Cinegy Capture 21.4 System Recommendations

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Chapter 1. Operating Systems Support

Cinegy Capture service/engine is certified to run on the 64-bit editions of the following operating systems: Windows Server 2012 R2*, Windows 10*, Windows Server 2016*, Windows Server 2019*.

Cinegy Capture Control is certified to run on all the operating systems mentioned above.

Cinegy Capture service/engine is tested on fully-patched versions of the supported operating systems at time of version release, and problems may be encountered if a machine is not this minimum patch level. Supported released versions are continuously tested against the recommended operating system, and incompatibilities that might be introduced by new patches will be addressed via a new Cinegy software release where appropriate.

Operating system recommendation: Windows Server 2019 is recommended for Cinegy Capture engines (server), Windows 10 Pro is recommended for Cinegy Capture Control application.

**Chosen SDI card compatibility with operating system should be confirmed by user.*

We recommend updating Windows OS to include the latest Microsoft updates and hotfixes.

1.1. Supported Codecs and File Formats

Supported TV Formats

Standard Definition (SD)	High Definition (HD)	Ultra High Definition (UHD/4K)	Ultra High Definition (UHD/8K)
720x576i@25fps 4:3	1920x1080i@25fps	3840x2160@25fps	7680x4320@25fps
720x576i@25fps 16:9	1280x720p@50fps	3840x2160@50fps	7680x4320@50fps
720x480i@29.97fps 4:3	1920x1080i@29.97fps	3840x2160@29.97fps	7680x4320@29.97fps
720x480i@29.97fps 16:9	1280x720p@59.94fps	3840x2160@59.94fps	7680x4320@59.94fps
	1920x1080p@50fps		
	1920x1080p@59.94fps		

Only drop frame timecode is supported for 29.97 fps and 59.94 fps NTSC video formats.

Supported Media File Formats

- Raw Daniel2
- Raw DV
- MPEG-2 Program Stream (M2V, MPG)
- Raw H.264
- Apple Quicktime (MOV)
- MP4
- MXF Op1a
- MXF OpAtom
- MXF AS-02 / AS-03 / AS-11

- WAV
- AAC
- VANC
- Y4M

Supported Video Codecs

- IMX
- DV25 / DV50
- DV100
- MPEG-2 I-Frame
- MPEG-2 Long GOP
- H.264*
- Sony XDCAM EX
- Sony XDCAM HD
- Sony XDCAM HD422
- AVC-Intra
- AVC-Ultra: 4K Intra
- Apple ProRes (422/LT/HQ)
- Avid DNxHD
- Avid DNxHR
- Cinegy Daniel2*
- HEVC NVIDIA GPU*
- XAVC Intra
- Y4M
- Uncompressed Video
- Cinegy Daniel2 NVIDIA GPU

* *Hardware acceleration is available.*

Supported Audio Codecs

Cinegy Capture currently supports live input with an audio sample rate of 48 kHz.

- 16 and 24 bit PCM
- AAC Audio
- MPEG Audio (MPEG-2)

File Formats and Codecs Combinations

The table below shows the allowed file/Codecs combinations:

Media Files	Video Codecs	SD	HD	UHD
MPG (MPEG-2)	IMX	+	-	-
	MPEG-2 I-Frame	+	+	+
	MPEG-2 Long GOP	+	+	+
	Cinegy H.264	+	+	+
	Sony XDCAM HD	-	+	-
	Sony XDCAM HD422	-	+	-
	Sony XDCAM EX	-	+	-
MOV (Apple QuickTime)	IMX	+	-	-
	Avid DNxHD HQX/HQ/SQ/LB	-	+	-
	Avid DNxHR HQX/HQ/SQ/LB	-	-	+
	AVC-Intra	-	+	-
	AVC-Ultra: 4K Intra	-	-	+
	MPEG-2 I-Frame/Long GOP	+	+	+
	DV25/DV50	+	-	-
	DV100	-	+	-
	H.264 NVIDIA GPU	+	+	+
	Cinegy H.264	+	+	+
	Sony XDCAM HD422	-	+	-
	Sony XDCAM EX	-	+	-
	ProRes 422	+	+	+
	Uncompressed Video	+	+	+
MP4	IMX	+	-	-
	Avid DNxHD HQX/HQ/SQ/LB	-	+	-
	AVC-Intra	-	+	-
	AVC-Ultra: 4K Intra	-	-	+
	MPEG-2 I-Frame/Long GOP	+	+	+
	DV25/DV50	+	-	-
	DV100	-	+	-
	H.264 NVIDIA GPU	+	+	+
	Cinegy H.264	+	+	+
	Sony XDCAM HD422	-	+	-
	Sony XDCAM EX	-	+	-
	HEVC NVIDIA GPU	+	+	+

Media Files	Video Codecs	SD	HD	UHD
MXF OP1a (Generic, MXF AS-03, MXF AS-11)	IMX	+	-	-
	Avid DNxHD HQX/HQ/SQ/LB	-	+	-
	Avid DNxHR HQX/HQ/SQ/LB	-	-	+
	AVC-Intra	-	+	-
	AVC-Ultra: 4K Intra	-	-	+
	MPEG-2 I-Frame/Long GOP	+	+	+
	DV25/DV50	+	-	-
	DV100	-	+	-
	Cinegy Daniel2	-	+	+
	Cinegy Daniel2 NVIDIA GPU*	-	+	+
	XAVC Intra	-	-	+
	Sony XDCAM HD	-	+	-
	Sony XDCAM HD422	-	+	-
	Sony XDCAM EX	-	+	-
MXF AS-02	IMX	+	-	-
	Avid DNxHD HQX/HQ/SQ/LB	-	+	-
	MPEG-2 I-Frame/Long GOP	+	+	+
	DV25/DV50	+	-	-
	DV100	-	+	-
MXF OPAtom	IMX	+	-	-
	Avid DNxHD HQX/HQ/SQ/LB	-	+	-
	H.264 Proxy Avid	+	+	-
	AVC-Intra	-	+	-
	XAVC Intra	-	-	+
	Sony XDCAM HD422	-	+	-
	Sony XDCAM EX	-	+	-
M2V	MPEG-2 I-Frame/Long GOP	+	+	+
	Sony XDCAM HD	-	+	-
	Sony XDCAM HD422	-	+	-
	Sony XDCAM EX	-	+	-
DN2 (Cinegy Daniel2 Raw)	Cinegy Daniel2	-	+	+
	Cinegy Daniel2 NVIDIA GPU*	-	+	+
Y4M	Y4M	+	+	+

Media Files	Video Codecs	SD	HD	UHD
H264 (H.264 Raw)	AVC-Ultra: 4K Intra	-	-	+
	H.264 NVIDIA GPU	+	+	+
	Cinegy H.264	+	+	+
	XAVC Intra	-	-	+
	H.264 Proxy Avid	+	+	-
DV (Raw DV)	DV25/DV50	+	-	-
	DV100	-	+	-
	AVC-Ultra: 4K Intra	-	-	+
Raw *	HEVC NVIDIA GPU	+	+	+
	H.264 NVIDIA GPU	+	+	+
	Cinegy H264	+	+	+
	AVC-Ultra: 4K Intra	-	-	+
	Avid DNxHD HQX/HQ/SQ/LB	-	+	-
	Avid DNxHR HQX/HQ/SQ/LB	-	-	+
	XAVC Intra	-	-	+
	H.264 Proxy Avid	+	+	-

**Only one audio or video codec can be used for Raw wrapper.*

1.2. Supported SDI Boards

Before performing any drivers changes or updates, it is recommended to stop processes and services (e.g. Cinegy Capture engines) which use SDI cards. Please mind that most of the cards require a reboot or even power cycle to finalize driver processing/firmware update. Make sure the applications or services autostart is disabled. Processes and services which automatically start after reboot and access card/driver may prevent this update from normal processing and finishing.

The following SDI boards are supported for ingest in Cinegy Capture:

DVS

Model	Recommended Driver Version	Recommended Firmware Version	UHD Support	RS-422 Control	Ext. Timecode
Atomix LT	4.3.5.18	5.4.1.5_5.2.7	+	+	+

Multichannel Blackmagic and Deltacast cards as well as AJA cards of the latest generation allow to work with channels in different TV formats on condition their frequency is consistent.

Please note that multichannel AJA cards of the old generation (specifically Corvid22, Corvid24, Kona3G) do not support work with channels in different TV formats.

Blackmagic Design

Model	Recommended Driver Version	UHD Support	RS-422 Control
DeckLink SDI	11.1.0	–	+
DeckLink HD Extreme 3D	11.1.0	–	+
DeckLink Duo	11.1.0	–	–
DeckLink Duo 2	11.1.0	–	–
DeckLink Quad	11.1.0	–	–
DeckLink Quad 2	11.1.0	–	–
DeckLink SDI 4K**	11.1.0	+	+
DeckLink SDI 4K PRO	11.1.0	+	–
DeckLink SDI 8K PRO*	11.1.0	+	–
DeckLink Studio 4K**	11.1.0	+	+
DeckLink 4K Extreme**	11.1.0	+	+
DeckLink 4K Extreme 12G	11.1.0	+	+
DeckLink Mini Recorder	11.1.0	–	–
Intensity Pro 4K	11.1.0	+	–
Intensity Shuttle	11.1.0	–	–

* Supported in Single Link (1.5G - 12G), Dual Link (2x1.5G - 2x6G), Quad Link/2SI (4x 3/12G) modes with TV formats up to UHD 4320p59.94. Please note: DCI formats and 64-channel audio are not yet supported in Cinegy products.

** The board does not support VANC playback or capture in UHD mode due to the board limitation.

AJA

Please be aware that due to OS changes, running old AJA firmware using later versions of Cinegy software may cause a known issue. In case you cannot access the correct number of inputs on the board after installing the new Cinegy software, then a firmware upgrade will be required. The relevant AJA Driver and Tools package can be downloaded **here**.

Model	Recommended Driver Version	UHD Support	RS-422 Control	Ext. Timecode
Kona LHi	15.5.3	–	+	+
Kona LHe+	15.5.3	–	+	+
Kona 3G	15.5.3	+	+	+
Kona 4	15.5.3	+	+	+
Kona IP SMPTE 2022-6/7 uncompressed IP video	15.5.3	-	-	-
Corvid	15.5.3	–	+	OnRef LTC
Corvid 3G	15.5.3	–	+	OnRef LTC

Model	Recommended Driver Version	UHD Support	RS-422 Control	Ext. Timecode
Corvid 22	15.5.3	–	+ (2x)	2x LTC
Corvid 24	15.5.3	+	+ (2x)	2x LTC
Corvid 88	15.5.3	+	+	OnRef LTC
Corvid 44	15.5.3	+	+	OnRef LTC

Deltacast

Model	Recommended Driver Package	UHD Support (quad-link SDI)	RS-422 Control	Ext. Timecode
DELTA-hd-elp-d 44	6.05	up to p29.97	–	–
DELTA-hd-elp-d 62	6.05	up to p29.97	–	–
DELTA-hd-elp-d 80	6.05	up to p29.97	–	–
DELTA-3G-elp-d 8c	6.05	up to p60	–	–
DELTA-3G-elp-d 4c	6.05	up to p60	–	–
DELTA-3G40-hd40-elp-d	6.05	up to p60	–	–
DELTA-3G-elp-d 40	6.05	up to p60	–	–
DELTA-ip-ST2022-6 10	6.05	–	–	–

DELTA-hd-elp boards have only passive heat sinks cooling. At least 5 mph airflow in the chassis is recommended, especially when using multiple boards.

1.3. SDI Signal Source Parameters Recommendations

The following settings are supported:

Parameters	DVS/Deltacast/AJA	Blackmagic Design
SDI Signal	SMPTE 292M (1.5G) SMPTE 424M (3G) SMPTE 425-3	SMPTE 292M (1.5G) SMPTE 424M (3G) SMPTE ST-2081 (6G) SMPTE ST-2082(12G)
SDI Level	A	A
Color coding	10 bit YCbCr	10 bit YCbCr
HD formats	Single-link 1.5/3G	Single-link 1.5/3G
UHD formats	Quad-link 1.5/3G "2SI (Two-Sample Interleave)" *except DVS boards	Single-link 6G Single-link 12G Quad-link 1.5/3G

RGBA (Fill&Key) dual-link is supported as a special mode only for Cinegy Air products

1.4. NVIDIA Accelerated Encoding

To optimize performance of your NVIDIA graphic board, it is recommended to use the "Prefer maximum performance" value for the "Power management mode" parameter in the NVIDIA Control Panel.

Cinegy Capture supports the hardware accelerated encoding for H.264 4:2:0, Cinegy Daniel2 and HEVC NVIDIA GPU video codecs. The codecs are highly recommended to use it for high-density output formats like HD/UHD.

In order to be able to use the encoding hardware acceleration you will need to install the NVIDIA graphic board (based on Maxwell generation GPU) into the Capture server:

- NVIDIA GeForce Series (started from GeForce 600)
- NVIDIA Quadro Series

Please note that the GeForce and lower Quadro Series (Quadro 600) has a **limitation of two concurrent encoding streams**, therefore if you use these boards, you won't be able to record more than two H.264 files at the same time by using the NVIDIA hardware acceleration (see the table below):

NVIDIA Series	Number of Concurrent Encoding Streams
GeForce Series (GeForce 600 and newer), Quadro M600 Series	2
Quadro Series (M2000 and higher)	Unlimited

If you are going to use the multiple encoding (more than 2 streams) it is recommended to use the Maxwell or Pascal generation of GPU (recommended board is NVIDIA Quadro P1000 or higher); if you do not need more than two streams, you can use the modern GeForce Series (e.g. NVIDIA GTX 960).

After installing a dedicated graphics card, please disable the onboard graphics card (e.g. Matrox) using the Windows Device Manager > Display Adapters and selecting the "Disable device" option for that card.

Do not choose NVIDIA "RTX" series cards if you want to use GPU encoding (NVEnc) for Interlaced TV formats! All RTX (Turing family) NVIDIA cards do not support interlace field coding mode. Please, use Daniel2 GPU encoder, which not affected by this limitation.

If you use the older driver you may have an issue with NVIDIA encoding initialization, in this case you will have the corresponding message in the log file and encoding will fail.

1.5. Hardware Recommendations

The actual performance of a Capture server depends on the number of recording channels and streams and their resolution, source type and encoders used for capture for each channel, as well as various settings. Therefore, no precise hardware recommendation can be given; however you can find below the typical configurations which have been tested in our test-lab.

Cinegy products work only on machines with CPU supporting minimum instruction set SSE4.1, "Intel® AVX" is also required.

These system recommendations use older hardware which has been previously tested. The CPU's listed should be used as a guide to select modern equivalent options and not as direct requirements.

Configuration Sample – HD Capture Server

The following configurations have been proved for reliable multichannel capture of **eight HD** programs:

TV Format	HD 1920x1080i25
CPU, Mainboard	Dual Intel E5 2650 v2 (2,6 GHz), X79
RAM	32 GB
Input signal	HD SDI
Codecs	XDCAM HD 422 50 Mbs NVIDIA H.264 Apple ProRes 422
Preview stream	MPEG-2, downscaled to SD
Concurrent recordings	Up to 8 channels

TV Format	HD 1920x1080i25
CPU, Mainboard	Dual Intel E5-2630 v3 (2,4 GHz), X99
RAM	128 GB
Input signal	RTP Stream, MPEG-2 HD
Codecs	XDCAM HD 422 50 Mbs NVIDIA H.264 Apple ProRes 422
Preview stream	MPEG-2, downscaled to SD
Concurrent recordings	Up to 8 channels

Configuration Sample – Ultra HD Capture Server

The following configuration will be able to capture **Ultra HD** programs by using H.264 NVIDIA accelerated encoder or Apple ProRes 422:

TV Format	UHD 3840x2160 @ 25p
CPU, Mainboard	Dual Intel E5 2650 v2 (2,6 GHz), X79
RAM	32 GB
Input signal	HD SDI
Codecs	NVIDIA H.264 Apple ProRes 422
Preview stream	MPEG-2, downscaled to SD
Concurrent recordings	Up to 2 channels

TV Format	UHD 3840x2160 @ 25p
CPU, Mainboard	Intel I7-6700 (3,4 GHz), Z170
RAM	16 GB
Input signal	RTP H.264, 50 Mb/s*
Codecs	NVIDIA H.264
Preview stream	MPEG-2, downscaled to SD

TV Format	UHD 3840x2160 @ 25p
Concurrent recordings	1 channel

TV Format	UHD 3840x2160 @ 25p
CPU, Mainboard	Intel I7-6700 (3,4 GHz), Z170
RAM	16 GB
Input signal	RTP H.264, 50 Mb/s*
Codecs	Apple ProRes 422
Preview stream	–
Concurrent recordings	1 channel

** Due to the nature of H.264 codec, a higher base CPU frequency is more important than a higher CPU core number. For this reason, a minimum supported CPU frequency has to be at least 3,4 GHz to decode a UHD RTP H.264 stream properly (see the tables above).*