

This document provides a complete list of the supported import and export formats for the Harmonic ProMedia™ Carbon and ProMedia Xpress file-based transcoders. In order to transcode from one format to another, ProMedia Carbon and Xpress must be able to both decode the input format and then encode into the output format. For example, if you are converting from a QuickTime DV25 file into a GXF MPEG-2 long-GOP format, then the transcoder needs to be able to both decode QuickTime DV25 files and encode GXF MPEG-2 long-GOP files.

You can use the table on the next pages to determine if your particular import/export requirements are supported. The table lists each format, and indicates whether that format is supported for import and/or export. The table further indicates whether a particular codec is included with ProMedia Carbon and Xpress. In addition to the codecs that ship with ProMedia file-based transcoders, you can also install most DirectShow or QuickTime codecs for use with the products. If a particular codec in the list is not included, links are provided below for downloading that codec. Some codecs are available for free and some require an additional purchase from the codec developer. If you do not see a particular format that you need in the list, please contact support via <http://www.harmonicinc.com/content/technical-support>. We are continually updating our product with new features and want your feedback.

The formats in this guide are organized according to container and then by codec. A container (also known as a “wrapper”) is a defined structure for how video data, audio data and metadata are multiplexed into a final file. This is different from a codec, which only defines how video or audio data are compressed. Just because two devices read the same codec does not mean they are compatible; it is possible to have the exact same codec wrapped in non-compatible containers. For example, an MPEG-2 codec may be used to compress video that is then put into a MPEG-2 transport stream, a MPEG-2 elementary stream, a DVD VOB, a MXF file or an AVI file. When you look up formats in the following guide, make sure that you are looking at the required combination of container and codec. Edge cases of the codec/compliance identified or the referenced specification may not be supported.

For more information about containers and codecs, we recommend the following sources:

**Overview of Video Codecs:** [http://en.wikipedia.org/wiki/Video\\_codecs](http://en.wikipedia.org/wiki/Video_codecs)

**Video Compression (Includes Table of Compression and Container Formats):** [http://en.wikipedia.org/wiki/Video\\_compression](http://en.wikipedia.org/wiki/Video_compression)

**Comparison of Video Container Formats:** [http://en.wikipedia.org/wiki/Comparison\\_of\\_container\\_formats](http://en.wikipedia.org/wiki/Comparison_of_container_formats)

**Introduction to Video Compression:** <http://www.videsignline.com/howto/showArticle.jhtml?articleID=185301351>

**Quantel Digital Factbook:** [http://www.quantel.com/site/en.nsf/html/library\\_dfb](http://www.quantel.com/site/en.nsf/html/library_dfb)

**MPEG-2:** <http://en.wikipedia.org/wiki/MPEG-2>

**MPEG-4:** <http://en.wikipedia.org/wiki/MPEG-4>

**Video Streaming White Papers:** <http://whitepapers.zdnet.com/search.aspx?kw=Video+Streaming>



Container	Codec / Compliance	Import	Export	Incl.	Comments
<b>3GPP and 3GPP2</b>					
3GPP	H.263	Y	Y	Y	
3GPP	MPEG-4 Part 2 video (ISO/IEC 14496-2)	Y	Y	Y	
3GPP	MPEG-4 Part 10 video (ISO/IEC 14496-10 ITU-T H.264)	Y	Y	Y	
<b>AVI</b>					
AVI	AJA v210	Y	Y	N	<a href="http://www.aja.com">http://www.aja.com</a>
AVI	Blackmagic HD 10-bit 4:2:2	Y	Y	N	<a href="http://www.blackmagic-design.com">http://www.blackmagic-design.com</a>
AVI	Blackmagic HD 10-bit 4:4:4	Y	Y	N	<a href="http://www.blackmagic-design.com">http://www.blackmagic-design.com</a>
AVI	Blackmagic HD 8-bit 4:2:2	Y	Y	N	<a href="http://www.blackmagic-design.com">http://www.blackmagic-design.com</a>
AVI	Canopus DV	Y	Y	Y	DVCPRO25, AVI 1.0 and 2.0 (Open DML)
AVI	Canopus HQ	Y	Y	N	<a href="http://www.canopus.com">http://www.canopus.com</a>
AVI	Cinepak	Y	Y	Y	Not included on all Windows Platforms
AVI	DivX	Y	Y	N	<a href="http://www.divx.com/divx/windows/">http://www.divx.com/divx/windows/</a>
AVI	DPS	Y	Y	N	<a href="http://www.leitch.com/custserv/webdl.nsf/FD/DPS_AVI_Codec15.exe">http://www.leitch.com/custserv/webdl.nsf/FD/DPS_AVI_Codec15.exe</a>
AVI	Indeo R3.2	Y	Y	Y	
AVI	Indeo Video 4.5	Y	Y	Y	
AVI	Indeo Video 5.1	Y	Y	Y	
AVI	Intel IYUV	Y	Y	Y	
AVI	Matrox AXIO	Y	Y	N	<a href="http://www.matrox.com">http://www.matrox.com</a>
AVI	Microsoft DV	Y	Y	Y	DVCPRO25, AVI 1.0 and 2.0 (Open DML), DV Type 1 and Type 2
AVI	Microsoft Video 1	Y	Y	Y	
AVI	Motion JPEG	Y	Y	Y	
AVI	Uncompressed RGB	Y	Y	Y	
AVI	xVID	Y	Y	N	<a href="http://www.xvid.org">http://www.xvid.org</a>
<b>Flash</b>					
F4V	Flash 9	Y	Y	Y	
FLV	Flash 8 (VP6)	N	Y	Y	Carbon is not licensed to decode VP6-encoded video
FLV	Flash 7	Y	Y	Y	
F4A	Flash 9 audio only	Y	Y	Y	Use H.264 Exporter to create Flash 9 audio-only files (F4V).



Container	Codec / Compliance	Import	Export	Incl.	Comments
<b>GXF – Grass Valley</b>					
GXF	DV25 525	Y	Y	Y	DVCAM or DVCPRO
GXF	DV25 625	Y	Y	Y	DVCAM or DVCPRO
GXF	DV50	Y	N	Y	
GXF	MPEG-2 I-frame 525	Y	Y	Y	720x512i - 29.97 Generic MPEG, 720x480i - 29.97 Generic MPEG, 720x512i - 29.97 D10/IMX
GXF	MPEG-2 I-frame 625	Y	Y	Y	720x608i - 25 Generic MPEG, 720x576i - 25, Generic MPEG, 720x608i - 25 D10/IMX
GXF	MPEG-2 I-frame HD	Y	Y	Y	1920x1080i - 29.97, 1920x1080i - 25, 1280x720 - 59.94
GXF	MPEG-2 IPB 525	Y	Y	Y	720x512i - 29.97 Generic MPEG, 720x480i - 29.97 Generic MPEG, 720x512i - 29.97 D10/IMX
GXF	MPEG-2 IPB 625	Y	Y	Y	720x608i - 25 Generic MPEG, 720x576i - 25, Generic MPEG, 720x608i - 25 D10/IMX
GXF	MPEG-2 IPB HD	Y	Y	Y	1920x1080i - 29.97, 1920x1080i - 25, 1280x720 - 59.95
<b>Image Sequences</b>					
Image Seq.	BMP	Y	Y	Y	
Image Seq.	DPX	Y	N	Y	
Image Seq.	JPEG	Y	Y	Y	
Image Seq.	JPEG 2000	N	Y	Y	
Image Seq.	MacPaint	N	Y	Y	
Image Seq.	PhotoShop	N	Y	Y	
Image Seq.	PICT	N	Y	Y	
Image Seq.	PNG	Y	Y	Y	
Image Seq.	QT Image	N	Y	Y	
Image Seq.	SGL	N	Y	Y	
Image Seq.	TGA	Y	Y	Y	
Image Seq.	TIFF	Y	Y	Y	
<b>LXF – Leitch/Harris</b>					
LXF	DV25	Y	Y	Y	DVCAM or DVCPRO
LXF	MPEG-2 I-frame	Y	Y	Y	4:2:0, 4:2:2, SD, and HD
LXF	MPEG-2 long-GOP	Y	Y	Y	
<b>MPEG Elementary Streams</b>					
MPEG ES	MPEG-1	Y	Y	Y	Proxy
MPEG ES	MPEG-2	Y	Y	Y	SP@MP, MP@LL, MP@ML, MP@HL, MP@H14, HP@ML, HP@HL, HP@H14, 422P@ML, 422@HL



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<b>MPEG Program Streams</b>					
MPEG PS	DVD	Y	Y	Y	
MPEG PS	MPEG-2	Y	Y	Y	SP@MP, MP@LL, MP@ML, MP@HL, MP@H14, HP@ML, HP@HL, HP@H14, 422P@ML, 422@HL
MPEG PS	SVCD	Y	Y	Y	
MPEG PS	Avid MediaStream	Y	Y	Y	Supports some features of MediaStream 8000. No other systems are supported.
<b>MPEG Transport Streams</b>					
MPEG TS	MPEG-4 Part 10 video (ISO/IEC 14496-10 ITU-T H.264)	Y	Y	Y	
MPEG TS	HDV HD-1	Y	Y	Y	MP@ML, MP@H-14, MP@HL (1280x720, 720x480, 720x576)
MPEG TS	HDV HD-2	Y	Y	Y	MP@ML, MP@H-14, MP@HL (1440)
MPEG TS	MPEG-2	Y	Y	Y	SP@MP, MP@LL, MP@ML, MP@HL, MP@H14, HP@ML, HP@HL, HP@H14, 422P@ML, 422@HL, 302M Audio
MPEG TS	ATSC (A/53)	Y	Y	Y	Incl. Dolby Digital (AC-3)
MPEG TS	CableLabs	Y	Y	Y	SD and HD, Incl. Dolby Digital (AC-3)
MPEG TS	DVB	Y	Y	Y	ETSI TR 101 154, Incl. Dolby Digital (AC-3)
<b>MPEG-1 System Streams</b>					
MPEG-1 SS	MPEG-1	Y	Y	Y	VideoCD, Proxy
<b>MPEG-4</b>					
MPEG-4	MPEG-4 Part 10 video (ISO/IEC 14496-10 ITU-T H.264)	Y	Y	Y	
MPEG-4	MPEG-4 Improved	Y	Y	Y	ISMA Profile 1 -- MPEG-4 ASP
MPEG-4	MPEG-4-Basic	Y	Y	Y	ISMA Profile 0
MPEG-4	XDCAM EX	Y	N	Y	
MP4/M4V/M4A	H.264	Y	Y	Y	Use H.264 Exporter to create output files.
<b>MXF (Material Exchange Format)</b>					
MXF (AS02)	JPEG 2000	Y	Y	Y	Export option available through WFS.
MXF (OP1a)	D10 (IMX)	Y	Y	Y	30, 40, 50 Mbit. Includes support for Quantel and XDCAM
MXF (OP1a)	DV25	Y	N	Y	
MXF (OP1a)	DV50	Y	N	Y	
MXF (OP1a)	DVCPRO HD	Y	N	Y	
MXF	AS02	Y	Y	Y	
MXF	EVS Motion JPEG	Y	N	Y	
MXF (OP1a)	JPEG 2000	Y	N	Y	Supported with WAV
MXF (OP1b)	JPEG 2000	Y	N	Y	
MXF (OP1a)	MPEG-2 I-frame	Y	N	Y	
MXF (OP1a)	MPEG-2 long-GOP	Y	N	Y	
MXF (OPAtom)	DV25	Y	N	Y	WAV only
MXF (OPAtom)	DV50	Y	N	Y	



Container	Codec / Compliance	Import	Export	Incl.	Comments
<b>MXF (Material Exchange Format)</b>					
MXF (OPAtom)	DVCPRO HD	Y	N	Y	
MXF (OP Atom)	Avid DNxHD	Y	Y	Y	Requires that the MXF file follows the OP Atom standard and Avid Codec Pack!. Only some of these files can be imported, this is not a full Avid MXF OP Atom Importer.
MXF (OP Atom)	Avid DVCAM, DVCPRO 25/50/100, IMX 30/40/50, XDCAM	Y	Y	Y	
MXF (OP Atom)	Avid JFIF	N	Y	Y	
MXF (OP1A)	Avid DNxHD	Y	N	Y	Only some of these files can be imported, this is not a full Avid MXF OP1a Importer.
MXF (OPAtom)	JPEG 2000	Y	N	Y	DVS Clipster formats
MXF	XDCAM 4:2:0	Y	Y	Y	SD and HD
MXF (OP1A)	XDCAM MPEG-2 4:2:2	Y	Y	Y	MXF OP1A MPEG-2 HD 4:2:2
MXF	XDCAM MPEG-4 Proxy	N	Y	Y	
MXF	Panasonic P2	Y	Y	Y	DV, DVCPRO, DVCPRO HD, and AVC-Intra
<b>Harmonic Spectrum (formerly Omneon, both MXF and QuickTime)</b>					
Spectrum	AVC-Intra Class 50 & 100	Y	Y	Y	960x720p@50/59.94, 1440x1080i@25/29.97 1280x720p@50/59.94, 1920x1080i@25/29.97
Spectrum	OP1a IMX (MXF)	Y	Y	Y	720x512i, 720x608i
Spectrum	DV	Y	Y	Y	720x486i, 720x576i
Spectrum	IMX	Y	Y	Y	720x512i, 720x608i
Spectrum	MPEG-2 IBP	Y	Y	Y	720x480i, 720x512i, 720x576i, 720x608i, 1280x720p, 1920x1080i
Spectrum	MPEG-2 I-frame	Y	Y	Y	720x480i, 720x512i, 720x576i, 720x608i, 1280x720p, 1920x1080i
<b>Quantel</b>					
Quantel	MXF OP1a IMX	Y	Y	Y	40Mbit NTSC. 30 Mbit PAL.
Quantel	DVCPRO HD	Y	Y	Y	720p, 1080i
<b>QuickTime</b>					
QuickTime	Apple Animation	Y	Y	Y	
QuickTime	Apple BMP	Y	Y	Y	
QuickTime	Apple Cinepak	Y	Y	Y	
QuickTime	Apple Component Video - YUV 422	Y	Y	Y	
QuickTime	Apple DV/DVCPRO	Y	Y	Y	
QuickTime	Apple Graphics	Y	Y	Y	
QuickTime	Apple H.261	Y	Y	Y	
QuickTime	Apple Motion JPEG A	Y	Y	Y	



Container	Codec / Compliance	Import	Export	Incl.	Comments
<b>QuickTime</b>					
QuickTime	Apple Motion JPEG B	Y	Y	Y	
QuickTime	Apple MPEG-4	Y	Y	Y	
QuickTime	Apple None	Y	Y	Y	
QuickTime	Apple Photo - JPEG	Y	Y	Y	
QuickTime	Apple Planar RGB	Y	Y	Y	
QuickTime	Apple PNG	Y	Y	Y	
QuickTime	Apple TGA	Y	Y	Y	
QuickTime	Apple TIFF	Y	Y	Y	
QuickTime	Apple Video	Y	Y	Y	
QuickTime	Avid DNxHD	Y	Y	N	Requires Avid Codec Pack LE <sup>2</sup>
QuickTime	Avid Media Composer Meridian 1:1	Y	Y	N	
QuickTime	Avid Media Composer Meridian JFIF	Y	Y	N	
QuickTime	HDV	Y	Y	Y	
QuickTime	IMX	Y	Y	Y	
QuickTime	BlackMagic 10-bit	Y	Y	N	<a href="http://www.blackmagic-design.com/support/software/">http://www.blackmagic-design.com/support/software/</a>
QuickTime	BlackMagic RGB 10-bit	Y	Y	N	
QuickTime	DVCPRO HD	Y	Y	Y	
QuickTime	DVCPRO 100/HD	Y	Y	Y	
QuickTime	H.263	Y	Y	Y	
QuickTime	H.264	Y	Y	Y	
QuickTime	Intel Indeo Video 4.4	Y	Y	Y	
QuickTime	JPEG 2000	Y	Y	Y	
QuickTime	ProRes 422	Y	Y	Y	Export to ProRes requires separate node licenses and is only available for systems that meet certain restrictions. See the Carbon Installation and User Guide.
QuickTime	Spectrum	Y	Y	Y	See Spectrum container section for more detail
QuickTime	Sorenson Video	Y	Y	Y	
QuickTime	Sorenson Video 3	Y	Y	Y	
QuickTime	XDCAM MPEG-2 4:2:2	Y	Y	Y	
<b>Raw</b>					
Raw	FLC	Y	Y	Y	
Raw	Raw DV (DIF)	Y	Y	Y	
Raw	H.264	Y	Y	Y	
Raw	VC-1	N	Y	Y	
<b>Real</b>					
Real	Real Video 10	N	Y	Y	Carbon is not licensed to decode Real Media video
Real	Real Video 9	N	Y	Y	
Real	Real Video 8	N	Y	Y	



Container	Codec / Compliance	Import	Export	Incl.	Comments
<b>VOB</b>					
VOB	MPEG-2	Y	Y	Y	Requires an AC-3 audio decoder if embedded AC-3 is present on input side.
<b>WMV/ASF</b>					
WMV/ASF	Window Media Video 9	Y	Y	Y	
WMV/ASF	Windows Media Video 8	Y	Y	Y	
WMV/ASF	Windows Media Video 7	Y	Y	Y	
WMV/ASF	WMV 9 Adv. Profile	Y	Y	Y	
WMV/ASF	VC-1	Y	Y	Y	
<b>YUV – Uncompressed</b>					
YUV	I420	Y	Y	Y	
<b>Audio Codecs</b>					
	AAC	Y	Y	Y	
	HE-AACv1	Y	Y	Y	
	AES3-302	Y	Y	Y	
	AES3-331	Y	Y	Y	
	AIFF	Y	Y	Y	
	Broadcast WAV	Y	Y	Y	
	Dolby Digital (AC-3)	Y	Y	Y	Audio-only files using the Dolby Digital Plus Exporter, and also embedded in the MPEG-2 & H.264 Exporters
	Dolby Digital Plus (E-AC-3)	Y	Y	Y	
	Dolby E	N	Y	N <sup>2</sup>	Export only. This option is only available as a separate license.
F4V, F4A, M4A, MP4	AAC, HE-AACv1, MP3	Y	N	Y	Added Support for the import of audio only files
F4V, MPEG-4 System Stream	AAC, HE-AACv1, AC-3, E-AC-3, MP3	N	Y	Y	Allow creation of audio only files in the H.264 exporter in F4V containers and MPEG-4 System Streams
MPEG-2 Transport Stream	MPEG-1 Layer II, MPEG-2 Layer II, AAC, HE-AACv1, AC-3, E-AC-3, MP3	N	Y	Y	Allow creation of audio only files in the H.264 exporter in MPEG-2 Transport Streams
	MPEG Audio	Y	Y	Y	
	MP3	Y	Y	Y	
	MPEG-1 Layer II	N	Y	Y	Use the MP3 Audio Exporter to create MPEG-1 Layer II elementary audio output files.
	PCM	Y	Y	Y	
	μLAW	Y	Y	Y	
	WAV	Y	Y	Y	



Other Compatible File Types	
SCC	ProMedia Carbon supports the import of SCC files to insert Closed Caption data into Line 21 or alternative carriers, such as MPEG User Data.
XML	ProMedia Carbon supports insertion of Subtitling, Metadata, and Titling information via a structured XML file. Carbon also supports the extraction of Line 21 Closed Captioning information into an XML file.
EBU-STL	ProMedia Carbon supports reading and writing EBU-STL files compliant with specification <a href="http://tech.ebu.ch/webdav/site/tech/shared/tech/tech3264.pdf">http://tech.ebu.ch/webdav/site/tech/shared/tech/tech3264.pdf</a> . This is a binary format; text-based caption files (some of which may also have the “.stl” file extension) are not supported.
Microsoft Smooth Streaming	The Microsoft Smooth Streaming Exporter creates compliant files that can be streamed with the appropriate 3rd-party servers.
Apple HTTP Live Streaming	The Apple HLS Exporter creates compliant files that can be streamed with the appropriate third-party servers.
Adobe HTTP Dynamic Streaming	Adobe HDS enables on-demand and live adaptive bitrate video delivery of standards-based MP4 media over regular HTTP connections.
MPEG-DASH	Dynamic Adaptive Streaming over HTTP, also known as MPEG-DASH, enables high-quality streaming of media content over the Internet delivered from conventional HTTP web servers.
TTML	Transport Stream captions to TTML are available in WFS. HDS and MPEG-DASH require ProMedia Xpress. Smooth Streaming and HLS are also available in Xpress.

**Notes**

1. Link to download Avid codec pack: [http://avid.force.com/pkb/articles/en\\_US/download/en423319](http://avid.force.com/pkb/articles/en_US/download/en423319)
2. Dolby E is only available as a separate license, and is not included with a Carbon license.

