Choosing a network bandwidth

Select a target bandwidth for the Windows Media stream. The first four choices are based on common network capabilities. Use the fifth choice to customize the bandwidth if required by your application. The difference between the capacity of the network connection and the actual bandwidth used allows for other network traffic.

- **Internet 28.8** (20 kilobits per second [Kbps] actual). Supports streaming of both audio and video content to clients using a network connection that operates at a minimum of 28.8 Kbps.

- **Internet 56 modem** (37 Kbps actual). Supports streaming of both audio and video content to clients using a modem network connection that operates at 56 Kbps.

- **Single channel ISDN** (50 Kbps actual). Supports network connections at Integrated Services Digital Network (ISDN) rates.

- **Intranet** (100 Kbps actual). Supports clients on an intranet or LAN.

- **Custom** (bits per second [bps]). Supports end users with systems that require a customized bandwidth setting, such as those using a dedicated network that does not use one of the preceding bandwidths. When specifying the bit rate, consider other traffic that must pass over the network. Unlike the preconfigured bandwidth settings, with this setting Windows Media Encoder uses the entire bandwidth you specify for streaming information. This value is entered in bits per second, rather than kilobits per second.

Compressing the audio and video content

Use this screen to select which compression algorithms (codecs) to apply to your audio and video content. This screen has two parts: **Audio** and **Video**.

- **Audio**. Because some of the audio codecs have multiple formats, **Audio** has options for both the codec and the format. Use the **Codec** list to select the audio codec. If the codec has multiple formats, use the **Format** list to select the amount or type of compression. The format of a codec is displayed as the bit rate for the audio stream, the sampling rate (in kilohertz [kHz] or hertz [Hz]), and the number of channels (mono or stereo). Remember that the audio stream must share the available network bandwidth with any video or script command streams.

  By default, the Microsoft Windows Media Audio codec is selected because, in most cases, it produces the best sound quality in a media file with mixed media types. However, if you are creating a low bandwidth stream (less than 20 Kbps) that has voice-only audio content, better results may be obtained by using the Sipro Labs ACELP.net codec.

- **Video**. The Microsoft Windows Media Video version 7.0 codec is used for all video compression. Select this codec unless you need to target an audience that must use an older version of Microsoft Windows Media Player. The Microsoft MPEG-4 version 3.0 codec is compatible with version 6.4 of Windows Media Player.

  To adjust some advanced video settings, such as the size of the window displayed for the Windows Media Player client, the number of frames per second, and the number of I-frames, click **Advanced**.

- **Screen**. The Microsoft Windows Media Screen version 7.0 codec enables lossless streaming of computer screen images at data rates as low as 15 kbps. You can use it for on-demand training, software demonstrations, and support applications. It is well suited for capturing screens in productivity applications, such as Microsoft Word, Excel, and Visual Studio®. Windows Media Screen codec is fully optimized for both streaming and download scenarios and makes use of Digital Rights Management (DRM) technology to encrypt the encoded screen content. It is included with Windows Media Player 7.

Related Topics

Using advanced video settings

Using advanced video settings

Change specific aspects of the video output in the Windows Media stream by manipulating advanced video settings. Changes made here can have a great impact on the characteristics and quality of content that end users see and hear. Increasing the image size and number of frames per second and decreasing the number of seconds per I-frame places greater demands on your central processing unit (CPU) by Windows Media Encoder. The faster your CPU, the more frames per second and I-frames you can include in the Windows Media stream.

Use this screen to adjust the following settings:

- **Image Size**. Quarter Common Interface Format (QCIF) and Common Interface Format (CIF) are predefined image standards; CIF height and width are exactly double those of QCIF. These standards are provided because their image size (both height and width) is a standard that is supported by many codecs and video editing tools. The 160 x 120 and 320 x 240 options provide video windows that are slightly smaller than QCIF and CIF, respectively. The slight decrease in image size means that more bandwidth can be used for video frames and can improve content quality in some scenarios. Use these options if video sharpness is more important than video size for your content.

- Use **Custom** to define your own image size. When resizing an image with the **Custom** setting, be aware that many codecs require image size settings in multiples of 4.

- **Frames/second.** To set the number of frames per second for the Windows Media stream, use the **Frames/second** dialog box. The Frames/second value can be set from 1 through 30. How much you adjust this value depends on the speed of the computer's processor and whether the computer is encoding high-motion or low-motion video. If more frames per second are used, there are smaller changes between frames, and the video looks smoother. If fewer frames per second are used, the video has a slower motion transition rate, so video with a lot of motion can appear disjointed. However, the more frames per second your computer is required to encode, the harder the processor must work. It is possible to overwork your processor by requesting it to encode more action than its capability allows. If this happens, Windows Media Encoder stops encoding and displays a message.

- **Second/I-Frame**. The **Second/I-Frame** dialog box displays the number of seconds that separate I-frames. All frames between I-frames are called *delta frames*. Delta frames contain only the information used to display change and are considerably smaller than I-frames; however, the visual quality of delta frames is poor. As I-frames get farther apart, the size of the video (in bytes) gets smaller. As I-frames get closer together, the size of the video (in bytes) gets larger, and the computer's processor must work harder.

- **Image Quality**. To fine-tune the image quality, use the **Image Quality** slider. You can emphasize either video smoothness or image crispness. Video content is smooth when objects easily move from one position to another on the screen and the edges of objects are not jagged. Video content is crisp when images and motion are well defined and clearly delineated. As you increase the image crispness, the video becomes less smooth. Keep in mind that increasing the crispness can affect the frames per second, depending on the video. For example, if your video has a lot of motion in it, increasing the crispness may decrease the frames per second.

Note   If you make changes to these settings, test the content before delivering it to end users.

Creating multiple bit rate video

You can use multiple bit rate video to provide end users with better quality content during times of network congestion. When you use multiple bit rate video, your video content is recorded at multiple bandwidths that you select. These bandwidths range from 5 kilobits per second (Kbps) to several megabits per second (Mbps). Using multiple bit rate video gives Microsoft Windows Media Player the ability to switch to a lower bandwidth video stream when the reception quality of the higher bandwidth deteriorates or the network connection does not support the higher bandwidth.

Encoding single stream video creates Windows Media-based content that supports only one target bandwidth. This content is best suited for network environments that have constant available bandwidth or for content that is hosted on an HTTP server without Microsoft Windows Media Services. Windows Media-based content created with a single video stream has lower processor requirements and requires less storage space.

Related Topics

Understanding profiles

Selecting target bandwidths for multiple bit rate video configurations

Microsoft Windows Media Export Plug-in for Adobe Premiere has two categories of target bandwidths: low bit rate and high bit rate. When you select the target bandwidth category, you are presented with a default grouping of four target bandwidths. You can edit and remove these target bandwidths from your configuration. Once you have less than five target bandwidths defined for your category, you can add new target bandwidths to the category.

Each target bandwidth has a default bit rate that you can customize to meet your needs. The following table identifies the bit rate ranges that can be used by each target bandwidth.

Target bandwidth	Bit rate
28.8 modem	18 - 27 Kbps
56 dial-up modem	28 - 37 Kbps
Single channel ISDN	38 - 55 Kbps
Dual ISDN	56 - 120 Kbps
Intranet	121 - 250 Kbps
High speed Internet	251 - 500 Kbps
LAN	501 - 700 Kbps
High speed LAN	701 Kbps - 10 Mbps

A video stream is encoded into the Windows Media stream for each target bandwidth you select.

Note

When you customize the bandwidths supported by each video stream, you cannot combine low and high bandwidth streams. If you create a video stream for a target network bandwidth that is less than 80 Kbps, the maximum bandwidth for additional video streams is constrained to 300 Kbps. To encode multiple bit rate video that supports bandwidths greater than 300 Kbps, you must not specify any video streams that are less than 80 Kbps.

Understanding profiles

Windows Media Encoder and Microsoft Windows Media Player use profiles to identify the configuration of Windows Media streams. These profiles are based on the bandwidth available to your target bandwidth and the type of content being streamed.

Microsoft Windows Media Export Plug-in for Adobe Premiere comes with a collection of standard profiles that you can use to achieve the best quality for your encoded content. A description of the profile and details about the compression algorithm (codec) used with it are provided as you click on each profile individually. The codecs and bandwidths for each profile have been tested to ensure that they can provide the highest quality presentation of your audio and video content. To provide flexibility across all scenarios, you can create custom profiles when you have special content or network requirements.

Profiles contain the following information:

- **Target network bandwidth**. This value identifies the minimum bandwidth of the end user's network connection. If the end user's network connection does not support the target bandwidth, the end user cannot receive the stream. Profiles range in bandwidth from 5 kilobits per second (Kbps) to several megabits per second (Mbps). If your end users will be connecting over a variety of bandwidths, consider using a multiple bit rate video template to create a stream that supports multiple bandwidths.

- **Content type**. The type of content you plan to stream has a great impact on the audio and video codecs used and the video settings that provide optimal performance. A variety of profiles are available for audio-only streams as well as multimedia streaming profiles.

- **Multiple bit rate video**. Multiple bit rate video profiles are used to encode multiple video bandwidths into a single Windows Media stream or file so that the content can stream over variable network bandwidths. This provides for the best client experience at higher bandwidths while still supporting lower bandwidth network connections. It also is useful when available network bandwidth is constrained and the stream needs to adapt to different conditions.

Note   The properties on the right side of the screen are optional. They are displayed in Windows Media Player when the Windows Media file is viewed.

Related Topics

Naming your profile

0   Creating multiple bit rate video

Naming your profile

When creating a custom profile, give it a name that is representative of its function. For example, the name could include the intended bandwidth (e.g., 28.8 or 56) and whether the profile is for audio or video. This profile will be displayed with the list of pre-defined profiles the next time you export a Windows Media file.

Related Topics

Understanding profiles

Creating content for earlier versions of Windows Media Technologies

If you need to maintain backward compatibility with Windows Media Services 4.1 and Windows Media Player 6.4, use the following codecs when creating or selecting profiles for your encoding configuration:

- Microsoft Windows Media Audio version 7.0 codec

- Microsoft MPEG-4 version 3.0 codec

- Sipro Labs ACELP codec

If you use the latest versions of the codecs when encoding with Windows Media Encoder 7 and attempt to play the content in Windows Media Player version 6.4, you are prompted to download the latest codecs so the player can decompress the encoded content. To download Windows Media Player 7, go to the Windows Media page at http://www.microsoft.com/.

Bit rate is the speed at which binary content is streamed on a network. Bit rate is usually measured in kilobits per second (Kbps), for example, 28.8 Kbps. The bit rate of a Windows Media file or live stream is determined during the encoding process, when the streaming content is created. Bandwidth is the bit rate capacity of a network.

Bandwidth is the data transfer capacity of a digital communications system, such as the Internet or a LAN. Bandwidth is usually expressed in the number of bits transferred in a second: bits per second (bps). High bandwidth refers to a network capable of a fast data transfer rate.

Codecs are compression/decompression algorithms that are used to make audio and video files a more manageable size. Windows Media Encoder applies a codec to audio and video content to compress it. This makes the file easily transferable over a network. Microsoft Windows Media Player uses the codec to decompress the content, and present it to the end user. Codecs are created by many different companies to meet a variety of customer needs. You also can add other codecs to Windows Media Encoder.

Windows Media Audio is an audio codec created by Microsoft. It is designed to handle all types of audio content, from low-bandwidth 8-kilohertz (kHz) speech to 48-kHz stereo music. This codec is very resistant to degradation due to packet loss. This loss tolerance makes it excellent for use with streaming content. In addition, by using an improved encoding algorithm, this codec encodes and decodes much faster. The improved compression algorithm creates audio files that need much less disk space for storage than the same content created with other codecs. Content created using the Windows Media Audio codec is easily distributed over the Internet because the files can be downloaded more quickly.

I-frames are independent video frames that contain all of the content from the frame. In contrast, delta frames (also called P-frames) contain only data about what has changed in the video frame since the previous frame was transmitted.

Multiple bit rate video is a feature of Microsoft Windows Media Technologies that supports the creating and streaming of multiple encoded video streams within one Windows Media stream. Using multiple bit rate video in Windows Media Encoder creates Windows Media-based content that has a variety of video streams at variable bandwidths that can range from 28.8 Kbps to 300 Kbps, as well as a separate audio stream. After receiving this multiple encoded stream, the server determines which bandwidth to stream based on the network bandwidth available. Multiple bit rate video is not supported on HTTP servers.

Target bandwidth represents the minimum bandwidth of the end user's network connection. If the end user's network connection does not support the target bandwidth, then the end user cannot receive the stream.

A profile is a predefined group of settings that match content type and bit rate with appropriate audio and video codecs.

Frames per second is the number of video frames that are encoded and then played per second. The higher the frames per second, the smoother the motion appears. Television in the United States is based on 30 frames per second.