Matrox™ Release notes

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

Software version 3.01.00

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Overview

This document describes the current release of the Matrox Mura drivers (v3.01.00) for Mura MPX Series, Mura IPX Series, and C-Series graphics for Microsoft® Windows® operating systems.

This driver supports the following supported display wall configurations:

- Up to 2× C680/C900 cards.

- Up to 2× C680/C900 plus multiple Mura IPX Series 4K capture cards.

- Up to 14× Mura MPX Series cards.

- Up to 14× Mura MPX Series plus multiple Mura IPX Series 4K capture cards.

- Up to 4× NVIDIA® M4000 plus an NVIDIA sync card and multiple Mura IPX Series 4K capture cards.

- NVIDIA® M6000 plus multiple Mura IPX Series 4K capture cards.

- Intel® HD Graphics 530 graphics hardware plus multiple Mura IPX Series 4K capture cards.

- Intel® HD Graphics 630 graphics hardware plus multiple Mura IPX Series 4K capture cards.

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.

- Up to 2 C-Series C900/C680 standalone and up to 2 C-Series C900/C680 + multiple Mura IPX Series 4K capture cards configurations:
  - All Professional and Standard versions (64-bit) of Windows® 10 and Windows® 7.
  - All Embedded versions (64-bit) of Windows® 7.
  - Windows® 10 IoT.
  - Windows® Server® 2008 R2.
  - Windows® Server® 2016.

- Up to 14 Mura Series (Mura MPX Series with or without Mura IPX Series 4K capture cards configurations:
  - Windows® Embedded Standard 7 (64 bit).

- Windows® 7 Professional (64 bit).

- Windows® 7 Professional for Embedded Systems (64 bit).

- Windows® Server® 2008 R2 (64 bit).

- Up to 4 NVIDIA M4000 + NVIDIA sync card, an NVIDIA M6000 card, Intel HD Graphics 530 graphics hardware, or Intel HD Graphics 630 graphics hardware + multiple Mura IPX Series 4K capture cards configuration

  - All Professional and Standard versions of Windows® 10 and Windows® 7.

  - Windows® Server® 2008 R2

  - Windows® Server® 2016

What's new in this release

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

- Support HDCP on Mura IPX Series HDMI inputs for controllers using Mura MPX Series products.

- Support for RTP, MPEG-2 TS, and SRT streaming protocols for IP decoding only.

- Support for SDP (Session Description Protocol) with RTP streaming protocol.

- Supports the decoding of Extio 3 Series - 4:4:4 streams (up to and including 4K30). Extio3 version 1.00.05 or later is supported.

- Audio support on Windows controllers using C-Series or third party graphics hardware.

- Audio support for RTP, MPEG-2 TS, RTSP, and SRT streams.

- Addition of an /ALL parameter to Net API command Source.

- Addition of a Net API command/parameter to return status of streams.

- M-Series console support on controllers using Mura MPX Series products.

- Support for synchronization of IPX physical inputs on an MPX-based controller. All IPX physical inputs (HDMI) from a card are synchronized and presented together at the outputs if the incoming signals are framelocked together.

- Support for Low-Latency decoding.

- General stability improvements.

- 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):
  - 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.

- 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 4K streams.

- Local VLC playback performance may be affected if an M-Series product is used as a console in a controller using C-Series cards.

- 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.

- Using streaming windows that contain too many layers may affect rendering performance.

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

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 and mono.

- Support for AAC and PCM.

- Audio support may affect latency.

■ The playback of only 1 audio source is supported at any given point in time.

■ 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.

■ Mode changes on inputs being encoded are unsupported.

■ Power management is unsupported and should be disabled.

■ Interlaced video is currently unsupported on Mura IPX Series.

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.

■ The following are supported console displays for C-Series based display walls:

- Matrox M9148 LP PCIe x16

- Matrox M9140 LP PCIe x16

- Matrox M9138 LP PCIe x16

- Matrox M9128 LP PCIe ×16

- Matrox M9125 PCIe x16
- Matrox M9120 Plus LP PCIe x16
- Matrox M9120 Plus LP PCIe x1
- Matrox M9120 PCIe x16
- Intel® HD Graphics 530 (onboard)
- Intel® HD Graphics 630 (onboard)
- NVIDIA® NVS 510
- NVIDIA® NVS 310

- ■ To avoid possible problems, we recommend you use only Matrox PowerDesk software to change your display settings.
- ■ Third party console displays can only be used in independent mode.

Notes and limitations with Mura MPX Series cards

- ■ The following are supported console displays for Mura MPX Series based display walls:
  - Matrox M9148 LP PCIe x16
  - Matrox M9140 LP PCIe x16
  - Matrox M9138 LP PCIe x16
  - Matrox M9128 LP PCIe ×16
  - Matrox M9125 PCIe x16
  - Matrox M9120 Plus LP PCIe x16
  - Matrox M9120 Plus LP PCIe x1
  - Matrox M9120 PCIe x16
  - Matrox P690 PCIe x16
  - Matrox P690 Plus PCIe x16

  The Mura display wall driver package also installs the required M-Series or P690 drivers if the corresponding card is detected in the system.

- ■ Audio and encoding are unsupported.

Notes and limitations with third party graphics support

The following are known limitations while using third party graphics:

- Only the Intel HD Graphics 530, Intel HD Graphics 630, NVIDIA M4000 (4× NVIDIA M4000 + sync card), and NVIDIA M6000 can be paired with Mura IPX Series 4K capture cards and be used as display wall outputs. 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.

- 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

Notes and limitations with the Network API interface

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

- 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 `ClearDatabase` command doesn't delete the encoders, RTSP streams, or recordings.

- The following third party applications have been validated by Matrox:
  - VLC® – 3.0.3 in 64-bit
  - VNC® – 6.2
  - 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.

- When the *Netinfo* command is called, only the host network adapter is listed. [26732]

- Changing the output resolution resets the rotation to landscape. [28506]

- The aspect ratio of a VLC stream isn't respected when the source is loaded to a layout for the first time. [28234]

- The Network API can only report modes common to all monitors.

- Borders aren't resized along with the window if the window position was changed using the transition function. [28984]

- 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]

- Text and image overlays aren't properly handled within *Transitions*. The size and transparency aren't adjusted properly.

- The same caption can be set on 2 different windows of the same layout.

- The *SetSourceImageOverlay* and *AddSourceTextOverlay* commands don't work with source applications running on the Host system.

- Using HTTPS communication with the Network API bypasses any passwords set using telnet communication.

- Shutting down the system while streams are up on the wall is unsupported.

- The *ClearDatabase* /*Images* command returns *InternalError* if an image is in use on the wall.

- Unable to restart Network API if your output configuration contains more than 12 displays in independent mode.

- 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 PowerDesk software

The following are known limitations when using PowerDesk software:

- 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.

- PowerDesk can only detect C-Series graphics hardware if at least one C-Series output is attached to the desktop.

Notes and limitations with HDCP support on Mura MPX based controllers

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.

- 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 products.

- For Mura IPX Series cards, capture of HDCP content is supported on the physical inputs of Mura IPX Series 4K capture cards.

- Your monitors must be connected directly to your Mura MPX Series output cards (Mura MPX-4/4, MPX-4/2, and MPX-4/0). Repeaters aren't supported.

- 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.

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

- A source device connected to the input connector of a Mura MPX Series card must support between 2 and 12 downstream devices. This number is equal to the maximum number of monitors used to view that source plus 1. From a single source, your Mura product can show copy protected content on a maximum of 11 monitors.

- 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

Before you begin

- Make sure the correct operating system is installed.
    - C-Series based controllers support all Professional and Standard versions of Windows 10 and Windows 7. They also support Windows 10 IoT, Windows Server 2008 R2, Windows Server 2016, and all Embedded versions of Windows 7.
    - Mura MPX based controllers support Windows Embedded Standard 7 (64 bit), Windows 7 Professional (64 bit), Windows 7 Professional for Embedded Systems (64 bit) and Windows Server 2008 R2 (64 bit)
    - Third party graphics based controllers support all Professional and Standard versions of Windows 10 and Windows 7, and all Embedded versions of Windows 7.

- Make sure all the latest hot fixes for Windows are installed on your system. For Windows 7, you must install Windows 7 SP1 and the Microsoft KB2670838 hot fix. For improved stability under Windows Server 2008 R2 (XDDM mode), you must install the Microsoft KB980731 hot fix.

- 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-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 drivers for MPX systems 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 M-Series	5.04.00.030
Matrox P690 PCIe x16	5.04.00.030
Matrox P690 Plus LP PCIe x16	5.04.00.030

Setting up your C-Series-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.

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 M-Series	5.04.00.030
Intel HD Graphics 530	20.19.15.4463
Intel HD Graphics 630	23.20.16.4973
NVIDIA NVS 510	385.69
NIVIDIA NVS 310	368.39

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

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 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.

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 and/or NVIDIA) to configure your desktop layout (multi-display setup).

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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Matrox Graphics Inc.

1055 Saint Regis Boulevard
Dorval, Quebec, Canada
H9P 2T4

graphics@matrox.com
www.matrox.com/graphics

(514) 822-6000

matrox®
Graphics for Professionals