Video signal compression and decompression

Video signal compression is digital video processing aimed at reducing video stream size. Compression is performed according to a specific software algorithm.

INTELLECT™ software uses a specific MotionWavelet algorithm to compress video signals received from video capture cards. This algorithm allows reducing video stream size by tens of times (from 5 to 30, subject to video signal features and compression rate).

To compress video signals from IP-devices, standard (MPEG4) or vendor designed algorithms are in use.

With compression, video stream size decreases at the cost of its quality. That is why INTELLECT™ software compresses the video signal in two modes only: in disk recording mode and in transmission to the Remote Workplace mode. The video signal is not compressed before displaying on a video server monitor.

Before displaying the compressed video signal it is decompressed. Decompression is automatically performed while displaying video signals (both real-time and archive footage playback) at Remote Workstations and video recordings playback on the video server.

If video resolution on the Monitor is less than resolution of compressed video, then INTELLECT™ partly decompresses video (it allows reducing load of CPU that decompresses video). Network load is reduced if the MotionWavelet codec is in use; if other codecs are in use, then the network load stays the same. Partial decompression is supported by MPEG4, MJPEG, MXPEG, Motion Wavelet and H264svc codecs. Partial decompression is not supported by H263, H264avc and Mpeg2 codecs. Only fps reduction is supported by H264svc-t codec.

Description of decompressors is shown in the table.

<table>
<thead>
<tr>
<th>Decompressor</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FfmpegAllInOneDecoder</td>
<td>A module with a set of Ffmpeg library decoders (with an open source code). It allows converting multimedia data compressed by MxPEG, MPEG2, MPEG4 and Motion JPEG codecs.</td>
</tr>
<tr>
<td>H264InterlacedIppDecoder</td>
<td>Decompressors included into the Intel Integrated Performance Primitives (Intel IPP) library. A compression format is specified in the decompressor name.</td>
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<tr>
<td>H264IppDecoder</td>
<td>Decompressors included into the Intel Integrated Performance Primitives (Intel IPP) library. A compression format is specified in the decompressor name.</td>
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<tr>
<td>MPEG2IppDecoder</td>
<td>Decompressors included into the Intel Integrated Performance Primitives (Intel IPP) library. A compression format is specified in the decompressor name.</td>
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<tr>
<td>MJPEGIppDecoder</td>
<td>Decompressors included into the Intel Integrated Performance Primitives (Intel IPP) library. A compression format is specified in the decompressor name.</td>
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<tr>
<td>MPEG4IppDecoder</td>
<td>Decompressors included into the Intel Integrated Performance Primitives (Intel IPP) library. A compression format is specified in the decompressor name.</td>
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<tr>
<td>H264SvcEx</td>
<td>A decompressor for converting video signals in H264Svc format received from Stretch devices into the H264Avc format.</td>
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<tr>
<td>H264SvcTex</td>
<td>A decompressor for converting video signals in H264Svc-t format received from VIVOTEC devices into the H264Avc format.</td>
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<tr>
<td>MxPEG Mobotix</td>
<td>A decompressor for converting video signals received from Mobotix devices.</td>
</tr>
<tr>
<td>Motion Wavelet 7.1</td>
<td>A decompressor for wavelet-converting video signals.</td>
</tr>
<tr>
<td>BOSCH</td>
<td>A decompressor for converting video signals received from BOSCH devices.</td>
</tr>
</tbody>
</table>
Compression and decompression algorithms are set on the settings panel of a Camera object using the Compressor and Decompressor list correspondingly (see the Settings panel of the Camera object section). The decompression algorithm set in the camera settings is used when a video signal is displayed on a video surveillance monitor and for detection operation.

**Important!**
By default compression and decompression algorithms are not available for selecting and Compressor and Decompressor dropdown lists are not available for editing. To enable this feature set the “1” value for EnableCodecSettings registry parameter (see Registry keys reference guide).

**Note**
When decompressors included into the Intel IPP library are in use, there can be video distortions for some resolutions. In these cases resolutions divisible by 16 are recommended to be used (e.g., 1280x720 or 1360x768) or another decompressor is to be selected.

If the compressor/decompressor (default value) is not selected on the settings panel of a Camera object or the incorrect one is selected, then INTELLECT™ software automatically selects the first compressor/decompressor in alphabetical order. If it does not fit too, the following one is selected and so on, until the correct one is selected.

**Note**
In multistream mode (see Configuration of multistream video) the codec selecting and settings of video signal quality is performed separately for each video stream on the Camera object’s settings panel on the Video stream tab.

**Note**
When WS7 and WS17 video capture cards are in use, the Decompression field is to be left blank otherwise use Motion Wavelet decompressor. If another decompressor is selected, then INTELLECT™ operation is not guaranteed.

**Important!**
If for some reasons the automatic decompressor selection is not right, then you are to select a decompressor manually.