

Matrox™ Release notes

Matrox™ Mura™ MPX Series, Mura™ IPX Series, C-Series

Software version 3.02.00

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Graphics for Professionals

Overview

This document describes the current release of the Matrox Mura drivers (v3.02.00) for Mura MPX Series, Mura IPX Series, and C-Series graphics.

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

Operating system support

This release supports the following configurations and operating systems combinations.

- Standalone Mura IPX 4K IP Decode & Display card configuration:
 - No host CPU or operating system required.
- Up to 2 C-Series C900/C680 standalone & up to 2 C-Series C900/C680 + multiple Mura IPX Series 4K Capture cards (including the new 4K DisplayPort 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.
 - Linux®: Ubuntu 14.04.1, 14.04.2, 14.04.3, 14.04.4 and CentOS 7.2 (please contact Matrox for more details)
- Up to 14 Mura MPX + multiple Mura IPX Series 4K Capture cards (including the new 4K DisplayPort capture cards) configurations:
 - Windows® 7 (64 bit).
 - Windows® Embedded Enterprise 7 (64 bit).
 - Windows® Embedded Standard 7 (64 bit).
 - Windows® Server® 2008 R2 (64 bit).
- NVIDIA® M4000 + NVIDIA® sync card, NVIDIA® P5000, NVIDIA® P6000, NVIDIA® M6000, AMD® WX 7100, Intel® HD Graphics 530 graphics hardware, or Intel® HD Graphics 630 graphics hardware + multiple Mura IPX

Series 4K capture cards (including the new 4K DisplayPort capture cards) configurations:

- Windows® 10 64-bit
- Linux® (please contact Matrox for more details about supported configurations)

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

What's new in this release

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

- Support for the new Mura IPX 4K DisplayPort Capture and IP Encode/Decode cards (MURAIPXI-E2MF and MURAIPXI-E2MHF) on Mura MPX, C-Series, and 3rd party graphics video wall controllers.
- Support for HTTPS Network API connection on Mura IPX 4K IP Decode & Display cards.
- Support for Mura IPX input synchronization on C-Series/Windows controllers. Any inputs that are synchronized when captured will remain synchronized when displayed on the outputs of the C-Series card.
- Support for output configuration on Mura IPX 4K IP Decode & Display cards without having all physical monitors connected.
- Support for pass phrases on the decoding of an encrypted SRT IP stream on Windows controllers.
- Support for third party HTTPS certificates on Windows controllers. Users can now create and sign their own HTTPS certificates to be used with Network API.
- Support for new Network API commands: Layout /All, that returns all layouts and their information.
- Support for transitions on controller running a Linux operating system.
- General bug fixes.

Notes and limitations

Known performance limitations

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

- A Mura IPX Series card performance is limited to the following number of streams (or combination of – 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.

- 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 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.
- Some systems may exhibit bus transfer performance issues that won't allow you to attain the suggested performances listed above.
- When capturing two (2) 4K60 4:4:4 streams from a Mura IPX 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. Performance limitations also exist with Mura MPX based configurations. For more information, contact us at DWCSupport@matrox.com.

General notes and limitations under Linux

On a Linux system, the following are known issues that may be fixed in a future release:

- Third party graphics hardware is supported only if one or more Mura IPX Series cards are present in the system.
- Only the following third party graphics hardware can be used for your display wall output:
 - NVIDIA[®] M4000 (4× NVIDIA[®] M4000 + sync card)
 - NVIDIA[®] P6000

The list of supported third party brand and models will grow over time. If you have a specific request, contact us at DWCSupport@matrox.com.

- Console displays are unsupported with C-Series and third party graphics hardware.
- Previews aren't supported on a Mura IPX Series cards.
- Alpha blending is supported between two windows or between a window and a subwindow.
- The render rate may be affected if the outputs don't all use the same refresh rate.
- Some systems may exhibit bus transfer performance issues.
- Encoding on Mura IPX Series encode cards is unsupported.
- For the `StartNoBackground` command, the parameter `NoWindowsFrame` is unsupported with third party graphics hardware.

Notes and limitations with Mura IPX Series cards

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

- For audio, the following limitations exists:
 - No support for audio-only streams.
 - 16-bit audio.
 - Support sampling rates from 32 KHz to 96 KHz.
 - Support for stereo.
 - Support for AAC.
 - Audio support may affect latency.

- The playback of only 1 audio source is supported at any given point in time.
- Audio is supported only from the Windows default audio output.
- Audio is unsupported for IP encoding functionality.
- Audio is unsupported for streams from a Matrox Extio 3 product.
- Encoding, streaming, and recording functionalities of Mura IPX 4K Capture and IP Encode/Decode cards are only supported on C-Series based systems 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 unsupported 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 unsupported on Mura IPX Series.
- Only RTSP protocol is currently supported for IP encoding.
- An encode region can't span more than 1 display in PowerDesk.
- Power management is unsupported and should be disabled.

Known limitations with Mura IPX 4K Decode & Display cards

The following are known issues while using Mura IPX 4K Decode & Display cards.

- For audio, the following limitations exists:
 - Audio is only supported on the first output of a Mura IPX 4K Decode & Display card.
 - No support for audio-only streams.
 - 16-bit audio.
 - Support sampling rates from 32 KHz to 96 KHz.
 - Support for stereo.
 - Support for AAC.
 - Audio support may affect latency.
 - The playback of only 1 audio source is supported at any given point in time.
- Displays of the same make and model need to be used on all outputs of the Mura IPX 4K Decode & Display card.

- Rotation of IP sources in source settings is unsupported. However, the rotation of a window containing an IP source is supported.

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.
- To avoid possible problems, we recommend you use only Matrox PowerDesk software to change your display settings.
- 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.
- **Windows 10** –Enabling 10-bit display pixel format isn't supported.

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, the quantity of setups and configurations possible is too numerous to test completely. 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 4.5.2 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.
- The following third party applications have been validated by Matrox:
 - VLC[®] – 3.0.4 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 unsupported for third party applications except for VLC.
- 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.
- 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. [29197, 29198]
- The *ResumeAutoTransitionStart* command starts transitions right away even without the */restart* option. [29565]
- The same caption can be set on 2 different windows of the same layout.
- Shutting down the system while streams are up on the wall is unsupported.
- Windows Aero needs to be enabled for windows to be displayed correctly on a C-Series or third party based display wall controller.
- The Network API won't start if you have a video wall that contains 12 or more independent displays.

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 horizontal resolution of your layout in stretched mode can't be higher than 32768 pixels on a Mura MPX Series based system.
- The resolution per output, for C-Series cards, must be divisible by 8.
- PowerDesk configuration changes are unsupported while Network API is in use.

Notes and limitations with HDCP support on Mura MPX Series and Mura IPX Series

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

The following are known issues while using HDCP:

- Enabling HDCP capture may cause a drop in rendering performance.
- Up to 10 MPX Series output cards can be installed in your system. Make sure your cards are properly installed, you're using the correct connectors, and that all connectors are properly fastened. For more information, see the user guide for your Matrox Mura products.
- All monitors 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 MPX Series or Mura MPX Series plus Mura IPX Series cards.
- Capture of HDCP content isn't supported on Mura MPX-SDI and Mura IPX 4K DisplayPort Capture & IP Encode/Decode products.
- For Mura IPX Series cards, capture of HDCP content is supported on the physical inputs of Mura IPX 4K HDMI Capture & IP Encode/Decode cards.
- Repeaters aren't supported.

- The Preview surface functionality of the Display Wall library isn't supported on HDCP encrypted streams.
- Each HDCP encrypted stream can only be shown on a maximum of 11 downstream devices if the source is coming from a Mura MPX input. Some source devices support less downstream devices.
- A source device connected to the HDMI input connector of a Mura IPX Series card must support the number of downstream devices equal to the total number of monitors on your display wall plus 1.
- Moving a streaming window from one monitor to another while an HDCP encrypted stream is displayed will cause a monitor revalidation process (required for HDCP) and cause temporary image defects on the stream.
- When an HDCP input streaming window is rotated, the number of HDCP downstream devices required to be authenticated may increase due to the position of the underlying bounding rectangular window. [29070]
- HDCP sources won't stream protected content on a monitor currently on a revocation list.

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 Mura IPX 4K Decode & Display card

- 1 Install your Mura IPX 4K Decode & Display card in an enclosure, system or backplane that provides power to the PCIe slot. It can be placed in any system and any slot as long as the required power requirements are met.
- 2 Connect your Mura IPX 4K Decode & Display card to your network and to at least 1 monitor. It's important that the network used to configure the card has a DHCP server. Once configured, the card can be set to a static address and can be used without a DHCP server.
- 3 When the Mura IPX Decode & Display card boots, its IP Address is shown on the display. Run the firmware updater for your Mura IPX 4K Decode & Display card.
- 4 If required, use the IPX Utility to set a static address on the card.

Output configuration is performed using the Network API (or MuraControl for Windows).

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

- 1 Remove any existing third party graphics hardware installed in your system. If graphics hardware is built into the motherboard of your computer, make sure it's disabled.
- 2 Install and connect your Mura MPX Series cards, Mura IPX Series 4k capture cards, and the card for your console display. Make sure to uninstall any Matrox display drivers previously installed.
- 3 Install the Matrox Mura unified drivers by running *Matrox.Setup.exe*. This may take several minutes. If virus scan software is active during the installation process, the installation may take 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 completed successfully.
- 5 Run Matrox PowerDesk to configure your desktop layout (multi-display setup).

Supported Mura MPX consoles

The following are all the graphic cards currently supported as console displays when paired with Mura MPX 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
Matrox P690 PCIe x16	included in unified installer
Matrox P690 Plus LP PCIe x16	included in unified installer

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 If you are using a C900, please complete firmware update on C900. Firmware update is available for download through our website.
- 3 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.
- 4 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.

- 5 Restart the system once the installation completed successfully.
- 6 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.
- 7 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.
- 8 **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	21.20.16.4973
Intel HD Graphics 630	21.20.16.4973

NVIDIA NVS 510	24.21.14.1163
NVIDIA 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 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 M4000 or M6000 based controllers, install the NVIDIA graphics driver version 391.58.

For NVIDIA P5000 and P6000 based controllers, install the NVIDIA graphics drivers version 24.21.14.1163.

For Intel HD Graphics 530 based controllers, install the Intel graphics driver version 20.19.15.4463 or the ASUS driver version 21.2016.4541.

For Intel HD Graphics 630 based controllers, install the Intel graphics driver version 23.20.16.4973.

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

- 3 Install the Matrox Mura Display Wall drivers by running *Matrox.Setup.exe*. This will take several minutes. If virus scan software is active during the installation process, the installation takes significantly longer to complete (up to 2 or 3 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 completed successfully.

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

Driver installation on a Linux system

Before you begin

- Make sure the correct operating system is installed.
- Make sure you're running as root as this will be required for the installation of the drivers.
- Make sure the necessary exceptions are added to your firewall to allow network communications. The Network API uses port 23 for telnet communications.

Setting up a controller using C-Series products (with or without Mura IPX Series 4K capture cards)

- 1 Install and connect your C-Series C680 and Mura IPX Series cards.
- 2 For installation instructions, read the correct *readme* file for your operating system included in your software package.

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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