GRASS VALLEY, A BELDEN BRAND

Supported file formats for playback

For Vertigo XG and Intuition XG platforms

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Contents

Preface

The purpose of this document is to provide a guideline for the playback capabilities of the Vertigo graphics engine that is used in Vertigo XG and Intuition XG devices. It is important to note that these are general guidelines only. The only 100% sure way of validating that you are operating the system within its capabilities is to verify the performance status indicators on the XG device's output (see section on Using Statistics).

Supported Files for Playback

The file formats listed below are natively supported by all Vertigo graphics processors. This means that all of the listed formats can be played back on either a Vertigo XG or Intuition XG as long as the file meets the format requirements.

A format that is **not** listed below may or may not be suitable for playback on a Vertigo XG or Intuition XG. In general, file formats that are not natively supported will need to be transcoded on ingest. For example, .**MOV files** are NOT natively supported by Vertigo XG and Intuition XG devices, therefore they must be transcoded to MXF on ingest. Transcoding to VAF can only take place if the file has the following characteristics:

- An animation codec
- Single track multi-channel audio (24 bit, 48Khz)

VAF (Vertigo Animation Format)

VAF is a proprietary optimized format for the playout of animations with alpha on Vertigo XG and Intuition XG devices. Cell animations and .MOV (with alpha) content is converted to the VAF format on ingest.

MPEG2

- MPEG (IBP)
- Extension: (.mpg, .mpeg)
- Codec: MPEG2 (IBP)
- Recommended Bit Rate: SD@9Mbps; HD1080i@19-25Mbps
- Max. Bit Rate: 50Mbps
- Chroma subsampling: 4:2:2
- Audio Codec: MPEG Audio Layer 2/Layer 3/AAC (16 bit, 48Khz)
- Audio Tracks: Single
- Audio Channels: Stereo

- MPEG (I-Frame)
- Extension: (.mpg, .mpeg)
- Codec: MPEG2 (I-Frame)
- Max. Bit Rate: 50 Mbps
- Chroma subsampling: 4:2:2
- Audio Codec: MPEG Audio Layer 2/Layer 3/AAC (16bit, 48Khz)
- Audio Tracks: Single
- Audio Channels: Stereo

MXF-wrapped MPEG-2 is also supported, as long as the MPEG-2 clip meets the requirements listed above. Note that in MXF, only PCM (uncompressed) or AIFF audio is supported.

Cel Animation file formats

32 BIT UNCOMPRESSED files (i.e. bug_00001.tga to bug_09999.tga).

Both TGA sequences and .OXA files are supported by Vertigo XG and Intuition XG devices. However, we does not recommend the use of these formats natively. When ingesting these animation file types, you are given the option to convert to .VAF, or in some cases to .OXI with embedded VAF. Playout of .VAF or .OXI with embedded VAF ensures a better and more stable performance.

If for some reason a native TGA sequence or .OXA must be used, we recommend that the total file size of all combined TGA and OXA animations, on all layers both on-air and cued, does not exceed a total of 1GB. Exceeding this limit can cause dropped frames or other system failure.

.OXI animations

There are two types of .OXI files. The first is an .OXI as a wrapper for a TGA sequence. Note that for optimal performance, it is strongly recommended to transcode large .OXI files (e.g. files exceeding 250MB) to .VAF on ingest.

The second is an .OXI as a wrapper for both a TGA sequence and .VAF. For this file type see performance details for VAF (Vertigo Animation Format).

Note: OXI is a file format that was developed for full compatibility between the older Intuition+ platform and the newer Intuition XG. In these cases a single wrapper contains both the TGA sequence that will be used by the Intuition+ and the VAF that will be used by the Intuition XG. This “hybrid” file should only be used in mixed environments consisting of both the Intuition+ and Intuition XG.

Image file formats

Since the Vertigo Suite handles static image file format conversions, Vertigo XG and Intuition XG devices also support a number of image formats. For optimal results, however, we recommend that you use **TARGA (.TGA) 32 BIT UNCOMPRESSED.**

Vertigo XG and Intuition XG devices support the following image formats:

- JPEG (.jpg)
- Portable Network Graphics Format (.png)
- Truevision TARGA Format (.tga)
- Oxtel Image Format (.oxt)

Audio file formats

The Vertigo XG and Intuition XG passes embedded audio channels through with the video, while discrete audio is only available through the addition of the Vx-Audio-e option .
In addition, any audio processing, such as adding voice-overs, sounds, or audio ducks, also requires the Vx-Audio-e option.

Note: The Intuition-XG-e model does not offer the EAS discrete audio support described above.

Vertigo XG and Intuition XG devices support the following audio formats:

- WAV
- MP3
- AAC

- AIFF

Detailed specifications on device rendering and playback capabilities

The following section provides detailed specifications of what Vertigo XG and Intuition XG devices are certified to deliver in terms of graphics performance. Representative sets of (concurrent) capabilities are provided for each platform/configuration identified below.

Single Channel Scenario (1 input, 1 output*)

- **Up to 3 full screen VAF animations**, that can be divided into smaller animations.
  For example: 2 x full screen + 4 x quarter screen)
- **Up to 2 MPEG-2 clips** assuming no more than 1 full screen VAF is playing at the same time.
  - **1 long GOP or I-frame**, 17.5 to 50Mbps
  - **1 long GOP**, up to 27Mbps
- **One full screen of dynamically rendered animation & text**

The specifications listed above apply to the following processors:

- **Vx-Vertigo-XG-21-e**
- **Intuition-XG-e**
- **Intuition-XG-3U-e**

*An output may consist of a single HD-SDI signal or a pair of HD-SDI fill & key.

1.5 Channel Scenario (2 inputs, 1 output*)

No VAF animations

- **Up to 2 long GOP MPEG-2 clips**
  - **1 MPEG-2 clip,** 17.5 to 50Mbps
  - **1 MPEG-2 clip**, up to 27Mbps
- **One full screen of dynamically rendered animation & text**

Mix of VAF animations and MPEG-2 clips

- **1 full screen VAF animation**
- **1 long GOP MPEG-2 clip**, 17.5 to 50Mbps
- **One full screen of dynamically rendered animation & text**

VAF animations only (no MPEG-2 clips)

- **Up to 2 full screen and 1 half screen VAF animations**, that can be divided into smaller animations.
  For example: 1 x full screen + 6 x quarter screen or 10 x quarter screen.
- **One full screen of dynamically rendered animation & text**

The specifications listed above apply to the following processors: **Vx-Vertigo-XG-21-e**

*An output may consist of a single HD-SDI signal or a pair of HD-SDI fill & key.

Dual Channel* Scenario (2 inputs, 2 outputs)

2 HD channels **or** 1 HD + 1 SD channels

- **Up to 2 full screen VAF animations**, that can be divided into smaller animations.
  For example: 1 x full screen + 4 x quarter screen)
- **One MPEG-2 clip (HD MXF, long GOP 422, up to 50Mbps),** assuming no more than 1 full screen VAF is playing at the same time.
- **One full screen of dynamically rendered animation & text**

Note regarding support of MPEG-2 clips: the clip **MUST** be MXF, long GOP using 4:2:2 profile

The specifications listed above apply to the following processors:

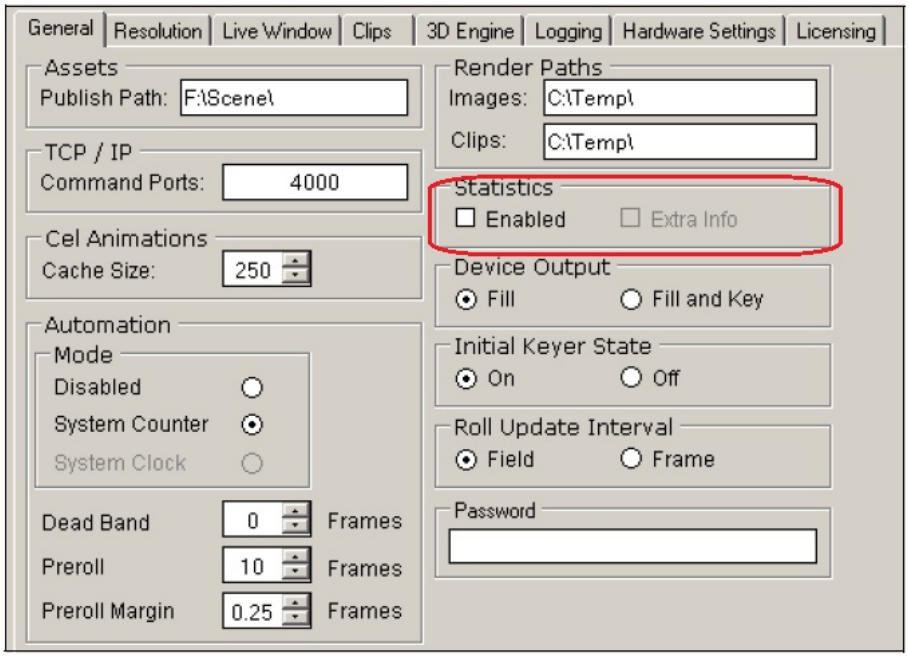
- **VX-Vertigo-XG22-e**
- **Intuition-XG-DUAL-e**

* Note that a channel refers to one input + one output, where an output may consist of a single HD-SDI signal or a pair of HD-SDI fill & key.

Using Statistics

System performance can be measured by enabling statistics, which will be displayed as overlays on the Vertigo XG or Intuition XG's video output.

To enable statistics monitoring, select the **Enabled** and **Extra Info** check boxes on the Vertigo Dashboard's **General** tab. For more information on accessing and using the Dashboard, please refer to the Vertigo XG or Intuition XG Configuration Guides.



When enabled, the statistics will be visible on the video output of the Vertigo XG or Intuition XG:

- **Fps**: frame per seconds. Normally, this should match the frame rate of the video signal that is going through the Vertigo XG or Intuition XG (typically 59.94, 50, 29.97, 25).
- **Memory**: This indicates the memory usage of the Vertigo XG or Intuition XG. A value approaching or reaching the physical memory limit may be an indication of potential performance degradation.
- **DX9, DSX and readback timings**: Timings approaching the "red" region on the far right may be an indication of potential performance degradation.

We strongly recommend that tests be conducted before on-air deployment, especially if graphics requirements are expected to be near the specifications provided in the previous section.

Appendix A – On-air capabilities of sample single-channel configurations

The following tables are examples of possible single-channel configurations for Vertigo XG or Intuition XG devices. Each table summarizes the on-air capabilities of the device for that specific configuration.

	Keying Layer (DSK)	Full screen MPEG2 playback	¼ screen snipe – Targa sequence .VAF (1920 x 270)	Static logo – "Coming Up Next" type of graphic (500 x 300)
Full screen playback, with a snipe and a static logo on top	1	**YES**	NO	NO
	2	NO	**YES**	NO
	3	NO	NO	**YES**
Extended use capabilities	4	NO	¼ screen snipe **or** Static logo	
	5	NO	¼ screen snipe **or** Static logo	
	6	NO	¼ screen snipe **or** Static logo	
	7	NO	¼ screen snipe **or** Static logo	
	8	NO	¼ screen snipe **or** Static logo	

Table 1 – Full screen playback, with a snipe and a static logo on top

	Keying Layer (DSK)	Animated Targa sequence .VAF – up to 1/3 of screen area (1920 x 360)	¼ screen snipe – Targa sequence .VAF (1920 x 270)	Static logo – "Coming Up Next" type of graphic (500 x 300)
Animated logo (up to 1/3 of screen area) with snipes and a static logo on top	1	**YES**	-	-
	2	NO	**YES**	-
	3	NO	NO	**YES**
Extended use capabilities	4	**YES**	¼ screen snipe **or** Static logo	
	5	**YES**	¼ screen snipe **or** Static logo	
	6	NO	¼ screen snipe **or** Static logo	
	7	NO	¼ screen snipe **or** Static logo	
	8	NO	¼ screen snipe **or** Static logo	

Table 2 – Animated logo (up to 1/3 of screen area) with snipes and a static logo on top

	Keying Layer (DSK)	Full screen static image	Up to 1/3 of screen snipe – animated Targa sequence .VAF (1920 x 360)	Static logo – "Coming Up Next" type of graphic (500 x 300)
Full screen static image, with an animated sequence and a static logo	1	**YES**	-	-
	2	NO	**YES**	-
	3	NO	NO	**YES**
Extended use capabilities	4	NO	1/3 screen snipe **or** Static logo	
	5	NO	1/3 screen snipe **or** Static logo	
	6	NO	1/3 screen snipe **or** Static logo	
	7	NO	1/3 screen snipe **or** Static logo	
	8	NO	1/3 screen snipe **or** Static logo	

Table 3 – Full screen static image, with an animated sequence (up to 1/3 of screen area) and a static logo on top

	Keying Layer (DSK)	Full screen static image	¼ screen snipe – Targa sequence .VAF (1920 x 270)	Static logo – "Coming Up Next" type of graphic (500 x 300)
Full screen static image	1	**YES**	-	-
Extended use capabilities	2	NO	¼ screen snipe **or** Static logo	
	3	NO	¼ screen snipe **or** Static logo	
	4	NO	¼ screen snipe **or** Static logo	
	5	NO	¼ screen snipe **or** Static logo	
	6	NO	¼ screen snipe **or** Static logo	
	7	NO	¼ screen snipe **or** Static logo	
	8	NO	¼ screen snipe **or** Static logo	

Table 4 – Full screen static image with animated snipes on additional layers.
Several snipes can be run at once in this scenario, plus additional small logos

Note: All of the guidelines specified in the four tables above assume that all TGA sequences will be ingested as **VAF** (Vertigo Animation Format). Converting the TGA sequences to VAF on ingest ensures optimal playback performance. Also note that backwards compatibility with legacy .OXI format is maintained.