Matrox® Release notes

Matrox® Mura™ IPX Series, C-Series, and D-Series

Software version 3.04.00

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Overview

This document describes the current release of the Matrox Mura drivers (v3.04.00) for Mura IPX Series, C-Series, and D-Series graphics cards.

Matrox provides these notes to describe bug fixes and improvements to the software, API, and driver.

What's new in this release

This release of the Mura driver adds support for the following features and options:

■ Support for new Matrox D-Series video wall graphics cards.

■ Support for HDCP baseband inputs between IPX HDMI inputs (MURAIPXI-D4JF, MURAIPXI-D4JHF, MURAIPXI-E4JF and MURAIPXI-E4JHF) and D-Series.

■ Support for desktop encoding (streaming and recording) with third-party GPU. This provides the ability to stream and record regions of interest or the entire video wall, depending on the size of the video wall, the requested stream size, and the GPU capability. The data is sent from the GPU to the IPX card over the bus. If using NVIDIA, it is recommended to be in independent mode.

■ Support for IPv6 addressing for decoding on Mura IPX cards.

■ Support for RTSP interleave on Mura IPX cards.

■ Support for usage statistics reporting through VWLib and NetAPI for:
  ▪ Codec Engine usage percentage on the Mura IPX card
  ▪ Intel SoC usage percentage on the Mura IPX card

■ Support for selecting either unicast or multicast for the initial IP connection request through VWLib.

■ Various security improvements.

■ Generic bug fixes.

Operating system support

This release supports the following configurations and operating system combinations.

- Standalone Mura IPX Series 4K IP Decode & Display card configuration:
  - No host CPU or operating system required.

- Up to four (4) D-Series standalone and up to four (4) D-Series + multiple Mura IPX Series 4K Capture cards configurations:
  - Windows® 10 64-bit

- Up to two (2) C-Series C900/C680 standalone, and up to two (2) C-Series C900/C680 + multiple Mura IPX Series 4K Capture cards configurations:
  - Windows® 7 64-bit
  - Windows® Embedded Enterprise 7 64-bit
  - Windows® Embedded Standard 7 64-bit
  - Windows® 10 64-bit
  - Windows® 10 IoT
  - Windows® Server® 2008 R2
  - Windows® Server® 2016

- Matrox has tested the following graphics cards under Windows® 10 64-bit. Matrox does not foresee any compatibility issues with other third-party graphics or drivers.
  - NVIDIA® P4000, NVIDIA® P5000, NVIDIA® P6000, NVIDIA® RTX 2060, NVIDIA® RTX 5000, AMD® Vega 64, AMD® W 5700, AMD® WX 7100, AMD® WX 9100, Intel® HD Graphics 530 graphics hardware, or Intel® HD Graphics 630 graphics hardware + multiple Mura IPX Series 4K capture cards
  - Please contact Matrox for more details about supported configurations in Linux®.

Please note that OS support may vary depending on the GPU of the controller.

Notes and limitations

Known performance limitations

The following are known issues that may be fixed in a future release:

- A Mura IPX Series card supports the following number of streams, or a combination of streams, in YUV 4:2:0:

    - Two (2) 4k60 streams

    - Four (4) 4k30 streams

    - Eight (8) 1080p60 streams

    - Sixteen (16) 1080p30 streams

    - Forty-eight (48) D1@24Hz streams

    Adding more streams may affect performance. Using DirectShow may exhibit different performance numbers.

- Some systems may exhibit bus transfer performance issues that won't allow you to attain the suggested performances listed above.

- The maximum encoder frame size is 4K. To encode a larger portion of the desktop, the region can be set as a greater value, but the streamed value needs to be 4K. The encoding horizontal resolution must be a multiple of 16, and the vertical resolution must be a multiple of two (2).

- There may be audio-video synchronization issues with IP sources containing B-frames.

- Applying a geometric rotation angle to a streaming window may cause a drop in rendering performance.

- The render rate may be affected if the outputs don't all use the same refresh rate.

- When capturing two (2) 4K60 4:4:4 streams from a Mura IPX Series 4K DisplayPort Capture and IP Encode/Decode card, rendering is limited on C-Series controllers to a maximum of two (2) 4k60 outputs. C-Series controllers with more outputs may not render at full frame rate. For more information, contact us at DWCSupport@matrox.com.

- Desktop encoding functionality isn't supported with C-Series if the Mura IPX Series encode card is mapped by the system to an address above 1 TB.

- Changing the configuration on a multi-GPU video wall installation may take several minutes.

Notes and limitations with Mura IPX Series cards

The following are known issues while using Mura IPX Series cards.

- For audio, the following limitations exist:
    - No support for audio-only streams.
    - Support sampling rates from 32 KHz to 96 KHz.
    - Audio support may affect latency.
    - The playback of only one (1) audio source is supported at any given point in time.
    - Audio is supported only from the Windows default audio output.
- Audio is not supported for IP encoding functionality.
- Audio is not supported for streams from a Matrox Extio 3 product.
- Encoding, streaming, and recording functionalities of Mura IPX Series Capture and IP Encode/Decode cards are only supported in Windows 10.
- Disconnecting a Mura IPX Series encode card from the network can result in an *InternalError* if your Mura card is encoding.
- Stream mode/resolution changes are not supported during encoding.
- If static IP addressing is used, your network must have a time server (NTP) for the Mura IPX Series card to function properly.
- Interlaced video is currently not supported on Mura IPX Series.
- A desktop encode region can't span more than one (1) display in PowerDesk.
- Power management is not supported and should be disabled.
- **MURA IPX 12G-SDI** – 12G-SDI is supported only on connectors 2 and 4. 6G-SDI isn't supported. Not all 12G-SDI and 3G-SDI standards/formats are supported. For more information, contact DWCSupport@matrox.com.

Notes and limitations with C-Series cards

- Only Matrox C900 and C680 graphics hardware can be paired with Mura IPX Series 4K capture cards and be used as display wall outputs. Matrox C420 graphics cards aren't supported with Mura IPX Series 4K capture cards.
- When using a third-party graphics card as a console, set the desktop configuration with PowerDesk instead of any third-party graphics-display-configuration utility software.
- Third-party console displays can only be used in independent mode.

Notes and limitations with D-Series cards

- Matrox recommends using the preferred resolution of the monitors.

- Consoles are not currently supported with D-Series based controllers.

- When installing multiple cards in a system, a mix of D-series and C-series outputs cards is not supported.

- When installing multiple cards in a system, a mix of D1450 and D1480 cards is not supported.

- Mode Management is currently not supported with D-series.

- Installing the drivers for four (4) D-Series cards within one system can take up to 10 minutes.

- Linux is currently not supported with D-Series and 3.04 drivers. It will be added in the future. Until then, you may continue using 3.03 drivers under Linux with C-Series or third-party based controllers.

- When installing a D-Series card, it is possible that the NVIDIA drivers are automatically installed by Windows. If this is the case, the Matrox installation can be re-launched to install Matrox drivers on the D-Series cards.

- Hot plug detection (HPD) will not work when in stretched configuration.

- Joined mode is not yet supported with D-Series.

- Framelock with D-Series is possible if the following conditions are met:

  - The outputs of each GPU should be configured either in independent, or in a single stretch (no mix).

  - When there is a bezel adjustment or overlap, the outputs are not rotated at 90 or 180 degrees.

  - The first output of each GPU is connected to a monitor.

Notes and limitations with HDCP capture

Note: By default, HDCP mode is disabled after the driver is installed.

- Enabling HDCP capture may cause a drop in rendering performance.

- All monitors and repeaters used in the current output desktop configuration must be HDCP compliant, turned on, and connected using HDCP compliant cables. If HDCP capture can't be properly enabled, you may experience problems such as corruption on your outputs, monitors blinking periodically, streaming windows turning blue, and system freezes.

- Capture of HDCP content is only supported on controllers using Mura IPX HDMI capture cards and D-Series output cards together.

- The preview surface functionality of the Display Wall library isn't supported on HDCP-encrypted streams.

- A source device connected to the HDMI input connector of a Mura IPX Series card must support the number of downstream devices in your display wall, plus one (1).

- HDCP sources won't be displayed on a video wall which has a monitor currently on a revocation list.

- The following functions are not possible when HDCP is enabled on the video wall controller:

  - Desktop encoding

  - Print Screen

  - Remote desktop to the video wall controller

  - Input encoding of HDCP content
    Note: Input encoding of non-HDCP content remains possible

  - HDCP source previews

Notes and limitations with third party graphics support

The following are known limitations while using third-party graphics:

- Because Mura IPX Series cards leverage DirectX under Windows and OpenGL under Linux, Matrox doesn't foresee any compatibility issues with other third-party graphics brands and models not mentioned in the Configurations and OS support section above. Although Matrox strives to test a wide variety of setups and configurations of the most common use-cases, we are unable to test all possible setups and configurations. If you're having any issues with the setup of your third party graphics + Mura IPX Series configuration, we recommend removing all Mura IPX Series cards first to verify the stability of the isolated third-party graphics configuration. If you have any questions or a request for a specific brand and model to be tested, contact us at DWCSupport@matrox.com.

- You won't be prompted to restart your system when installing the unified package. You need to manually restart your system for the changes to take effect after the installation.

- Performance issues may exist when using Intel HD Graphics 630 in no background mode.

- When using Intel onboard graphics hardware as a console on a controller with third-party graphics hardware, the console display is part of the display wall layout.

- When using third-party graphics cards as the main video wall, set the desktop configuration with the accompanying third-party graphics-display-configuration utility software instead of PowerDesk.

Notes and limitations with the Network API interface

The following are known issues and limitations when using the Network API interface:

- Microsoft .NET 4.7 or 4.8 needs to be installed for the Network API to function correctly.
- Not all Network API commands are supported in all supported display wall hardware configurations. For a complete list of supported commands, see the Capabilities functionality in the Network API document.
- The following third-party applications have been validated by Matrox:
  - VLC® – 3.0.8 in 64-bit
  - VNC® – 5.05, 6.0
  - Internet Explorer – 9, 10, 11
  - PowerPoint Viewer – 2010 with SP1 for PowerPoint Viewer
  - PowerPoint 2016 – from Office 2016
- Z-order is not supported with third-party applications.
- Maximum encoder frame size is 4K (4096 x 2160). If you wish to encode a larger portion of a desktop, the region can be set as a greater value, but the frame size needs to be 4K.
- The *ClearDatabase* command doesn't delete encoders, RTSP servers, or recordings.
- Size and transparency of text and image overlays may not be adjusted properly within transitions.
- The *SetSourceImageOverlay* and *AddSourceTextOverlay* commands aren't supported with source applications running on the host system.
- The Network API can only report modes common to all monitors.
- Borders, text overlays, and image overlays aren't properly handled when using geometric rotation angles on streaming windows.
- The *ResumeAutoTransitionStart* command starts transitions right away even without the */restart* option.
- The same caption can be set on two (2) different windows of the same layout.
- Shutting down the system while streams are up on the wall is not supported.

- In Windows 7, Windows Aero needs to be enabled for windows to be displayed correctly on a C-Series or third-party based display wall controller.

Notes and limitations with the DirectShow interface

The following are known issues and limitations when using the DirectShow interface:

- DirectShow interface is only supported on certain Matrox based controllers. Please contact Matrox for more details.

- Performance going through DirectShow may not match performance when going through Matrox Mura libraries directly.

- Performance limitations may exist due to DirectShow rendering engine limitations.

- Performance limitations may be different depending on the rendering engine used.

- Stretching source across multiple GPUs isn't supported.

- Shutting down the system while streams are up on the wall isn't supported.

Notes and limitations with PowerDesk software

The following are known limitations when using PowerDesk software on a Windows system:

- When starting PowerDesk immediately after a system restart, PowerDesk may not start. We recommend waiting a while, and then trying to restart PowerDesk.

- The horizontal resolution of your stretched mode layout can't be higher than 8192 pixels on a Windows 7 C-Series based system and 16384 pixels on any other Windows operating system.

- The resolution per output, for C-Series cards, must be divisible by eight (8).

- PowerDesk configuration changes are unsupported while Network API is in use.

- With a D-Series controller, when applying a vertical stretch configuration, the display wall will automatically zoom. The user can re-adjust the settings to 100% using Windows Display settings.

- It may be difficult to tell when the outputs are slightly misaligned when accessing the video wall via PowerDesk. This may affect desktop encoding. The user can resolve this issue by adjusting the outputs in telnet.

- When using a D-Series controller, in order to enable or disable EDID emulation, all outputs of the graphics card need to be in independent mode.

Notes and limitations with Matrox Extio 3

- Mura IPX Decode cards can decode multicast and unencrypted video streams from Extio 3 running Extio 3 driver 3.00.0.263 (audio streams are not supported).

Driver installation on a Windows system

Before you begin

- Make sure you have administrator rights on your system. You need administrator rights to install certain software and change certain settings.

- Make sure that the necessary exceptions are added to your firewall to allow network communications. The Network API uses port 23 for telnet and port 46272 for HTTPS and Preview Surfaces.

Setting up your D-Series controller (with or without Mura IPX Series 4K capture cards)

1. Install and connect your D-Series, and your Mura IPX Series 4K capture cards.

2. Install the Matrox Mura Drivers for D-Series systems by running *Matrox.Setup.exe*. This will take several minutes. If a virus scan software is active during the installation process, the installation will take significantly longer to complete (up to two or three times longer than if it's disabled). Don't shut down or turn off your system until the installation is complete.

3. Restart the system once the installation is completed successfully.

4. Run Matrox PowerDesk to configure your desktop layout (multi-display setup). Make sure to use the same monitor brand/model on all D-Series outputs, and the same brand/model active dongles.

5. **Windows 10** – To avoid any issues, fast startup needs to be disabled. To disable fast startup:

   a. Open the Windows **Control Panel** and click on the **Power Options** icon.

   b. Click **Choose what the power buttons do** on the left panel.

   c. Click **Change settings that are currently unavailable.**

   d. Make sure **Turn on fast startup** is disabled.

Setting up your C900/C680-based controller (with or without Mura IPX Series 4K capture cards)

1. Install and connect your C-Series C680/C900, your Mura IPX Series 4K capture cards, and the card for your console display (optional).

2 Install the Matrox Mura Drivers for C-Series systems by running *Matrox.Setup.exe*. This will take several minutes. If a virus scan software is active during the installation process, the installation will take significantly longer to complete (up to two or three times longer than if it's disabled). Don't shut down or turn off your system until the installation is complete.

3 Install the correct driver of the card chosen for your console display. If you're using a Matrox M-Series card, the drivers for the console card will already be installed and no further driver installation is needed.

4 Restart the system once the installation is completed successfully.

5 Run Matrox PowerDesk to configure your desktop layout (multi-display setup). Make sure to use the same monitor brand/model on all C-Series outputs, and the same brand/model active dongles.

6 We strongly recommend enabling EDID emulation on your C-Series outputs to disable HPD events and prevent an undesired output configuration change. To enable EDID emulation, follow these steps:

a Open PowerDesk and go into **Multi-Display Setup**.

b Click **EDID management** and accept the notice that appears.

c Select **Apply EDID emulation for selected outputs**, then click **Select all** from the list.

d Accept the changes and restart the system.

7 **Windows 10** – To avoid any issues, fast startup needs to be disabled. To disable fast startup:

a Open the Windows **Control Panel** and click on the **Power Options** icon.

b Click **Choose what the power buttons do** on the left panel.

c Click **Change settings that are currently unavailable.**

d Make sure **Turn on fast startup** is disabled.

Supported C-Series consoles

The following are all the graphic cards currently supported as console displays when paired with the C-Series cards.

Graphics card	Driver version of graphics card
Matrox M9148 LP PCIe x16	Included in unified installer.
Matrox M9140 LP PCIe x16	Included in unified installer.
Matrox M9138 LP PCIe x16	Included in unified installer.
Matrox M9128 LP PCIe x16	Included in unified installer.

Matrox M9125 PCIe x16	Included in unified installer.
Matrox M9120 Plus LP PCIe x16	Included in unified installer.
Matrox M9120 Plus LP PCIe x1	Included in unified installer.
Matrox M9120 PCIe x16	Included in unified installer.
Intel HD Graphics 530	26.20.100.7372
Intel HD Graphics 630	26.20.100.7372
NVIDIA NVS 510	24.21.14.1163
NIVIDIA NVS 310	23.21.13.9189

Setting up your third-party-based graphics card controller (with Mura IPX Series 4K capture cards)

Make sure the fast startup option is disabled on the system running Windows 10. This setting can be found in the Control Panel under **Power Options**.

1 Install and connect your third-party graphics cards and Mura IPX Series 4K capture cards.

2 For NVIDIA P4000, P5000, and P6000 based controllers, install the NVIDIA graphics driver version 416.84 - 26.21.144274.

For NVIDIA RTX 2060 based controllers, install the NVIDIA graphics driver version 445.86.

For NVIDIA RTX 5000 based controllers, install the NVIDIA graphics driver version 442.74.

For Intel HD Graphics 530 based controllers, install the Intel graphics driver version 26.20.100.7372, or the ASUS driver version 21.2016.4541.

For Intel HD Graphics 630 based controllers, install the Intel graphics driver version 26.20.100.7372.

For AMD WX 7100 based controllers, install the AMD graphics driver version 24.20.12042.5.

3 Install the Matrox Mura Display Wall drivers by running *Matrox.Setup.exe*. This will take several minutes. If a virus scan software is active during the installation process, the installation takes significantly longer to complete (up to two or three times longer than if it's disabled). Don't shut down or turn off your system until the installation is complete.

4 Restart the system after installation is completed successfully.

5 Run the output management software (of Intel, NVIDIA, and/or AMD) to configure your desktop layout (multi-display setup).

6   **Windows 10** – To avoid any issues, fast startup needs to be disabled. To disable fast startup:

  a   Open the Windows **Control Panel** and click on the **Power Options** icon.

  b   Click **Choose what the power buttons do** on the left panel.

  c   Click **Change settings that are currently unavailable.**

  d   Make sure **Turn on fast startup** is disabled.

Contact us

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If you have any questions or comments about our products or solutions, contact us at www.matrox.com/graphics/contact.

You can get technical assistance by contacting Matrox technical support at dwcsupport@matrox.com.

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