delivery method that reads and monitors a user's bandwidth speed to determine and deliver the most optimal bit rate file for the connection speed.
- VideoSourceBitrates — Specifies any number of bit rate files available for single or multiple file stream switching.
- VideoSourceParts — Specifies the time(s) when multiple-file stream switching can occur.
- BufferAmount — Buffers a specified percentage or unit (seconds) of the video file.

Tip: For best results, assign this tag the value, "auto," enabling Viewpoint Video to auto-calculate the buffer amount based on connection speed, video duration, and file bit rate.

- Preload — Downloads video to the user's hard drive, caching the content for immediate access.

Tip: The Preload tag works most effectively when Preload="1" and On="0". These settings require explicit triggering of the file.

Viewpoint Video Sample MTX Code

The following MTX code samples describe two ways you can use video in your Viewpoint scene.

To specify single-file video playback:

- 1 Open your scene .mtx file in a text or XML editor.
- 2 Add a new MTSTimeElem tag to your scene.
For example, the following MTX code assigns a single-playback video .mts file to the scene background (PreAnimator).

```
<MTSTimeElem Name="myBackground" Type="iVideo" Path="vid-300.mts"
  PreAnimator="1" UseLeadSwitching="0" On="1" Preload="1"
  Clamp="0" BufferAmount="20%"/>
```

- 3 Save your changes to the .mtx file.

To specify stream-switching video playback:

- 1 Open your scene .mtx file in a text or XML editor.
- 2 Add a new MTSTimeElem tag to your scene.
For example, the following MTX code assigns a single-playback video .mts file to the scene foreground (PostAnimator).

```
<MTSTimeElem Name="myBackground" Type="iVideo" Path="vid-300.mts"
  PostAnimator="1" UseLeadSwitching="1" On="1" Preload="1"
  Clamp="0" BufferAmount="20%"/>
```

- 3 In the same MTSTimeElem Type="iVideo" declaration:

- For multiple-file stream switching, add the `VideoSourceParts` tag, which specifies approximate time increments when multiple-file stream switching between bit rate files can occur in a Viewpoint scene, and the `VideoSourceBitrates` tag, which specifies the bit rate files to be played and possibly stream switched.

For example, the following MTX code implements multiple-file stream switching where Viewpoint Media Player triggers the initial bit rate file it automatically chooses immediately after it buffers 20% of the file's total duration.

```
<MTSTimeElem Name="movieplayer" Type="iVideo"  
  Path="http://viewpoint.com:/movies/myVideo_120sec.mts"  
  VideoSourceBitrates="56,100,300,500,700,1500"  
  VideoSourceParts="10,20,30" PostAnimator="1"  
  UseLeadSwitching="1" On="1" Preload="1" Clamp="0"  
  BufferAmount="20%" >  
</MTSTimeElem>
```

- For single-file stream switching, add the `VideoSourceBitrates` tag, including the bit rate files that Viewpoint Media Player will select play.

For example, the following MTX code implements single-file stream switching where Viewpoint Media Player evaluates the user's connection speed and serves the most appropriate bit rate file from those listed.

```
<MTSTimeElem Name="movieplayer" Type="iVideo"  
  Path="http://viewpoint.com:/movies/myVideo_120sec.mts"  
  VideoSourceBitrates="56,100,300,500,700,1500"  
  PostAnimator="1" UseLeadSwitching="0" On="1" Preload="1"  
  Clamp="0" BufferAmount="20%" >  
</MTSTimeElem>
```

4 Save changes to the .mtx file.

Ensuring a Seamless User Experience

When using Viewpoint Video, consider the impact that the installation process of the Video component has on a user's experience.

A user's experience with Viewpoint Video content depends on whether or not the user already has the Video component installed. If not installed, each user's experience differs according to two applicable scenarios for component installation:

- Full installation — If a user accesses video content but does not already have a version of Viewpoint Media Player installed, the content triggers the process to download the player, including those player components relevant to the content.

Note: Currently, this scenario does not apply to Viewpoint ad content; this content type does not trigger Viewpoint Media Player installation.

- Partial installation — If a user accesses video content and already has a version of Viewpoint Media Player installed, the content triggers the process to download the Viewpoint Video component, even for advertising content.

The Video component installation process requires time. Be sure to account for installation and video buffering time to ensure that users enjoy a seamless experience.

To ensure a seamless user experience:

- 1 Plan a Viewpoint scene using video that includes multiple sequences. These sequences should account for the time required to download the scene .mtx files, install the Video component, and allow the video file to buffer.
- 2 In the scene .mtx file, insert an initial preloader sequence to display while video files download. This sequence can consist of a simple resource file, such as a .swf or .svg file. For example:

```
<MTSTimeElem Type="SWFView" Name="seqnc1" On="1" PostAnimator="1" Path="movie_preload.swf" Loop="0" />
```

- 3 Directly following the initial sequence, insert a dummy video declaration. For example, the following code sample triggers the component installation process without adversely affecting performance:

```
<MTSTimeElem Name="dummyvideo" Type="iVideo" Path="dummyspath" />
```

- 4 Directly following the dummy video declaration, insert a second sequence (or continue the first sequence via looping) to display while the Video component installs and the video file buffers. For example, whether or not you loop the initial sequence or insert a new sequence, the content should engage users regardless of the component's installation time, which can last up to 30 seconds.
- 5 Declare a legitimate Viewpoint Video animation, as described under the [“Viewpoint Video Sample MTX Code”](#) heading of this document.

The legitimate video content should include file-buffering parameters (BufferAmount). Also, consider using events, such as VideoReady and VideoStart, to manage the scene's transition from the non-video content to the video content.

Viewpoint Video FAQs

What is Viewpoint Video?

Viewpoint Video delivers the first truly interactive video content on the web. Now, video can be applied as a foreground, background, light map or even as a texture to any object, surface, or scene to create more organic and realistic sight, sound, and motion.

How does Viewpoint Video differ from competing brands, such as RealOne Player®, Windows® Media Player®, and QuickTime®?

Viewpoint Video utilizes Viewpoint Media Player, the leading interactive media-delivery platform, to deliver interactive video content. The technical architecture of Viewpoint Media Player enables Viewpoint Video to download automatically to the user's machine without interrupting the user experience with upgrade pop-up pages or branded 3rd party interface. Also, since Viewpoint Media Player manages all of the streaming technology, deploying Viewpoint Video content requires only a standard HTTP web server.

Viewpoint Video is the only media player to dynamically deliver video content based on the consumer's connection speed, thereby always ensuring the most optimal viewing experience possible. Viewpoint Video can be integrated with 2D, 3D, Flash, IPIX, QTVR, and other media to provide a more compelling viewing experience than what competing video brands offer.

Does Viewpoint Video compete with Eyewonder and Klipmart?

Yes, Viewpoint Video delivers interactive advertising and site-side video content, providing the following advantages over competing brands. Viewpoint Video:

- Does not require Java
- Introduces Dynamic Stream Switching™, which detects the user's connection speed to deliver the best quality video possible
- Integrates multiple media types within a scene
- Fully controls video playback via the Viewpoint XML control layer
- Enables customizable video player controls for managing brand consistency

How long does it take to convert a video to the Viewpoint media file format (.mts) and can I do it myself?

Viewpoint recommends allowing up to three days for converting and compressing a video file (.avi) or audio file (.wav) into the Viewpoint .mts file format. Currently, Viewpoint converts a client's video files and provides the code needed to integrate the converted video files into a Viewpoint scene.

What is the quality of the Viewpoint Video file format?

Viewpoint Video provides comparable video quality to that of Windows® Media® 9. Of course, the quality of video files converted to the Viewpoint Video file format (.mts) depends on the quality of the original video files, the selected frame rate for the files, and the consumer's connection speed. For more information on video file conversion to the Viewpoint Video file format, contact your Viewpoint representative.

Does delivering and deploying Viewpoint Video content require any special software or hardware?

No, Viewpoint Video does not require special server software or hardware to manage video streaming. One of the main advantages of Viewpoint Video is that Viewpoint Media Player manages all video file stream switching and bandwidth detection. Additionally, Viewpoint Video can be deployed on a standard web server or via Akamai or another Content Caching Network.

How are .avi and .wav files converted to the Viewpoint .mts file format?

Video content that is edited and created in any standard software package, such as Adobe Premiere or After Effects, should be saved as raw .avi or .wav files and sent to Viewpoint Corporation to be converted to the Viewpoint .mts file format. Once the video files are converted to the .mts file format, they can be applied to a Viewpoint-enabled scene in the same manner as Macromedia Flash or SVG files, for example.

What is the Viewpoint Video user experience?

Unlike other video packages, Viewpoint Video never interrupts the user experience with any messages for connection speed, player version, upgrades to the player, or even with any user interface wrapping content from marketers. The auto-update architecture of Viewpoint Media Player ensures that every user has the latest version, including Viewpoint Video, giving marketers the comfort that their users receive the desired branding experience.

Also, Viewpoint Video utilizes Dynamic Stream Switching, Viewpoint's proprietary video delivery method, to uniquely ensure the best user experience possible for video content. Dynamic Stream Switching is the process by which Viewpoint Video dynamically delivers (in real time) the video file most appropriate for the user's connection speed.

What other media players are required for a user to view Viewpoint Video content?

None. Viewpoint Media Player is the only player required to view Viewpoint Video content. Viewpoint Media Player enables any content provider to play Flash, Video, 3D, Audio, IPIX, QTVR, and other media content through a single media player. With the introduction of Viewpoint Video, Viewpoint helps marketers and publishers provide a consistent message to their audiences using video content, all through a single media player and without the annoyance of upgrades and multiple downloads.

Can Viewpoint Video be integrated with other media types?

Yes. Viewpoint Video content integrates with any part of a Viewpoint-enabled scene, including the scene's foreground or background, as a texture or light map, masked over a 2D image, or embedded directly into a web page. For examples of Viewpoint Video content, go to <http://www.viewpoint.com/video.html>

For more information on Viewpoint Video, contact your sales representative at sales@viewpoint.com or call 1-888-VIEWPOINT