Viz Engine
Driver Reference Guide
Product Version 2.8

Technical Support

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Contents

1 Introduction

This guide is a driver reference guide for Viz 2, and gives an overview of the video and graphics drivers supported by the Viz 2.x versions. In additon you will also find some procedures on how to install and maintain video and graphics hardware and software (i.e. drivers).

1.1 Document Structure

Chapter 2 gives an overview of the supported video cards, how to install them, what driver versions are supported and so on.

Chapter 3 gives an overview of the supported graphics cards, how to configure them, what driver versions are supported and so on.

Chapter 4 lists an extensive glossary with simple and to the point explanation of key words and acronyms referenced throughout the document.

1.2 Related Documents

- *Viz Artist User's Guide* – information on how to install Viz Engine and create graphics scenes in Viz Artist.
- *Viz Artist Script reference* – information on how to create scripts for a scene.
- *Viz Engine Plug-in SDK reference* – information on how to create a customized Viz plug-in.

1.3 Contact Vizrt

We encourage your suggestions and feedback regarding the product and this documentation. Our support E-mail address is support@vizrt.com. You are also welcome to use the web-based support at www.vizrt.com, or to contact your local Vizrt support person by telephone.

2 Graphics Card Reference

This chapter describes how To configure NVIDIA driver settings, and in addition gives an overview of the different cards and driver versions that are supported by Viz 2.

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IMPORTANT! Any other setup than those described is not guaranteed to be supported by Viz and may cause problems during operation.

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Note: Vizrt may make changes to specifications and product descriptions at any time, so please refer to an updated document version every time a new version of Viz is installed.

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This section contains information on the following topics:

- Driver Installation and Recommendation

2.1 Driver Installation and Recommendation

This section describes how To configure NVIDIA driver settings, and in addition gives an overview of the different card and driver versions that are supported by Viz.

This section contains information on the following topics:

- Driver Installation
- Driver Recommendations

2.1.1 Driver Installation

This section contains information on the following procedures:

- To configure NVIDIA driver settings
- To configure the v-phase settings when synchronizing the card

To configure NVIDIA driver settings

Figure 1: NVIDIA Control Panel, Desktop context menu
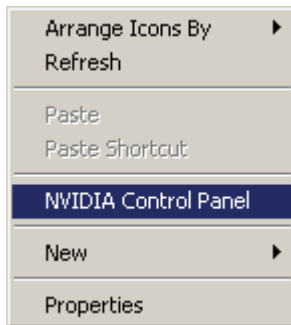
1. Right-click the desktop and select the **NVIDIA Control Panel** option on the appearing context menu

Figure 2: Advanced Settings, NVIDIA Control Panel
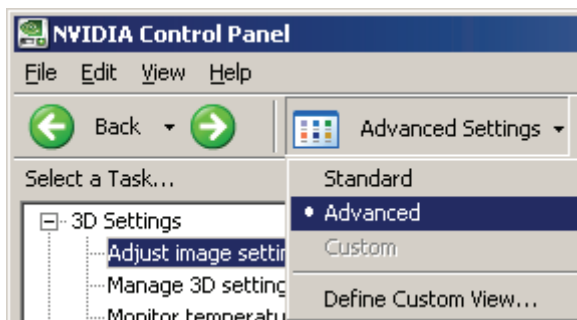
2. Set the NVIDIA Control Panel view option to **Advanced**
3. From the **Select a Task ...** tree view select **Adjust image settings with preview** to display the **Adjust Image Settings with Preview** in the right-hand pane

Figure 3: Adjust Image Settings with Preview, NVIDIA Control Panel
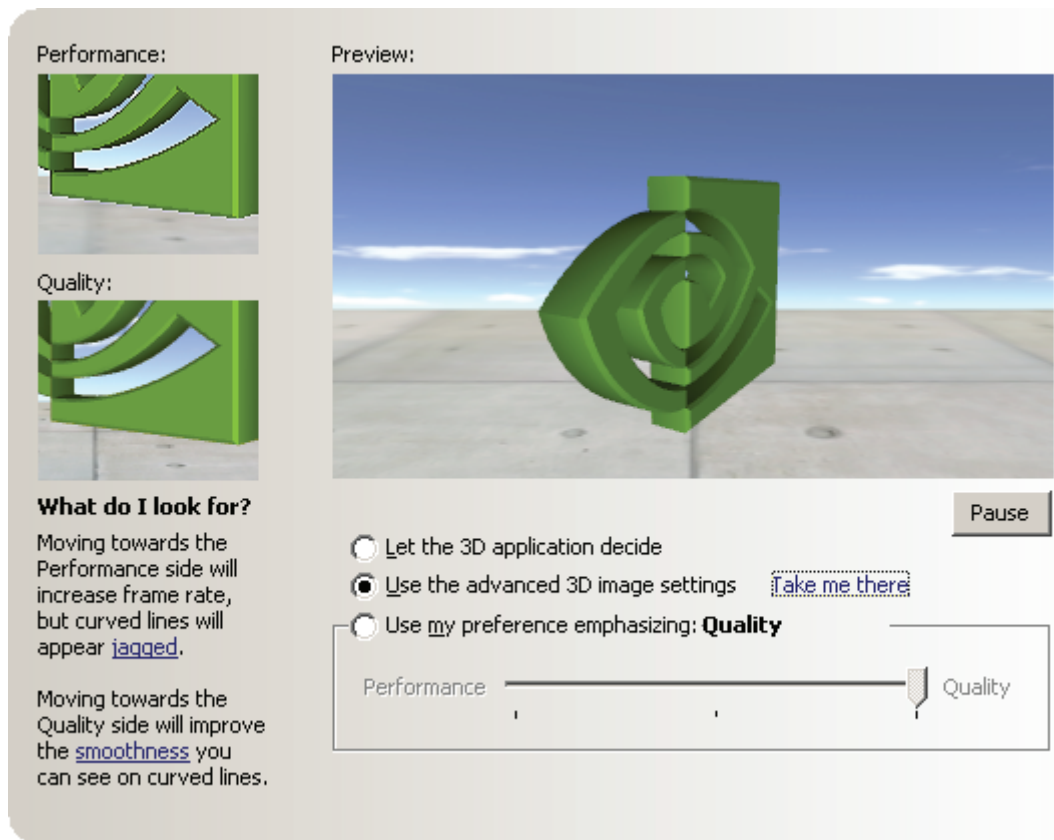
4. Select the **Use the advanced 3D image settings** option and click the **Take me there** link

5. Under **Global Settings** select the global preset option **Base profile**, and set the following parameters:
   - **Anisotropic filtering** – Application controlled
   - **Antialiasing–Gamma correction** – Off
   - **Antialiasing–Mode** – Override any application settings
   - **Antialiasing–Setting** – 4x (4xMS)
   - **Antialiasing–Transparency** – Off
   - **Vertical Sync** – Force off (see below for more)

Regarding *Vertical Sync*:
   - **Use the 3D application setting** for Viz installations (running in Standard PC (VGA) mode) and for Viz Video Wall setups where video is in use.
   - **Force Off** is used for Viz installations where video is in use (unless used for video walls).
   - **Unified Back Buffer** must be disabled (Off) in any case. Note that this depends on the driver version used. Most recent drivers from NVIDIA already have this setting disabled.

For Quadro FX 4000 SDI, FX 4500 SDI, and FX 5500 SDI you may need to set `use_old_nvsdk` to `1` in the Viz configuration file if you encounter stability issues on unsupported systems.

To configure the v-phase settings when synchronizing the card

1. Start **Viz Config**, or open the configuration from Viz Artist (Config button in the upper right corner)
2. Select the **Video Output** section
3. When using an NVIDIA SDI output option and synchronize on blackburst, use the following v-phase settings:
   - PAL: 606
   - NTSC: 509
   - 720p50: 743
   - 720p60: *not supported*
   - 720p60M: 736
   - 1080i50: 1113
   - 1080i60M: 1113

4. When synchronizing with SDI, leave the v-phase to 0

2.1.2   Driver Recommendations

NVIDIA driver 259.12 is recommended for most graphics cards on workstations.

For standard PC versions on laptops the NVIDIA notebook driver 176.87 is recommended.

The NVIDIA driver 91.36 is recommended for video wall setups with G-Sync boards and graphics cards FX5500, FX4500 or earlier to enable a stable clock on all machines. For later graphics cards the driver 259.12 is recommended.

See Also

- NVIDIA Quadro FX1400
- NVIDIA Quadro FX1500
- NVIDIA Quadro FX1700
- NVIDIA Quadro FX3400
- NVIDIA Quadro FX3700
- NVIDIA Quadro FX3800
- NVIDIA Quadro FX3800 SDI
- NVIDIA Quadro 4000
- NVIDIA Quadro FX4000
- NVIDIA Quadro FX4000 SDI
- NVIDIA Quadro FX4500
- NVIDIA Quadro FX4500 SDI
- NVIDIA Quadro FX4600
- NVIDIA Quadro FX4600 SDI
- NVIDIA Quadro FX4800
- NVIDIA Quadro FX4800 SDI
- NVIDIA Quadro 5000
- NVIDIA Quadro FX5500
- NVIDIA Quadro FX5500 SDI
- NVIDIA Quadro FX5600
- NVIDIA Quadro FX5600 SDI

- NVIDIA Quadro FX5800
- NVIDIA Quadro 6000

2.2   NVIDIA Quadro FX1400

Typically used with Viz Trio or Viz Weather clients on HP xw4200 and xw4300.
- **Interface** – PCIe
- **Operating System** – Microsoft Windows XP SP2

Configuration History

- **Driver** – 81.67
    - **Introduced** – February 2006
    - **Viz 2.x** – 2.8 pl1 hf4

- Driver – 71.84
    - Viz 2.x – 2.8

- Driver – 67.22
    - Viz 2.x – 2.7 pl5 – 2.7 pl6 hf2/3. Behaves very well in terms of stability and performance. No known issues.

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.3   NVIDIA Quadro FX1500

Typically used with Viz Trio or Viz Weather clients on HP xw4400.
- **Interface** – PCIe
- **Operating System** – Microsoft Windows XP SP2

Configuration History

- **Driver** – 162.62
    - **Introduced** – October 2006
    - **Viz 2.x** – 2.8 pl4 – 2.8 pl4 hf1

- Driver – 91.36
    - Viz 2.x – 2.8 pl2 and later. Disable anisotropic filtering, set antialising to x4, and use NVIDIA® profile "Vizrt" (in NVIDIA configuration dialogs).

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.4   NVIDIA Quadro FX1700

Typically used with Viz Trio, Viz Content Pilot or Viz Weather clients on HP
xw4600.
- **Interface** – PCIe
- **Operating System** – Microsoft Windows XP SP2

Configuration History

- **Driver** – 162.62
  - **Introduced** – February 2008
  - **Viz 2.x** – 2.8 pl4 hf1

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.5   NVIDIA Quadro FX1800

Typically used with Viz Trio, Viz Content Pilot or Viz Weather clients on HP Z400.
- **Interface** – PCIe
- **Operating System** – Microsoft Windows XP SP3

Configuration History

- **Driver** – 182.67
  - **Introduced** – May 2009
  - **Viz 2.x** – 2.8 pl5 hf3 and later

- Driver – 165.42
  - Viz 2.x – 2.8 pl5 hf3

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.6   NVIDIA Quadro FX3400

Typically used with *older* Viz systems based on HP xw8200.
- **Interface** – PCIe
- **Operating System** – Microsoft Windows XP SP2

Configuration History

- **Driver** – 165.42
  - **Viz 2.x** – 2.8 pl5 hf3 and later

- Driver – 81.67

- Introduced – February 2006
- Viz 2.x – 2.8 pl1 hf4

- Driver – 71.84
  - Viz 2.x – 2.8

- Driver – 67.22
  - Viz 2.x – 2.7 pl5 – 2.7 pl6 hf2/3. Behaves very well in terms of stability and performance. No known issues.

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.7 NVIDIA Quadro FX3700

Typically used with HD Viz systems based on HP xw8600.
- **Interface** – PCIe
- **Operating System** – Microsoft Windows XP SP2

Configuration History

- **Driver** – 169.96
  - **Introduced** – July 2008
  - **Viz 2.x** – 2.8 pl5 hf8 or later

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.8 NVIDIA Quadro FX3800

Typically used with HD Viz systems based on HP Z800.
- **Interface** – PCIe
- **Operating System** – Microsoft Windows XP SP3

Configuration History

- **Driver** – 259.12 or 182.67
  - **Viz 2.x** – 2.8 pl5 hf3 and later

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.9 NVIDIA Quadro FX3800 SDI

Typically used with HD Viz systems based on HP Z800.
- **Interface** – PCIe
- **Operating System** – Microsoft Windows XP SP3

Configuration History

- **Driver** – 259.12 or 182.67
  - **Viz 2.x** – 2.8 pl5 hf17 and later

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.10 NVIDIA Quadro 4000

Configuration History

- **Driver** – 259.12
  - **Viz 2.x** – 2.8 pl5 hf19

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.11 NVIDIA Quadro FX4000

Typically used with *older* Viz systems based on IBM Z-Pro 6221.
- **Interface** – AGPx8
- **Operating System** – Microsoft Windows 2000 Professional SP4

Configuration History

- **Driver** – 182.67
  - **Introduced** – May 2009
  - **Viz 2.x** – 2.8 pl5 hf13 or later

- Driver – 83.62
  - Introduced – November 2006
  - Viz 2.x – 2.8 pl2 hf5

- Driver – 81.67
  - Viz 2.x – 2.8 pl1 hf4 and later. Disable anisotropic filtering, set antialising to x4, and use NVIDIA® profile "Vizrt" (in NVIDIA configuration dialogs).

- Driver – 71.84
  - Viz 2.x – 2.8

- Driver – 67.22
  - Viz 2.x – 2.7 pl5 – 2.7 pl6 hf2/3. Behaves very well in terms of stability and performance. No known issues.

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.12   NVIDIA Quadro FX4000 SDI

Typically used with *older* HD Viz systems based on IBM Z-Pro 6221.
- **Interface** – AGPx8
- **Operating System** – Microsoft Windows 2000 Professional SP4 and XP SP2

Configuration History

- **Driver** – 165.42
  - **Viz 2.x** – 2.8 pl5 hf3 and later

- Driver – 83.62
  - Introduced – November 2006
  - Viz 2.x – 2.8 pl2 hf5

- Driver – 77.56
  - Viz 2.x – 2.8 pl1 hf6 and before. Disable anisotropic filtering, set antialising to OFF, and use NVIDIA® profile "Vizrt" (in NVIDIA configuration dialogs). There are known issues regarding shader plug-ins, like wrong colors or bad pixels.

- Driver – 71.84
  - Viz 2.x – 2.8

- Driver – 67.22
  - Viz 2.x – 2.7 pl5 – 2.7 pl6 hf2/3. Behaves very well in terms of stability and performance. No known issues.

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.13   NVIDIA Quadro FX4500

Typically used with Viz systems based on HP xw8200, xw8400 or IBM Z-Pro 6223.

- **Interface** – PCIe
- **Operating System** – Microsoft Windows XP SP2

Configuration History

- **Driver –** 165.42
  - **Viz 2.x –** 2.8 pl5 hf3 and later

- Driver – 83.62
  - Introduced – November 2006
  - Viz 2.x – 2.8 pl2 hf5

- Driver – 81.67
  - Viz 2.x – 2.8 pl1 hf4 and later. Disable anisotropic filtering, set antialising to x4, and use NVIDIA® profile "Vizrt" (in NVIDIA configuration dialogs).

- Driver – 71.84
  - Viz 2.x – 2.8

- Driver – 67.22
  - Viz 2.x – 2.7 pl5 – 2.7 pl6 hf2/3. Behaves very well in terms of stability and performance. No known issues.

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.14   NVIDIA Quadro FX4500 SDI

Typically used with HD Viz systems based on HP xw8200, xw8400 or IBM Z-Pro 6223.

- **Interface –** PCIe
- **Operating System –** Microsoft Windows XP SP2

Configuration History

- **Driver –** 162.62
  - **Viz 2.x –** 2.8 pl5 hf3 and later

- Driver – 83.62
  - Introduced – November 2006
  - Viz 2.x – 2.8 pl2 hf5

- Driver – 77.56
  - Viz 2.x – 2.8 pl1 hf6 and before. Disable anisotropic filtering, set antialising to OFF, and use NVIDIA® profile "Vizrt" (in NVIDIA configuration dialogs). There are known issues regarding shader plug-ins, like wrong colors or bad pixels.

- Driver – 71.84
  - Viz 2.x – 2.8

- Driver – 67.22

- Viz 2.x – 2.7 pl5 – 2.7 pl6 hf2/3. Behaves very well in terms of stability and performance. No known issues.

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.15 NVIDIA Quadro FX4600

Typically used with HD Viz systems based on HP xw8400 or IBM Z-Pro 9228.

- **Interface** – PCIe
- **Operating System** – Microsoft Windows XP SP2

Configuration History

- **Driver** – 259.12 or 182.67
  - **Viz 2.x** – 2.8 pl5 hf7 and later

- Driver – 165.42
  - Viz 2.x – 2.8 pl5 hf3 and later

- Driver – 162.62
  - Introduced – October 2007
  - Viz 2.x – 2.8 pl4 and later

- Driver – 97.78
  - Viz 2.x – 2.8 pl3 hf2 – 2.8 pl3 hf6. Tests was performed on a special pre-release version of this board for R&D. Antialiasing in Viz render window may be slightly worse than used from older drivers, not compatible with this hardware. Video out does not seem to be influenced. New NVIDIA control panel accessible from Windows control panel. During installation the driver will suggest to copy itself to folder 91.85. This is a bug in the NVIDIA driver installer. After installation the device will correctly recognize the driver with version 97.78 so it is recommended to rename the folder during installation in order to distinguish the two.

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.16 NVIDIA Quadro FX4600 SDI

Typically used with HD Viz systems based on HP xw8400 and xw8600.

- **Interface** – PCIe
- **Operating System** – Microsoft Windows XP SP2

Configuration History

- **Driver** – 165.42
  - **Introduced** – October 2007
  - **Viz 2.x** – 2.8 pl5

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.17　NVIDIA Quadro FX4800

Typically used with HD Viz systems based on HP Z800.

- **Interface** – PCIe
- **Operating System** – Microsoft Windows XP SP3

Configuration History

- **Driver** – 259.12 or 182.67
  - **Viz 2.x** – 2.8 pl5 hf7 and later

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.18　NVIDIA Quadro FX4800 SDI

Typically used with HD Viz systems based on HP Z800.

- **Interface** – PCIe
- **Operating System** – Microsoft Windows XP SP3

Configuration History

- **Driver** – 259.12 or 182.67
  - **Viz 2.x** – 2.8 pl5 hf17 and later

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.19   NVIDIA Quadro 5000

Configuration History

- **Driver** – 259.12
  - **Viz 2.x** – 2.8 pl5 hf19

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.20   NVIDIA Quadro FX5500

Typically used with HD Viz systems based on HP xw8400 or IBM Z-Pro 9228.

- **Interface** – PCIe
- **Operating System** – Microsoft Windows XP SP2

Configuration History

- **Driver** – 162.62
  - **Introduced** – October 2007
  - **Viz 2.x** – 2.8 pl4

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.21   NVIDIA Quadro FX5500 SDI

Typically used with HD Viz systems based on HP xw8400 or IBM Z-Pro 9228.

- **Interface** – PCIe
- **Operating System** – Microsoft Windows XP SP2

Configuration History

- **Driver** – 165.42
  - **Introduced** – October 2007
  - **Viz 2.x** – 2.8 pl4

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.22   NVIDIA Quadro FX5600

Typically used with HD Viz systems based on HP xw8400 and xw8600.

- **Interface** – PCIe
- **Operating System** – Microsoft Windows XP SP2

Configuration History

- **Driver** – 259.12 or 182.67
  - **Viz 2.x** – 2.8 pl5 hf7 and later

- Driver – 162.62
  - Introduced – October 2007
  - Viz 2.x – 2.8 pl4 and later

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.23   NVIDIA Quadro FX5600 SDI

Typically used with HD Viz systems based on HP xw8400 and xw8600.

- **Interface** – PCIe
- **Operating System** – Microsoft Windows XP SP2

Configuration History

- **Driver** – 165.42
  - **Introduced** – October 2007
  - **Viz 2.x** – 2.8 pl4 and later

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

2.24   NVIDIA Quadro FX5800

Configuration History

- **Driver** – 259.12 or 182.67
  - **Viz 2.x** – 2.8 pl5 hf7 and later

See Also

- To configure NVIDIA driver settings

- Release notes for recommended and supported hardware versions

2.25   NVIDIA Quadro 6000

Configuration History

- **Driver** – 259.12
    - **Viz 2.x** – 2.8 pl5 hf19

See Also

- To configure NVIDIA driver settings
- Release notes for recommended and supported hardware versions

3 Video Card Reference

This chapter describes the video cards supported by Viz 2.

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IMPORTANT! Any other setup than those described is not guaranteed to be supported by Viz and may cause problems during operation.

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Note: Vizrt may make changes to specifications and product descriptions at any time, so please refer to an updated document version every time a new version of Viz is installed.

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This section contains information on the following topics:

- BlueFish444 SD Lite Pro Express
- Matrox X.mio
- Legacy Video Cards

3.1   BlueFish444 SD Lite Pro Express

Figure 4: BlueFish444 SD Lite Pro Express
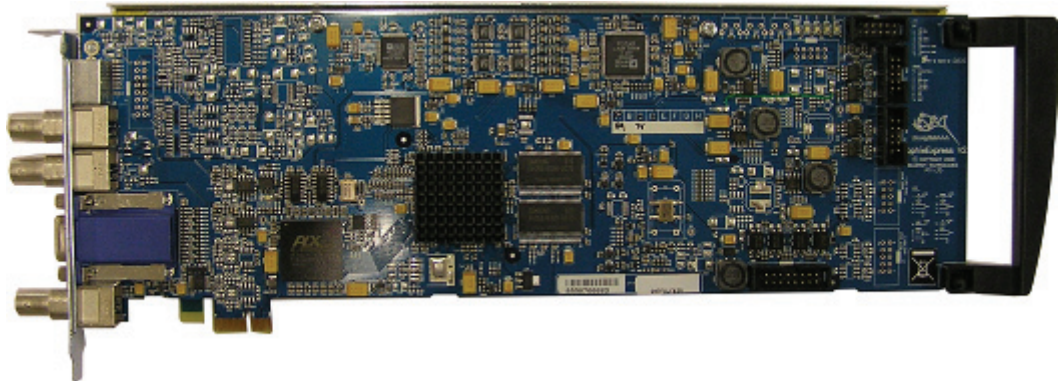
Viz 2 currently support two types of BlueFish444 cards in addition to the SD Lite Pro Express; The two older cards BlueFish444 Iridium|SD and the Digital Voodoo DeepBlue LT card.

BlueFish444 SD Lite Pro Express is the most recent BlueFish444 card supported by Vizrt, providing Fill, Key and GenLock connectors, and is the successor of the BlueFish444 Iridium|SD and the Digital Voodoo DeepBlue LT.

The card is mostly used with Viz Trio-NV which basically is a system with the ability to run a Viz Trio client with local preview and video output on a single machine; hence, there is no video input or video playback support as with the Matrox X.mio. The local preview can render a different scene than the one being output on video. The card is typically seen on HP xw4600.

This section contains information on the following topics:

- Connectors
- Driver Installation

3.1.1   Connectors

Figure 5: BNC Connectors, BlueFish444 SD Lite Pro Express
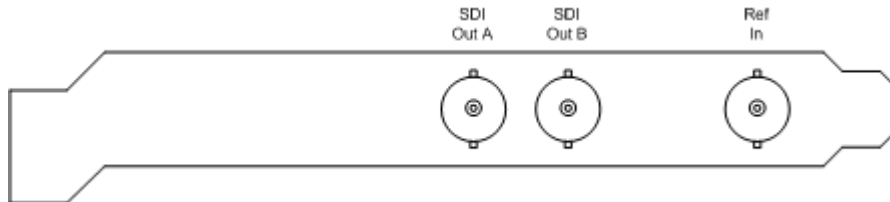
The BNC connectors from left to right are:
- **SDI Out A (Fill)** – SDI 4:2:2/4:4:4/Video
- **SDI Out B (Key)** – SDI 4:2:2/4:4:4/Video
- **Ref In** – Analog GenLock input

3.1.2   Driver Installation

Use the driver version available on Vizrt's FTP server in order to ensure proper functionality and ring buffer support.

- **Driver** – Bluefish444 v5.7.6
  - **Viz 2.x** – 2.8 pl5hf3 and later

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Note: Viz 2.x video version must be manually installed.

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3.2   Matrox X.mio

The Matrox X.mio is used as Vizrt's HD and SD multi-channel video- and audio I/O solution, replacing the Pinnacle Targa 3200 on Viz 2.8 installations.

Matrox is a registered trademark and Matrox DSX are trademarks of Matrox Electronic Systems Ltd.

This section contains information on the following topics:

- Connectors
- Codec Support
- Video Card Installation
- Driver Installation
- Watchdog
- Licensing

3.2.1   Connectors

The connectors for Matrox X.mio are:
- 133 MHz PCI-X card compliant to PCI-X standards 1.0b and 2.0
- x2 SDI Video Inputs in SD and HD

- x4 In / x8 Out, balanced XLR AES/EBU audio
- x8 Embedded Audio I/O Channels per SDI Stream

Because of the large number of I/O connections the card is equipped with Sub-D connectors instead of regular BNC plugs. A breakout-cable translating the Sub-D connectors to regular BNC plugs is included for every machine.

This section contains information on the following topics:

- Breakout box
- Cable wiring
- Audio configuration
- Audio-extension card

Breakout box

Figure 6: Matrox X.mio breakout box

The Matrox X.mio breakout box is the often used for Viz Engine solutions that needs to be rewired in regular intervals. The 1U Rack unit chassis is designed to fit into a standard 19" rack.

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Note: The parts and tools required to mount the box into a rack are not included.
- -

Figure 7: Video signal connector

The above image depicts the connector responsible for transmitting any video related signals to and from the Matrox X.mio card.

Figure 8: Video connectors for Matrox X.mio
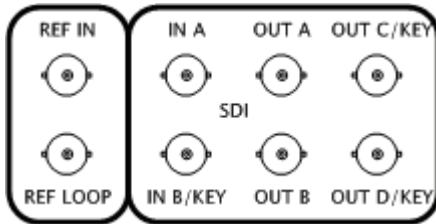
The front panel of the Matrox X.mio breakout box provides the user with 8 standard BNC connectors.

- x2 HD/SD SDI In
- x4 HD/SD SDI Out
- x1 Analogue Ref In
- x1 Analogue Ref Loop

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IMPORTANT! When using the Ref. In connector on the Matrox card for synchronization, the Ref. Out Loop connector must be terminated with a 75 Ohm resistor unless it is being used to loop an incoming GenLock signal.

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The front side of the breakout box also hosts the various audio in- and outputs offered by Matrox X.mio.

Figure 9: Audio connectors for Matrox X.mio
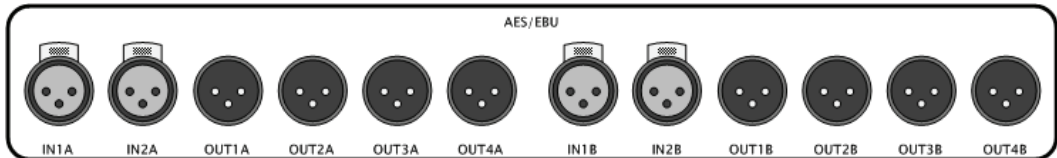
On the Matrox X.mio breakout box, each of the two audio bays, A and B, consists of two female AES/EBU audio input channels and of four male AES/EBU audio output channels.

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Note: Bay cables are not included.

- -

On the backside of the breakout box there are two connectors labeled AUDIO-A and AUDIO-B. The included cables are used to connect the corresponding plugs of the Matrox X.mio Audio-extension card to the computer.

Cable wiring

The Viz Engine can either be High Definition (HD) or Standard Definition (SD). Connect the relevant video input(s) and output(s), and the synchronization signal(s).

SDI Out connections are only relevant when the Matrox card is used for SDI In and Out.

A reference signal can be attached to the reference input connector (Analog Ref. In) which can be fed with any analogue GenLock signal such as a Blackburst signal or a Tri-level sync as required.

If you are relaying the reference signal (for synchronization) from Matrox to a graphics card (e.g. NVIDIA) you must verify that all internal connections between the graphics card and its SDI extension are OK and that the extension is properly supplied with power.

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IMPORTANT! When using the Ref. In connector on the Matrox card for synchronization, the Ref. Out Loop connector must be terminated with a 75 Ohm resistor unless it is being used to loop an incoming GenLock signal.

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Audio configuration

This section contains information on the following topics:

- AES Input Cable Assignment
- AES Output Cable Assignment

Table 1: AES Input Cable Assignment

Viz audio config	AES Cable	Matrox Video Channel
2 tracks	A IN 1	Video IN A
	B IN 1	Video IN B
4 tracks	A IN 1+2	Video IN A
	B IN 1+2	Video IN B

Table 2: AES Output Cable Assignment

Viz audio config	AES Cable	Matrox Audio Channel
2 tracks	A OUT 1	Audio OUT 0
	A OUT 3	Audio OUT 1
4 tracks	A OUT 1+2	Audio OUT 0
	A OUT 3+4	Audio OUT 1

Audio-extension card

Figure 10: Matrox audio-extension card
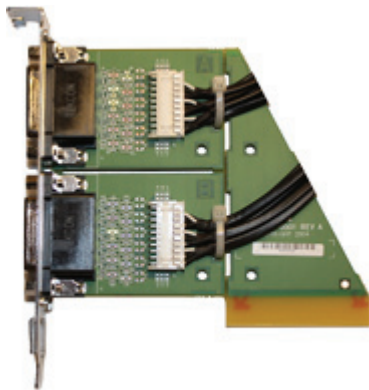
The audio-extension card needs to be installed when AES/EBU audio support is required. The card is only an extension for the connectors, and does not provide any extra functionality. For installations that require embedded audio, or no audio at all, this extension is not required.

- -
IMPORTANT! The Matrox audio-extension board only supports digital audio.
- -

By default the audio-extension card will consume one additional free slot on the motherboard. The card is supplied by the Matrox X.mio card in terms of power and data.

In some cases the design of the audio-extension card (see Matrox audio-extension card) makes it hard to mount it at a location with an underlying PCIe slot. Therefore it is an option To remove the audio-extension card back-end instead of using another PCI or PCI-X slot. However, it is in most cases possible to mount the extension card in any slot in the machine, unrelated to the underlying slot's design, without removing its back-end.

Removing the back-end of the extension card will free any connection to the motherboard. As a result it may react more sensitively to transportation and tension introduced by the external audio cables connected to it. Therefore, the above-mentioned procedure should only be applied to machines residing in stable environment like a dedicated machine room. Do not apply these instructions to machines intended to be used for OB or equipment that will be moved around a lot.

See Also

- Video Card Installation
    - To connect the audio-extension card to the video card
    - To remove the audio-extension card back-end

- Codec Support

3.2.2   Codec Support

Similar to the Pinnacle Targa 3200, the Matrox X.mio supports a selection of different codecs for both SD and HD.

- DVCAM (4:2:0), DVCPRO (4:1:1), and DVCPRO 50 (4:2:2)
- MPEG-2 I-frame YUV (4:2:2)
- IMX in an .MXF file wrapper: D10 (SD), D12 (HD)

Note: The codecs listed above are only a subset of currently implemented functionality in Viz Engine, while the video cards are capable of dealing with many other codecs.

All codecs are implemented in software. Matrox uses the card itself as a kind of dongle for the software codecs, therefore certain codecs require certain card classes as follows:
- 6000 class = SD codecs only. No D10.
- 8000 class= same as 6000 + HD codecs and D10, D12.

The Matrox X.mio 24/6000 card, including all SD codecs except D10/D12, is Vizrt's standard card for Viz 2.8. This model can be upgraded to any higher model-class by performing a license upgrade.

See Also

- Licensing

Differences to Targa

The Matrox X.mio is capable of playing all DV25, DV50 or MPEG-2 and AVI (v.2.0) clips as known from Pinnacle Targa 3200. However, it cannot play raw .DIF or .DV files. Even the Matrox X.mio 8000 class is unable to deal with IMX/D10 files in an AVI (v.2.0) wrapper as was the case with the IMX Targa. For IMX/D10 the Matrox X.mio makes use of an MXF file wrapper, therefore clips need to be converted from AVI (v.2.0) to MXF when taking account of IMX.

3.2.3   Video Card Installation

Installing a video or an audio-extension card is under normal circumstances not necessary as all components are pre-installed on all new systems with the latest driver versions; however, for maintenance or upgrade issues it is important to know how to do the installation for the different models.

This section contains information on the following procedures:

- To install Martox X.mio in an HP xw8600
- To install Matrox X.mio in an HP xw8400
- To install Matrox X.mio in an HP xw8200
- To verify the video card installation
- To replace a video card
- To connect the audio-extension card to the video card
- To remove the audio-extension card back-end

To install Martox X.mio in an HP xw8600

Figure 11: PCI, PCIe and PCI-X slots, HP xw8600
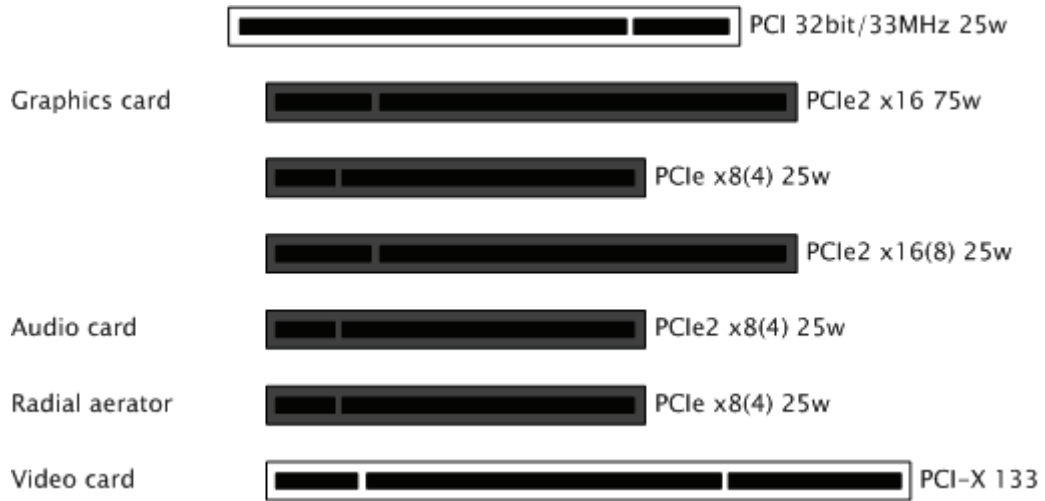
1. Disconnect the power and all other peripherals.
2. Before touching any components make sure you use an anti-static wrist strap to prevent electrostatic discharge.
3. Insert the graphics card in the PCIe slot number 2 from the top.
4. Insert the Matrox video card into the PCIe slot number 7 from the top.
5. Insert a powerful radial-aerator into the PCIe slot number 6 from the top.
6. *Optional:* Insert the Audio-extension card into the PCI-X slot number 5 from the top.

- -

Note: A radial-aerator is mandatory as the video card reaches high temperatures during operation.

- -

To install Matrox X.mio in an HP xw8400

Figure 12: SATA plug, HP xw8400

1. Disconnect the power and all other peripherals.
2. Before touching any components make sure you use an anti-static wrist strap to prevent electrostatic discharge.
3. Before mounting the video card, the SATA connector originally connected to the SATA port 0 needs to be reconnected to SATA port 1 in order to make room for the video card.

Figure 13: PCI, PCIe and PCI–X slots, HP xw8400

- PCI 32bit/33MHz 25w
- Graphics card — PCIe x16 25w
- PCIe x8(4) 25w
- PCIe x16(4) 25w
- Audio card — PCI–X 133
- Video card — PCI–X 100
- Radial aerator — PCI–X 100

- -

Note: For an HP xw8400, the Matrox X.mio 24/6000 video card requires a 64bit PCI–X slot operating at a minimum of 100 MHz.

- -

4. Insert the graphics card in the PCIe slot number 2 from the top.
5. Insert the Matrox video card into the PCI–X slot number 6 from the top.
6. Insert a powerful radial–aerator into the PCI–X slot number 7 from the top.
7. *Optional:* Insert the Audio–extension card into the PCI–X slot number 5 from the top.

- -

Note: A radial–aerator is mandatory as the video card reaches high temperatures during operation.

- -

To install Matrox X.mio in an HP xw8200

Figure 14: PCI, PCIe and PCI–X slots, HP xw8200
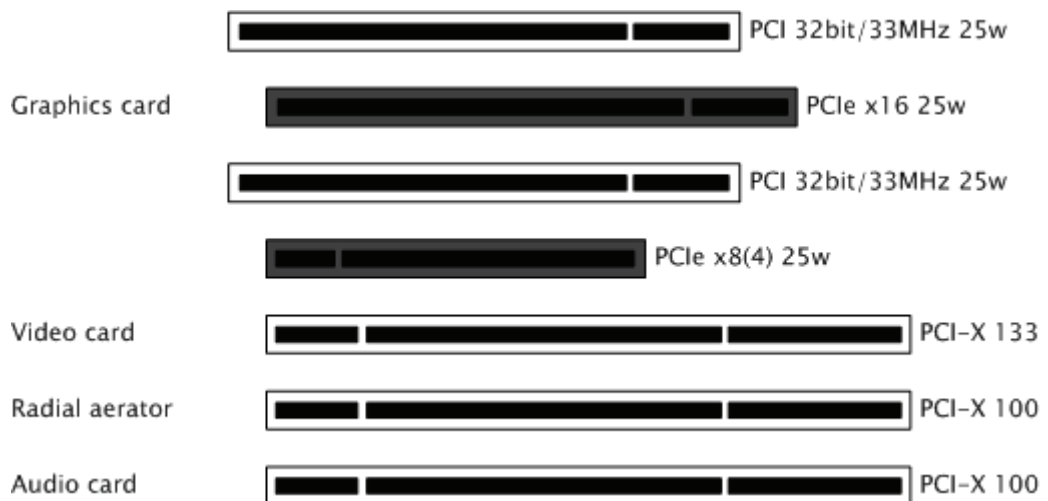
- PCI 32bit/33MHz 25w
- Graphics card — PCIe x16 25w
- PCI 32bit/33MHz 25w
- PCIe x8(4) 25w
- Video card — PCI–X 133
- Radial aerator — PCI–X 100
- Audio card — PCI–X 100

1. Disconnect the power and all other peripherals.
2. Before touching any components make sure you use an anti–static wrist strap to prevent electrostatic discharge.

3. Insert the graphics card in the PCIe slot number 2 from the top.
4. Insert the Matrox video card into the PCI-X slot number 4 from the top.
5. Insert a powerful radial-aerator into the PCI-X slot number 6 from the top.
6. *Optional:* Insert the Audio-extension card into the PCI slot number 7 from the top.

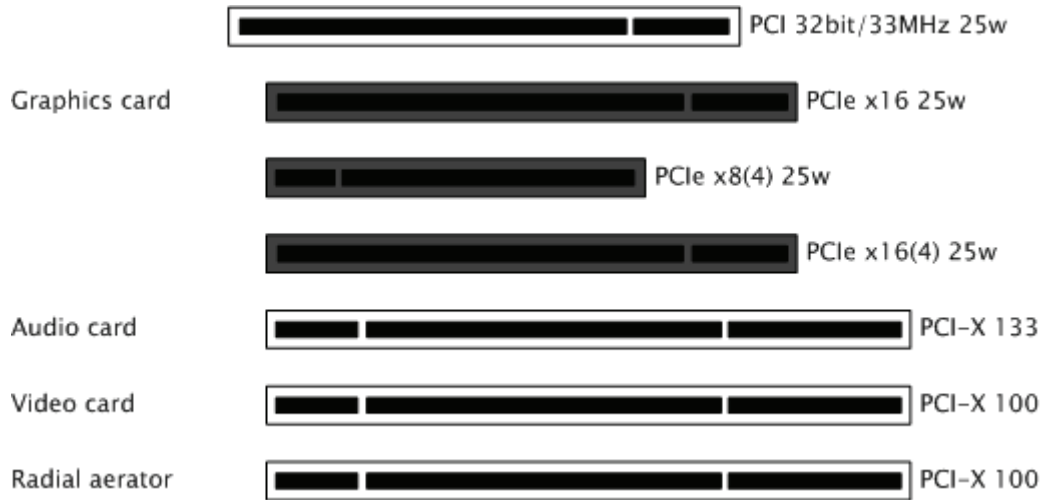**Note:** A radial-aerator is mandatory as the video card reaches high temperatures during operation.

To verify the video card installation

While an installation verification is usually performed once all drivers are installed and the hardware is being used, some basic verification can be performed by having a look at the back-end of the installed video card when powering up the machine.

Do the following:
- Look for the blue LED-light on the (top) backside of the slot panel, and make sure it is lit as this will indicate if the card is correctly supplied with power.

To replace a video card

This procedure describes how to remove the video card drivers for a system with an existing video card, or a system that previously has had a video card installed.

1. Remove the video card drivers.
2. Shut down the machine.
3. Mount the replacement video card.
4. Install the video card drivers.

IMPORTANT! When changing a video card the *Matrox.Devices* setting, set in the configuration file's SECTION MATROX_CONFIG, will not be updated. The Matrox support will not be set up correctly and the new card will not work. In this case the setting must be removed and Viz Engine restarted such that Viz Engine can insert the new serial number.

To connect the audio-extension card to the video card

Figure 15: Connecting the audio-extension card to the video card.
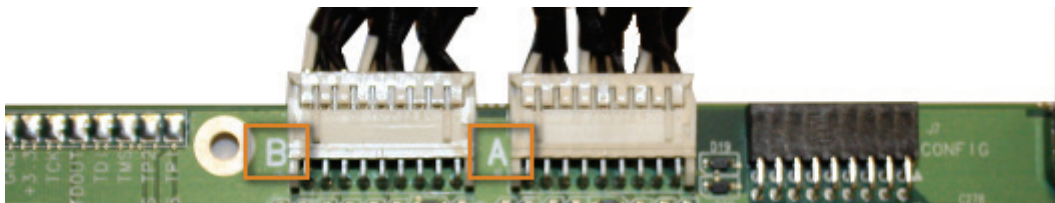
1. Locate the connectors on the audio-extension card labeled A and B.
2. Locate the connectors on the video card labeled A and B.
3. Use the cables to connect A on the audio-extension card to A on the video card, and do the same for the B connectors.

To remove the audio-extension card back-end

Figure 16: Audio-extension card's weak spots

- Locate the Audio-extension card's weak spots, and carefully break the connections.

- -

CAUTION! Do not break the weak spots that hold the two remaining pieces together.

- -

See Also

- To remove the Matrox X.mio driver
- To install the Matrox X.mio driver
- Audio-extension card

3.2.4   Driver Installation

The first time the machine is started with the Matrox X.mio card installed, the operating system (OS) will query the user To install the Matrox X.mio driver. It is not recommended to use the OS installation procedure, but to use the supplied driver installer application.
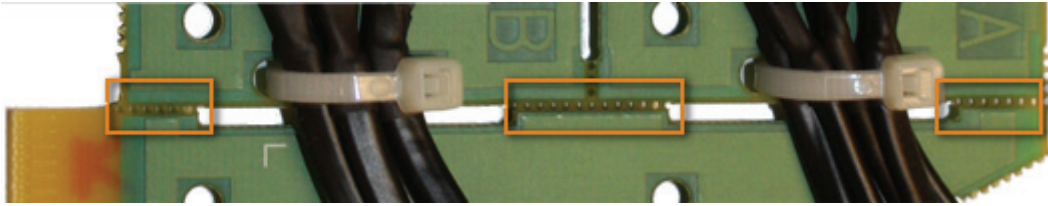
It is required To remove the Matrox X.mio driver on existing systems before a new driver is installed; however, there are some considerations to note:
- A new driver should not be installed before the new hardware is installed.
- It is recommended **not to use a different driver version** than what was shipped with the video card.
- Using a non-recommended driver version will in most cases cause the system to be **irresponsive**.

- -

IMPORTANT! As there are several driver versions available, it is always recommended to contact your local Vizrt representative or Vizrt support (support@vizrt.com) for updates.

- -

Figure 17: Matrox system tray icon

After the driver has been installed, a Matrox system tray icon should be visible. It is possible To verify the installation using Matrox X.info and/or To verify the installation using Windows Device Manager.

As there are many driver versions available, it is important to compare the versions of those reported by the Matrox X.info utility in order to verify that the Driver and firmware versions match. Also note that the driver version strongly depends on the Viz Artist version you are using.

This section contains information on the following topics:

- Matrox X.mio Configuration History
- Driver and firmware versions
- To install the Matrox X.mio driver
- To remove the Matrox X.mio driver
- To verify the installation using Matrox X.info
- To verify the installation using Windows Device Manager
- To replace a video card

Matrox X.mio Configuration History

- **Driver** – DSX.utils 5.0.3-171
  - **Introduced** – February 2009
  - **Viz 2.x** – 2.8 pl5 and later

- -
Note: DSX.utils 5.0.3-171 requires Windows XP SP3.
- -

- **Driver** – DSX.utils 5.0.3-166
  - **Introduced** – April 2008
  - **Viz 2.x** – 2.8 pl5 and later

- **Driver** – DSX.utils 4.0.0-132(sp1)
  - **Introduced** – August 2007
  - **Viz 2.x** – 2.8 pl4 and later

- **Driver** – DSX.utils 2.5.0-673
  - **Introduced** – February 2007
  - **Viz 2.x** – 2.8 pl3 – 2.8 pl3hf7

- **Driver** – DSX.utils 2.5.0-667
  - **Introduced** – October 2006
  - **Viz 2.x** – 2.8 pl3

- -
CAUTION! This driver is deprecated as new hardware revisions of the Matrox X.mio (Q1 2007) was equipped with different active- and passive elements. Capabilities and workflow will stay the same, but the transition requires a driver/firmware update.
- -

- **Driver** – DSX.utils 2.5.0-sp1
  - **Introduced** – Early 2006
  - **Viz 2.x** – 2.8 pl3 and later

Driver and firmware versions

Table 3: Driver and firmware versions

Driver version	Primary device firmware	Secondary device firmware
2.5.0–667	165.0	166.0
2.5.0–673 (sp1)	165.0	167.0
4.0.0–126	177.2	178.0
4.0.0–132 (sp1)	177.2	179.0
4.0.0–136 (sp3)	177.2	180.0
5.0.3–166	192.0	195.0
5.0.3–171	192.0	197.0

To install the Matrox X.mio driver

- -
Note: This procedure will use the supplied driver installer application.
- -

1. Start the machine.
2. Cancel any *Found New Hardware Wizard* dialog boxes.
3. Locate the Mio Tools setup executable (*setup.exe*), and start the installation.

Figure 18: Example dialog box, Matrox Firmware Updater.
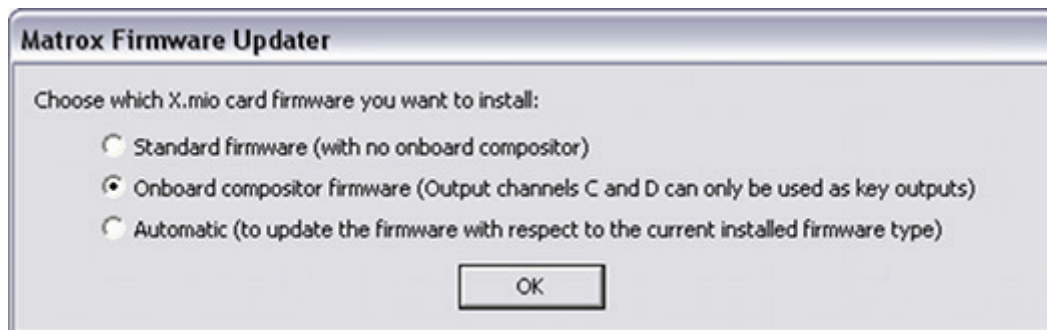
4. In the Matrox Firmware Updater dialog box, select the *Onboard compositor firmware* option, and click OK.
   · The firmware upgrade may take several minutes.
5. Once the upgrade is complete, click OK to close the *Setup* dialog box and to restart the system.
   · After the restart the firmware settings will take effect and the setup will continue.
6. Cancel any *Found New Hardware Wizard* dialog boxes.
7. In the *Welcome to Matrox Setup* dialog box, click Next to continue the setup.
8. Click Yes to acknowledge the license agreement.
9. In the *Select Program Folder* dialog box, click *Next* or select another program folder and click *Next*.
10. In the *Choose Destination Folder* dialog box, click *Next* or select a different destination folder.

・ The installation of driver files may take several minutes.

11. Once the installation is complete, click *OK* to close the *Install Complete* dialog box and to restart the system.

To remove the Matrox X.mio driver

Figure 19: Removing video card drivers, Device Manager
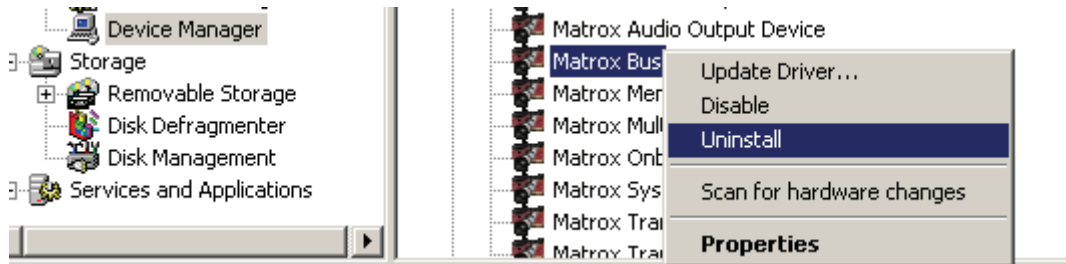
1. Open the Device Manager (see also To verify the installation using Windows Device Manager)
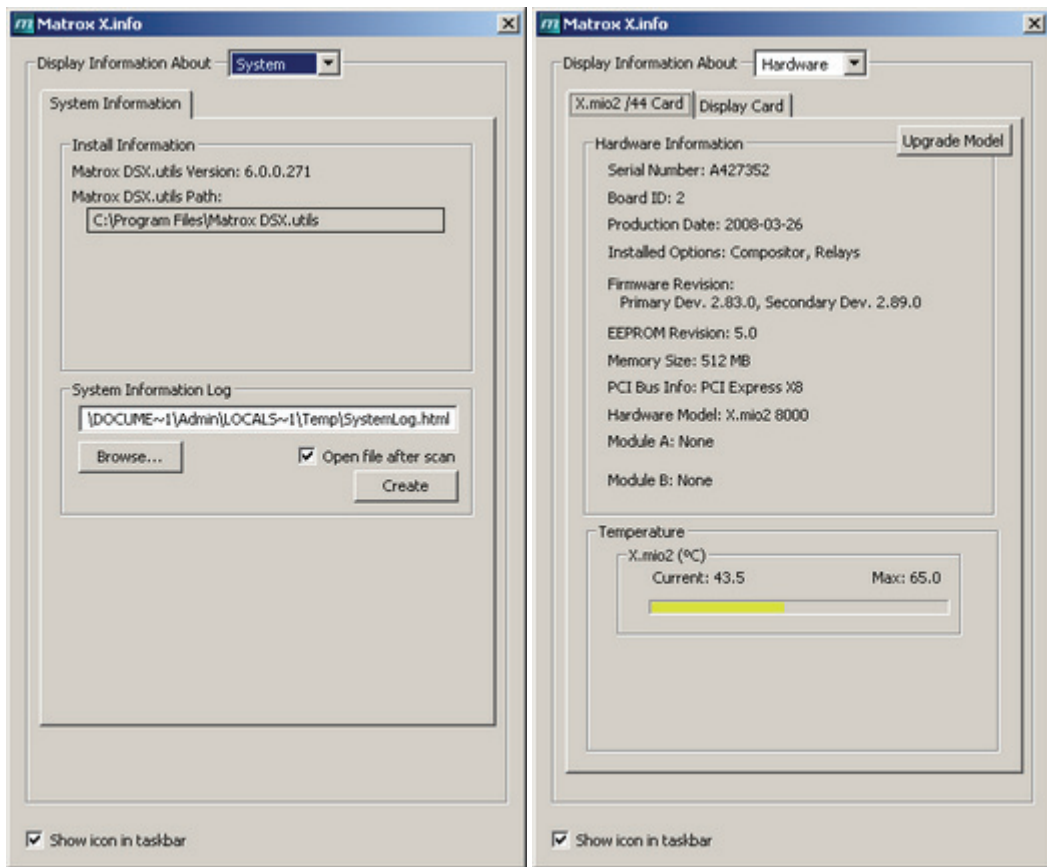2. Expand the *Matrox Audio/Video devices* node, and select the *Matrox Bus device*.
3. Right-click the *Matrox Bus* device and select Uninstall.
4. Click OK to confirm the device removal.
5. When the removal is done restart the machine for the changes to take effect.

To verify the installation using Matrox X.info

Figure 20: Matrox X.info.

1. Right-click the Matrox system tray icon, and select *Open X.info*.
2. From the *Display Information About* drop-list, select *System* to verify that the correct driver version was installed.

- -
IMPORTANT! Always disable the *Allow hibernation when available* option.
- -

3. From the *Display Information About* drop-list, select *Hardware* , and then the *Matrox X.mio/24 Card* tab to verify the following:
   - See *Installed Options* and verify that the card is taking advantage of the *On Board Compositor*
   - See *PCI Bus Info* and verify that the card was put into a PCI-X slot operating at the right frequency.

To verify the installation using Windows Device Manager

Figure 21: Microsoft Device Manager.
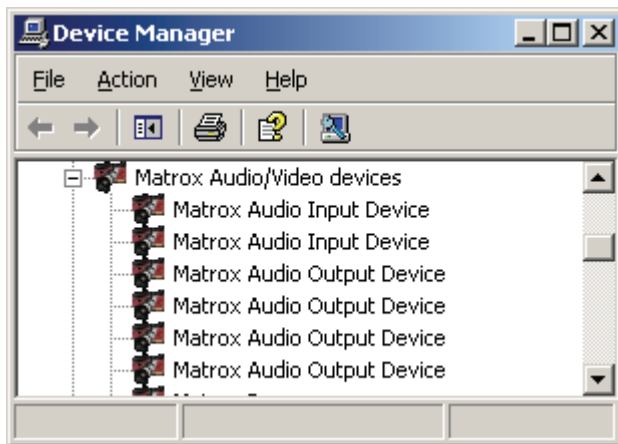
1. Start the Device Manager. Alternatives are:
   - Click *Start*, click *Run*, and then type *devmgmt.msc*, or
   - Right-click *My Computer*, click *Manage*, and then click *Device Manager*, or
   - Right-click *My Computer*, click *Properties*, click the *Hardware* tab, and then click *Device Manager*, or
   - Type the following command at a command prompt: *start devmgmt.msc*
2. Expand the *Matrox Audio/Video devices* node to see the devices installed.

3.2.5   Watchdog

A watchdog is essentially a timer that allows a system to continue video pass-through during an application crash or system failure. The Matrox X.mio has a built-in watchdog capability; however, the bypass only works for video (including optional embedded audio), while AES audio is not bypassed.

The watchdog is implemented, copper to copper in case of power loss, while a software bypass is performed in a powered machine state. In software bypass mode the incoming video and reference signals must be compliant in order to provide proper watchdog functionality.

3.2.6   Licensing

The Matrox X.mio includes all SD codecs except D10/D12. This model can be upgraded to any higher class model by performing a license upgrade using the Matrox X.info utility. To upgrade a video card to a higher class model it is necessary to generate and upgrade with a Matrox dongle information file. It is also possible To reset to factory settings at any time.

- -

Note: Driver versions prior to 4.0.0-126 do not support the upgrade and revert features.

- -

This section contains information on the following topics:

- To generate a Matrox Dongle Information File (.MDIF)
- To upgrade with a Matrox Dongle Upgrade File (.MDUF)

- To reset to factory settings

To generate a Matrox Dongle Information File (.MDIF)

1. Open the Matrox X.info utility on the Windows taskbar.
2. Select *Hardware*, and click the *Upgrade Model* button on the right.
3. From the appearing menu, choose *Generate Matrox Dongle Information File* (.MDIF).
4. Select to save the file to a specified location.
   - Once the file is created a confirmation dialog box will appear.
5. Click OK to dismiss the confirmation dialog box.
6. Locate the file and send it to your local Vizrt representative or to Vizrt support (support@vizrt.com).
   - Once the request to purchase an upgrade has been sent, an MDUF file will be sent in return from Vizrt.

To upgrade with a Matrox Dongle Upgrade File (.MDUF)

1. Open the Matrox X.info utility on the Windows taskbar.
2. Select *Hardware*, and click the *Upgrade Model* button on the right.
3. From the appearing menu, choose *Upgrade Board from Matrox Dongle Upgrade File* (.MDUF).
4. Click *Browse* to locate and select the .MDUF file to start the upgrade process.
5. Restart the machine for the changes to take effect.

To reset to factory settings

1. Open the Matrox X.info utility on the Windows taskbar.
2. Select *Hardware*, and click the *Upgrade Model* button on the right.
3. From the appearing menu, choose *Reset to Factory Settings*.
4. Restart the machine for the changes to take effect.

3.3 Legacy Video Cards

The following sections describe legacy video cards that no longer are delivered by Vizrt. The information briefly describes what the cards are used for and gives a short configuration history overview.

See the following topics for more information:

- BlueFish444 Iridium|SD
- Digital Voodoo D1 Desktop
- Digital Voodoo DeepBlue LT
- Digital Voodoo Red Devil V3 alias IO/2020
- Pinnacle Targa 3200

3.3.1 BlueFish444 Iridium|SD

Figure 22: BlueFish444 Iridium|SD
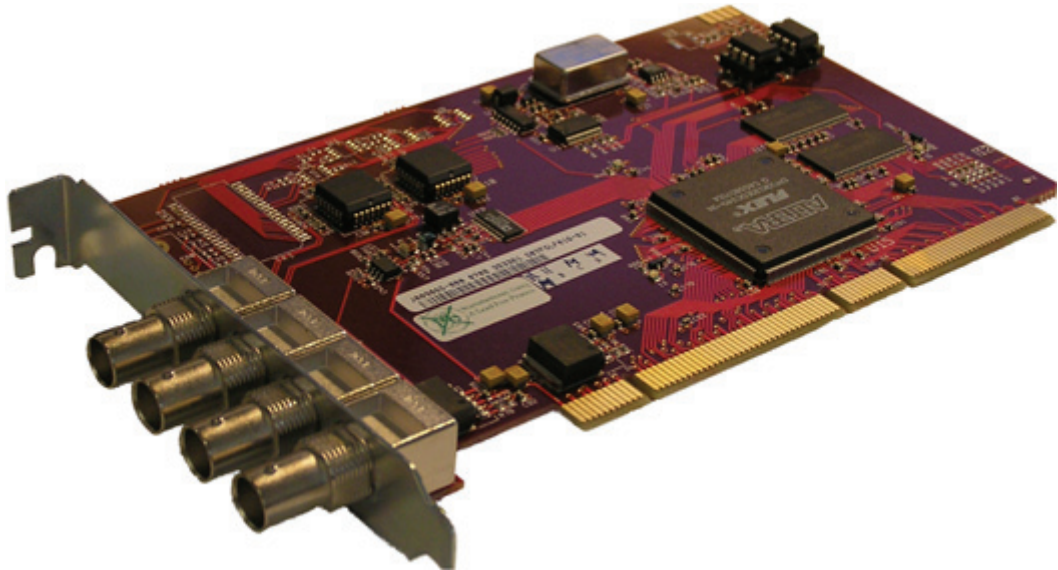
Viz 3 currently support two types of BlueFish444 cards in addition to the Iridium|SD; The latest BlueFish444 SD Lite Pro Express and the older Digital Voodoo DeepBlue LT card.

BlueFish444 Iridium|SD is the native successor of the Digital Voodoo DeepBlue LT and the predecessor of BlueFish444 SD Lite Pro Express, providing Fill, Key, GenLock and Composite Fill connectors. The Iridium|SD is fully compatible with existing DeepBlue–LT installations.

The card is mostly used with Viz Trio–NV which basically is a system with the ability to run a Viz Trio client with local preview and video output on a single machine; hence, there is no video input or video playback support as with the Matrox X.mio. The local preview can render a different scene than the one being output on video. The card is typically seen on HP xw4600.

This section contains information on the following topics:

- Connectors
- Driver Installation

Connectors

Figure 23: BNC Connectors, BlueFish444 Iridium|SD
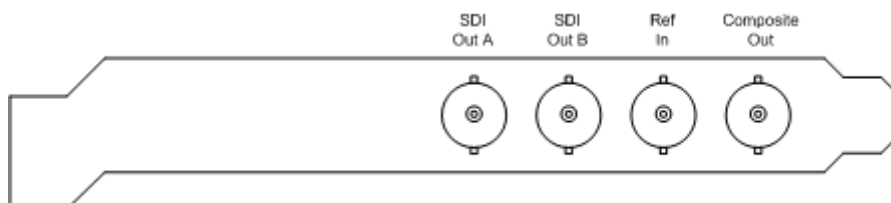
The BNC connectors from left to right are:
- **SDI Out A (Fill)** – SDI 4:2:2/4:4:4/Video

- **SDI Out B (Key)** – SDI 4:2:2/4:4:4/Video
- **Ref In** – Analog GenLock input
- **Composite Out** – Composite fill output

Driver Installation

The driver installation works the same way as for DeepBlue-LT cards. Use driver version 3.1 available on Vizrt's FTP server in order to ensure proper functionality and ring buffer support.

Iridium|SD is fully compatible with existing DeepBlue-LT installations and can be used with any recent Viz version supporting the older DeepBlue-LT device.

- **Driver** – Bluefish444 v3.1
  - **Viz 2.x** – 2.8 pl2hf5 and later

CAUTION! Only Bluefish444 v3.1 is guaranteed to support an adequate ringbuffer size. Any other driver will cut down or completely disable ringbuffer support.

3.3.2   Digital Voodoo D1 Desktop

Digital Voodoo D1 Desktop is an older SD board that is rarely used, but sometimes used with IBM Z-Pro 6221, IBM 6223 and HP xw8200.

Configuration History

- **Driver** – VizrtVideo 2.3
  - **Revision** – V1 and V2

CAUTION! Older board revisions (V1) are incompatible with recent systems like HP xw8200, xw8400, and IBM Z-Pro 6223. Symptoms are BSOD, machine freeze at Viz startup or corrupted live-video in Viz.

3.3.3   Digital Voodoo DeepBlue LT

Digital Voodoo DeepBlue LT was Vizrt's standard board for SD Viz Trio NV (no video) systems. Typically used with HP xw4200, xw4300 and xw4400.

Configuration History

- **Driver** – BlueFish444 v3.1
  - **Introduced** – March 2008
  - **Viz 2.x** – 2.8 pl2 hf5 and later

CAUTION! Only BlueFish444 v3.1 is guaranteed to support an adequate Ringbuffer-size. Any other driver will cut down or completely disable ring buffer support.

See Also

- BlueFish444 SD Lite Pro Express

- BlueFish444 Iridium|SD

3.3.4 Digital Voodoo Red Devil V3 alias IO/2020

Digital Voodoo Red Devil was Vizrt's standard board for SD virtual sets and Viz Arena. Typically used with IBM Z-Pro 6221, IBM ZPro 6223, and HP xw8200.

Configuration History

- **Driver** – VizrtVideo 2.3
  - **Revision** – V3

3.3.5 Pinnacle Targa 3200

Pinnacle Targa 3200 was Vizrt's standard board for SD Viz systems until 2007, and was typically used with IBM ZPro 6221, IBM Z-Pro 6223 and HP xw8200.

Configuration History

- **Driver** – CODI v2.42
  - **Revision** – 3213. Revision 3213 crashes the machine when used with CODI v2.41rc13.

- **Driver** – CODI v2.41rc13
  - **Revision** – 3212, 3214. Installation of CODI Compatibility Patch for revision 3214 is no more required.

- **Driver** – CODI v2.42
  - **Revision** – 3212, 3213, 3214. Installation of CODI Compatibility Patch is required.

- **Driver** – CODI v2.2 RC4
  - **Revision** – 3212, 3213.

See Also

- Matrox X.mio

4　Glossary

This section describes words and acronyms that are used throughout the documentation.

Table 4: Glossary

Name (acronym)	Description
5.1	Delivers five audio channels and 1 Low-frequency Effect (LFE) channel from a 6 channel source.
6DoF	Six degrees of freedom (6DoF) is used in interactive scenes to move and rotate objects in 3D on a defined grid.
7.1	Delivers seven audio channels and one Low-frequency Effect (LFE) channel from an 8 channel source.
AES	Audio Engineering Society (AES). Also known for the digital audio standard frequently called AES/EBU, officially known as AES3, is used for carrying digital audio signals between various devices; hence, the term AES/EBU connectors.
AGP	Accelerated Graphics Port (AGP) is a high-speed point-to-point channel for attaching a graphics card to a computer's motherboard, primarily to assist in the acceleration of 3D computer graphics.
Anamorphic widescreen	Anamorphic widescreen is a videographic technique utilizing rectangular (wide) pixels to store a widescreen image to standard 4:3 aspect ratio.
Anti aliasing	Anti-aliasing is the technique of minimizing the distortion artifacts known as aliasing when representing a high-resolution signal at a lower resolution.
Audio codec	An audio codec is a hardware device or a computer program that compresses and decompresses digital audio data according to a given audio file format or streaming audio format.
AVI	Audio Video Interleave (AVI) is a multimedia container format introduced by Microsoft in November 1992 as part of its Video for Windows technology.
BIOS	Basic Input/Output System (BIOS) is a system that defines the firmware interface. The initial function of the BIOS is to identify, test, and initialize system devices, and prepare the machine into a known state.
BNC	The BNC (Bayonet Neill Concelman) connector is a very common type of RF connector used for terminating coaxial cable.

Table 4: Glossary

Name (acronym)	Description
BSOD	The Blue Screen of Death (also known as a stop error or bluescreen) is an error screen displayed by some operating systems, most notably Microsoft Windows, after encountering a critical system error which can cause the system to shut down, to prevent damage.
Configuration file	Holds all configurable settings used by Viz Engine and various integrated applications.
	The configuration file can be found under Viz Engine's installation directory; C:\Program Files\vizrt\viz\.
CVBS	Composite video (aka CVBS or Composite Video Burst Signal) is the format of an analog television (picture only) signal before it is combined with a sound signal and modulated onto an RF carrier. It is a composite of the three source signals Y, U and V (YUV) with sync pulses.
D10	Television – Type D-10 Stream Specifications – MPEG-2 4:2:2P @ ML for 525/60 and 625/50. SMPTE D10 (356M) is a professional video compression format composed of MPEG-2 Video 4:2:2 Intra-frame (I-frame) only and 8 channel AES3 audio streams.
D12	Television – 6.35-mm Type D-12 Component Format – Digital Recording at 100 Mb/s 1080/60i, 1080/50i, 720/60p. Also known as Digital Betacam.
DIF	DV-DIF (Digital Video Digital Interface Format) is an interface format for DV, the Digital Video family of related video encodings (DV, DVCAM, and DVCPRO). DV Audio/Video data can be stored as raw DV data stream file (data is written to a file as the data is received over FireWire, file extensions are .dv and .dif) or the DV data can be packed into AVI container files.
Digital Voodoo	Digital Voodoo is a broadcast capture and playback card used for uncompressed Standard Definition 10-bit SDI solution on Macintosh computers.
DirectSound	DirectSound is a software component of the Microsoft DirectX library, that resides on a computer with the Windows operating system. It provides a direct interface between applications and the sound card drivers on Windows. It provides audio data to the sound card, recording and mixing sound; adding effects to sound for example reverb, echo, flange; using hardware controlled buffers for extra speed; positioning sounds in 3D space (3D audio spatialization), capturing sounds from a microphone or other input and controlling capture effects during audio capture.
DV	Digital Video.

Table 4: Glossary

Name (acronym)	Description
DV25	DV25 applies a 5:1 compression and a 4:1:1 color space and achieves a fixed data rate of 25Mbps.
DV50	DV50 applies a 3.3:1 compression and a 4:2:2 color space and achieves a fixed data rate of 50Mbps.
DVCAM	Sony's DVCAM is a professional variant of the DV standard that uses the same cassettes as DV and MiniDV, but transports the tape 33% faster.
DVCPRO	Panasonic's DVCPRO family is specifically created for electronic news gathering use, with good linear editing capabilities and robustness.
DVI	Digital Visual Interface (DVI) is a video interface standard designed to maximize the visual quality of digital display devices such as flat panel LCD computer displays and digital projectors.
EAS	The Emergency Alert System (EAS) is a national warning system in the United States of America (USA). The official EAS enables the President of the USA to speak to the citizens of the USA within 10 minutes.
EBU	European Broadcasting Union. See also AES.
GenLock	Genlock (Generator Lock) is a common technique where the video output of one source, or a specific reference signal, is used to synchronize other television picture sources together. GenLock type is set in Viz Config's Video Output section.
Glyph	A glyph is an element of writing. Glyphs may also be Ligatures, that is, compound characters, or diacritics.
HD	High-definition television or HDTV is a digital television broadcasting system with higher resolution than traditional television systems (standard-definition TV, or SDTV).
I/O	I/O is short for Input/Ouput, and is a common term used for hardware connectors.
IEEE	The Institute of Electrical and Electronics Engineers, Inc.
IRE	Institute of Radio Engineers. Is now part of the IEEE.

Table 4: Glossary

Name (acronym)	Description
IRE unit	An IRE unit is used in the measurement of composite video signals.
	The range of a video signal is defined to be 1.0 volts peak to peak (p/p) which again is divided into the picture and the synchronization portion of the signal. The picture portion is defined as 0 IRE to 100 IRE. The synch portion is defined as –40 IRE to 0 IRE; hence, the total range of IRE values is 140 units making each IRE unit equivalent to 1/140 volts.
	Picture sources are typically set with *black* somewhere between 7.5 to 10 IRE. The maximum signal brightness is usually set to just below 100 IRE.
	A third signal, the burst signal, is present from +20IRE to -20IRE. It is a short sample of the color subcarrier frequency, and is used to control how colors are displayed on screen.
LED	Light-emitting-diode.
Ligature	In writing and typography, a ligature occurs where two or more graphemes (fundamental unit in a written language) are joined as a single Glyph.
Lip-sync	Lip-sync (short for lip synchronization) is a technical term for matching lip movements with voice. The term refers to a technique in movie and broadcast production for synchronization of visual and audio signals.
LTC	Linear TimeCode. See also VITC.
MCX	MCX connectors are coaxial RF connectors. They use a snap-on interface and usually have a 50 Ohm impedance. They offer broadband capability from direct current (DC) to 6 GHz.
MDIF	Matrox Dongle Information File (.MDIF) can be generated and sent to Vizrt in order to upgrade the Matrox X.mio video card to a higher class model.
	See also how To generate a Matrox Dongle Information File (.MDIF).
MDUF	Matrox Dongle Upgrade File (.MDUF) is the file, provided by Vizrt, that will upgrade the Matrox X.mio video card to a higher class model.
	See also how To upgrade with a Matrox Dongle Upgrade File (.MDUF).
Mono	Monaural (often shortened to mono) sound reproduction is single-channel.

Table 4: Glossary

Name (acronym)	Description
MPEG	Moving Picture Experts Group, is the name of a family of standards used for coding audio-visual information (e.g., movies, video, music) in a digital compressed format.
MXF	Material Exchange Format (MXF) is an object-based file format that wraps video, audio, and other bitstreams, optimized for content interchange or archiving by creators and/or distributors, and intended for implementation in devices ranging from cameras and video recorders to computer systems.
NTSC	National Television System Committee (NTSC) is the analog television system used in the north, mid and to some extend in south America and also in some Asian countries.
OB	Outside Broadcasting is the production of television or radio programmes (typically to cover news and sports events) from a mobile television studio.
OP-Atom	MXF Operational Pattern Atom. OP-Atom was designed to address the needs of non-linear video and audio editing. Reference: SMPTE 390M-2004 Television – Material Exchange Form at (MXF) – Specialized Operational Pattern "Atom" (Simplified Representation of a Single Item).
PAL	Phase Alternating Line, is a color-encoding system used in broadcast television systems in large parts of the world.
PCI	PCI Local Bus (usually shortened to PCI), or Conventional PCI, specifies a computer bus for attaching peripheral devices to a computer motherboard.
PCIe	PCI Express was designed to replace the general-purpose PCI (Peripheral Component Interconnect) expansion bus, the high-end PCI-X bus and the AGP graphics card interface.
PCI-X	PCI-X (Peripheral Component Interconnect eXtended) is a computer bus and expansion card standard that enhanced the PCI Local Bus for higher bandwidth demanded by servers.
PCM	Pulse-code modulation (PCM) is a digital representation of an analog signal.

Table 4: Glossary

Name (acronym)	Description
Quad	Quadraphonic (or quadrophonic) sound – also called 4.0 stereo – uses four channels in which speakers are positioned at the four corners of the listening space, reproducing signals that are (wholly or in part) independent of one another.
Rack unit	A rack unit or U (less commonly, RU) is a unit of measure used to describe the height of equipment intended for mounting in a 19-inch rack or a 23-inch rack (the dimension referring to the width of the rack).
RF	A radio frequency (RF) connector is an electrical connector designed to work at radio frequencies in the multi-megahertz range.
RGB	RGB stands for Red Green Blue, and its color model is an additive color model in which red, green, and blue light are added together in various ways to reproduce a broad array of colors.
RGBA	RGBA stands for Red Green Blue Alpha. It uses the RGB color model with extra information, and is normally used as an transparency/opacity channel.
Ring buffer	A circular buffer or ring buffer is a data structure that uses a single, fixed-size buffer as if it were connected end-to-end. This structure lends itself easily to buffering data streams.
Safe Area (aka Action Safe Area)	Depending on how a television set is adjusted, viewers can see a larger area than the Title Area (aka Title Safe Area). The safe area is in Viz Artist shown as a green rectangle in the preview window. This area can be considered a "safe margin" to create a buffer and avoid that elements are butted up against the edge of the screen. However, the area outside the safe area is often used to place graphics (for example tickers that run horizontally across the screen) that butt up against the edges of the screen.
SATA	The Serial Advanced Technology Attachment (SATA) computer bus has the primary function of transfering data between the motherboard and mass storage devices (such as hard disk drives and optical drives) inside a computer.
SD	Standard-definition television or SDTV refers to television systems that have a resolution that meets standards but not considered either enhanced definition or high definition.
SDI	Serial digital interface (SDI) refers to a family of video interfaces standardized by the SMPTE.

Table 4: Glossary

Name (acronym)	Description
SECAM	Séquentiel couleur à mémoire, French for "Sequential Color with Memory"), is an analog color television system first used in France.
Shader	A shader in the field of computer graphics is a set of software instructions, which is used by the graphic resources primarily to perform rendering effects. A shader is a part of the renderer, which is responsible for calculating the color of an object; hence, the Viz Engine renderer has a shader that handles the video input (normally provided as interlaced YUV images).
	To be able to use the YUV images in a CG scene they need to be RGB, and in addition they need to be deinterlaced. All this is done by Viz Engine's shader.
	The shader not only takes two, but four input images when it does the color conversion from YUV to RGB and the deinterlacing. As this is a very heavy process it can only be done in SD.
SMPTE	Society of Motion Picture and Television Engineers.
SPG	A sync pulse generator (SPG) is a special type of generator which produces synchronization signals, with a high level of stability and accuracy. These devices are used to provide a master timing source for a video facility.
Stereo	Stereophonic sound (often shortened to Stereo) is the reproduction of sound, using two or more independent audio channels.
Sub-D	Sub-D, D-subminiature or D-sub is a common type of electrical connector used particularly in computers.
Surround sound	See Quad, 5.1 and 7.1.
Title Area (aka Title Safe Area)	The title area is in Viz Artist shown as a purple rectangular area which is far enough in from the four edges, such that text or graphics show neatly: with a margin and without distortion.
Universal Naming Convention (UNC)	Specifies a common syntax to describe the location of a network resource, such as a shared file, directory, or printer.
	\\ComputerName\SharedFolder\Resource
VBI	Vertical blanking interval (VBI) is the time difference between the last line of one frame or field of a raster display, and the beginning of the next.
Video codec	A video codec is a device or software that enables video compression and/or decompression for digital video.

Table 4: Glossary

Name (acronym)	Description
VITC	Vertical Interval TimeCode. See also LTC and VBI.
Writing system	A writing system is a type of symbolic system used to represent elements or statements expressible in language.
XLR	The XLR connector is an electrical connector, and a standard for broadcast audio equipement. The 3-pin XLR3 is used as a balanced audio connector for both analog and digital audio. Note that Viz Engine's Matrox board only supports digital audio.
YUV	YUV is a color space typically used as part of a color image pipeline. Y' stands for the luma component (the brightness) and U and V are the chrominance (color) components. The Y'UV color model is used in the NTSC, PAL, and SECAM composite color video standards.