NVIDIA Mosaic Technology

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User's Guide

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01 ABOUT NVIDIA MOSAIC TECHNOLOGY

NVIDIA® Mosaic™ Technology uses NVIDIA Quadro or NVS™ solutions to take multiple displays and present them as a single logical GPU to the operating system.

In this way, using multiple-display hardware acceleration, Mosaic technology lets you use multiple displays to create a larger, virtual canvas with minimal performance impact on 2D or 3D applications.

Each display defines a unique uniform region within a larger virtual canvas.

Figure 1.1 Mosaic Regions

Note: Installations that require Mosaic Technology with multi-projector or stereoscopic 3D functionality must use Premium Mosaic-capable systems for proper operation.

About This Document

This document explains the Mosaic settings and how to connect your displays for optimum performance.

System Requirements

- The following Quadro and NVS products are supported:

  Group A *(Windows 7 only)*

  - NVS 300
  - Quadro NVS 290, 295, 420, 450
  - Quadro FX 380 LP, FX380, FX580, FX1800, FX3800, FX4800
  - Quadro 400, 600, 2000, 2000D, 4000
  - Workstation Notebooks and systems based on the Quadro 4000M, 3000M, 2000M, 1000M[1] GPUs

  Group B *(NVIDIA Quadro high end solutions for Premium Mosaic features)*

  (Windows 7, Windows Vista, Windows XP, Linux)

  - Quadro 5000, 6000
  - Quadro FX5800
  - Quadro Plex 2200 D2
  - Quadro Plex 7000
  - Workstation Notebooks and systems based on the Quadro 5010M, 5000M [1]GPUs
- The following operating systems are supported:
  - Microsoft Windows 7 (supports product groups A and B)
  - Microsoft Windows Vista (supports group B products only)
  - Microsoft Windows XP (supports group B products only)
  - Linux (supports group B products only)
- NVIDIA Quadro Professional Driver Release 265 or newer.

1. Mosaic on these notebooks is limited to two matching external displays.

Feature Summary

Table 1.2 Summary of Supported Features Using Mosaic Technology

Feature	Product Groups	Other Requirements
Application Spanning	A B	
Task bar Spanning	A B	
Panel Bezel Correction	A B	
Projector Overlap (Premium Mosaic feature)	B	
Seamless Dual Display (Premium Mosaic feature)	B	
Seamless Multiple Display (Premium Mosaic feature)	B	Quadro Plex unit or dual Quadro SLI™ GPUs in a Quadro SLI™ certified workstation
Seamless 4k Resolution Panel or Projector (Premium Mosaic feature)	B	Quadro Plex unit or dual Quadro SLI™ GPUs in a Quadro SLI™ certified workstation
Stereoscopic 3D Mosaic (Premium Mosaic feature)	B	Quadro Plex unit or dual Quadro SLI™ GPUs in a Quadro SLI™ certified workstation

QUADRO LINECARD

NVIDIA® QUADRO® PROFESSIONAL SCALABLE VISUALIZATION SOLUTIONS

Detailed Features

	Quadro Plex		Quadro Fermi					Quadro FX						NVS™				
Features	Quadro Plex 7000	Quadro Plex 2200 D2	Quadro 6000	Quadro 5000	Quadro 4000	Quadro 2000	Quadro 600	Quadro FX 5800	Quadro FX 4800	Quadro FX 3800	Quadro FX 1800	Quadro FX 580	Quadro FX 380 / FX 380 LP	NVS 450	NVS 420	NVS 295	NVS 290	NVS 300
DISPLAY SUPPORT																		
Max # of displays	8 seamless	8 seamless	8 up to 4 seamless	8 up to 4 seamless	8	8	8	8 up to 4 seamless	8	8	8	8	8	8	8	8	8	8
Panel Bezel Correction	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Projector Overlap	Yes	Yes	Yes	Yes	–	–	–	Yes	–	–	–	–	–	–	–	–	–	–
Max Resolution/Display (60Hz)	2560 x 1600	2560 x 1600	2560 x 1600	2560 x 1600	2560 x 1600	2560 x 1600	2560 x 1600	2560 x 1600	2560 x 1600	2560 x 1600	2560 x 1600	2560 x 1600	2560 x 1600	2560 x 1600	2560 x 1600	2560 x 1600	1920 x 1200	2560 x 1600
Max Mosaic Resolution	16K x 16K	8K x 8K	16K x 16K	16K x 16K	16K x 16K	16K x 16K	16K x 16K	8K x 8K	8K x 8K	8K x 8K	8K x 8K	8K x 8K	8K x 8K	8K x 8K	8K x 8K	8K x 8K	8K x 8K	8K x 8K
APPLICATION SPANNING SUPPORT																		
Application Spanning	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Task Bar Spanning	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Seamless Dual Display	Yes	Yes	Yes	Yes	–	–	–	Yes	–	–	–	–	–	–	–	–	–	–
Seamless Multiple Display	Up to eight displays**	Up to eight displays**	Up to four displays*	Up to four displays*	–	–	–	Up to four displays*	–	–	–	–	–	–	–	–	–	–
Seamless 4k Resolution Panel or Projector	Yes	Yes	Single or Dual GPUs*^	Single or Dual GPUs*^	–	–	–	Single or Dual GPUs*^	–	–	–	–	–	–	–	–	–	–
MULTIPLE DISPLAY STEREO SUPPORT																		
Active Stereo Support	Up to eight displays**	Up to eight displays**	Up to four displays*	Up to four displays*	–	–	–	Up to four displays*	–	–	–	–	–	–	–	–	–	–
Passive Stereo Support	Up to eight displays**	Up to eight displays**	Up to four displays*	Up to four displays*	–	–	–	Up to four displays*	–	–	–	–	–	–	–	–	–	–
SYSTEM SUPPORT																		
Windows® 7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Windows Vista®	Yes	Yes	Yes	Yes	–	–	–	Yes	–	–	–	–	–	–	–	–	–	–
Windows XP	Yes	Yes	Yes	Yes	–	–	–	Yes	–	–	–	–	–	–	–	–	–	–
Linux®	Yes	Yes	Yes	Yes	–	–	–	Yes	–	–	–	–	–	–	–	–	–	–

*Featured requires dual Quadro SLI™ GPUs in a Quadro SLI™ certified workstation . View list of certified platforms.

** Support available with up to two Quadro Plex systems connected through a Quadro Plex dual host interface card.

^ Single or dual GPU is determined by panel or projector requirements

For more information on NVIDIA and NVIDIA Quadro products, **visit www.nvidia.com**

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NVIDIA

Limitations

- Maximum Resolution

  The maximum resolution depends on the Quadro product used.

  - **Quadro 5000/6000, Quadro Plex 7000 (R290 and earlier drivers)**

    These GPUs have a maximum desktop limitation of 16,384 x 16,384 pixels. For proper operation, do not configure display settings that will total greater than 16,384 pixels in either the horizontal or vertical direction. For example, a 1 x 4 array consisting of panels of 6400 x 1600 pixel output each would have a total pixel output dimension of 25,600 x 1600. This would exceed the 16,384 limitation in the horizontal direction.

  - **Quadro FX 5800, Quadro Plex D2, all others**

    These GPUs have a maximum desktop limitation of 8192 x 8192 pixels. For proper operation, do not configure display settings that will total greater than 8192 pixels in either the horizontal or vertical direction. For example, a 1 x 4 array consisting of panels of 2560 x 1600 pixel output each would have a total pixel output dimension of 10240 x 1600. This would exceed the 8192 limitation in the horizontal direction.

  The total pixel output for a configuration is the total horizontal pixels by total vertical pixels. *Total size* on the *Set Up Mosaic* page calculates the total pixel dimension for you. The total pixels displayed is a combination of the Display configuration, resolution setting, and edge overlap settings.

- Minimum Resolution

  Mosaic also requires that individual displays use a resolution greater than 800 x 600 pixel output. If a display in your configuration is set to one of the smaller pixel output resolutions (e.g., 640 x 480 or 800 x 600), the system will revert to single display mode.

- Matching Displays

  All displays must be the same type and use the same type of connection (for example, all DVI-to-DVI or all DVI-to-VGA). Mixed display use is not supported.

- Maximum Number of Displays

  - Up to 8 displays, depending on the product and configuration

    For example, 8 displays connected to four Quadro 2000 cards in one system

  - Single Quadro Plex D2, 7000 or supported Quadro SLI workstation: Supports up to 4 displays for seamless presentation with no tearing artifacts
  - Dual Quadro Plex D2, 7000 (with Dual Output HIC - DoHIC) supports up to 8 displays for seamless presentation with no tearing artifacts
  - For Workstation notebooks, only two matching external displays connected to the dock are supported
  - Notebooks with a DisplayPort and HDMI connector can drive two HDMI displays.

02 USING NVIDIA MOSAIC TECHNOLOGY

This chapter describes how to set up your displays and configure the NVIDIA software for NVIDIA Mosaic multi-display technology.

This chapter explains the basic stages for setting up NVIDIA Mosaic technology, and includes a troubleshooting section:

- Connecting Two Quadro Plex Units
- Connect Your Displays
- Configure Your Driver Settings
- Set Up Mosaic Mode
- Troubleshooting

About the NVIDIA Control Panel

- See the *NVIDIA Control Panel Quick Start Guide* for an overview of the interface.
- Mosaic settings are found on the *Set up Mosaic* page in your NVIDIA Control Panel. When Mosaic is enabled, the Microsoft Windows Display Properties panel will show multiple displays but you will not be able to interact with them. Instead, use the settings on the *Set up Mosaic* page to adjust the display resolution and refresh rate.

Connecting Two Quadro Plex Units

If your setup includes two Quadro Plex units for more than four displays, connect the Quadro Plex units to each other using one CAT5 ethernet cable connected to one of the G-Sync connectors from each unit.

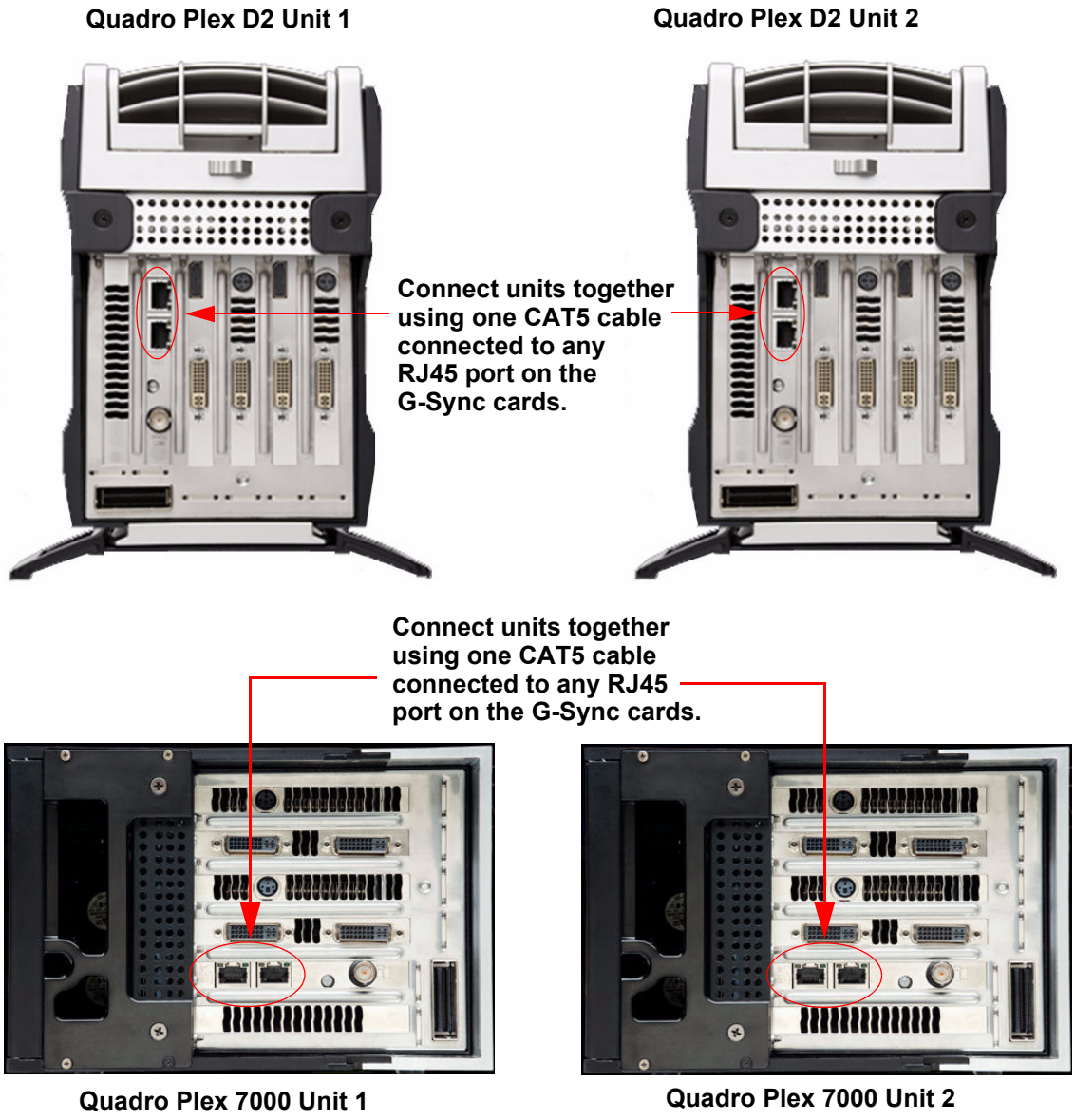


Figure 2.1 Quadro Plex G-Sync Connections

Connect Your Displays

Connect all the displays that you intend to use in Mosaic to the Quadro boards.

For Windows XP, see "Display Connections" on page 20 for the proper connectors to use, based on your solution and display configuration.

- All displays connected must be part of the Mosaic configuration. For example, the 2x2 configuration cannot be set with only 3 displays connected.
- Additional displays that are not part of the desired Mosaic configuration should not be connected, as this may result in unpredictable behavior.
- Mosaic mode cannot be enabled when only one display is connected.
- All displays must be the same type and use the same type of connection (for example, all DVI-to-DVI or all DVI-to-VGA).
- The visual characteristics of displays vary by manufacturer and model from the same manufacturer. NVIDIA recommends using the same make and model for all displays.

Configure Your Driver Settings

There are several settings that you should configure before enabling Mosaic mode.

- Configure Display Settings
- Enable SLI Mode on SLI and Quadro Plex Systems
- Enable V-Sync
- Set OpenGL Stereo Settings
- Set Up Mosaic Mode

Configure Display Settings

Before you enable Mosaic, only one display is lit. The display settings that you set on this display will be applied to all the displays after enabling Mosaic.

1. Open the NVIDIA Control Panel by right-clicking the desktop and then clicking **NVIDIA Control Panel** from the context menu.
2. Configure your display settings before enabling Mosaic.

   Display settings may include but are not limited to:

   - Desktop color settings
   - Flat panel scaling
   - Video and TV settings

Enable SLI Mode on SLI and Quadro Plex Systems

This setup is required only if your configuration requires SLI.

1. From the **NVIDIA Control Panel** *Select a Task* pane, under *3D Settings*, select **Set SLI configuration** to open the associated page.
2. Under **Select the SLI configuration**, click **Allow SLI Mosaic Mode**.
3. Click **Apply**.
4. Check the **Antialiasing – Setting** feature to make sure it is *not* set to any of the "SLI AA" values (e.g., 16x SLI AA, 32x SLI AA).

   If it is, select a non-SLI AA setting, then click **Apply**.

Enable V-Sync

1. From the **Manage 3D Settings** Global presets pull-down menu, select **Base profile.**
2. From the Settings list box, select **Vertical sync** and change its value to **Force on**, then click **Apply**.
3. From the Global presets pull-down menu, select **3D App - Default Global Settings** (the driver's default profile) or use the application profile that matches the application you are using, then click **Apply**.

Set OpenGL Stereo Settings

Optional: Set the OpenGL Stereo settings as needed.

On the Manage 3D Settings page:

- If you are not using OpenGL stereo, make sure that Stereo is disabled.
- If you are using active OpenGL stereo, then enable stereo and select the appropriate stereo display mode.
- If you are using passive OpenGL stereo, then enable stereo and select the Clone mode stereo display mode.

Set Up Mosaic Mode

The exact steps to take depend on the operating system you are using and whether your configuration supports the premium features:

- Set Up Premium Mosaic Under Windows XP
- Set Up Premium Mosaic (Windows Vista and Windows 7)
- Set Up Mosaic (Windows 7)

Set Up Premium Mosaic Under Windows XP

1. From the *Select a Task* navigation pane, under *Workstation*, click **Set Up Premium Mosaic** to open the associated page.

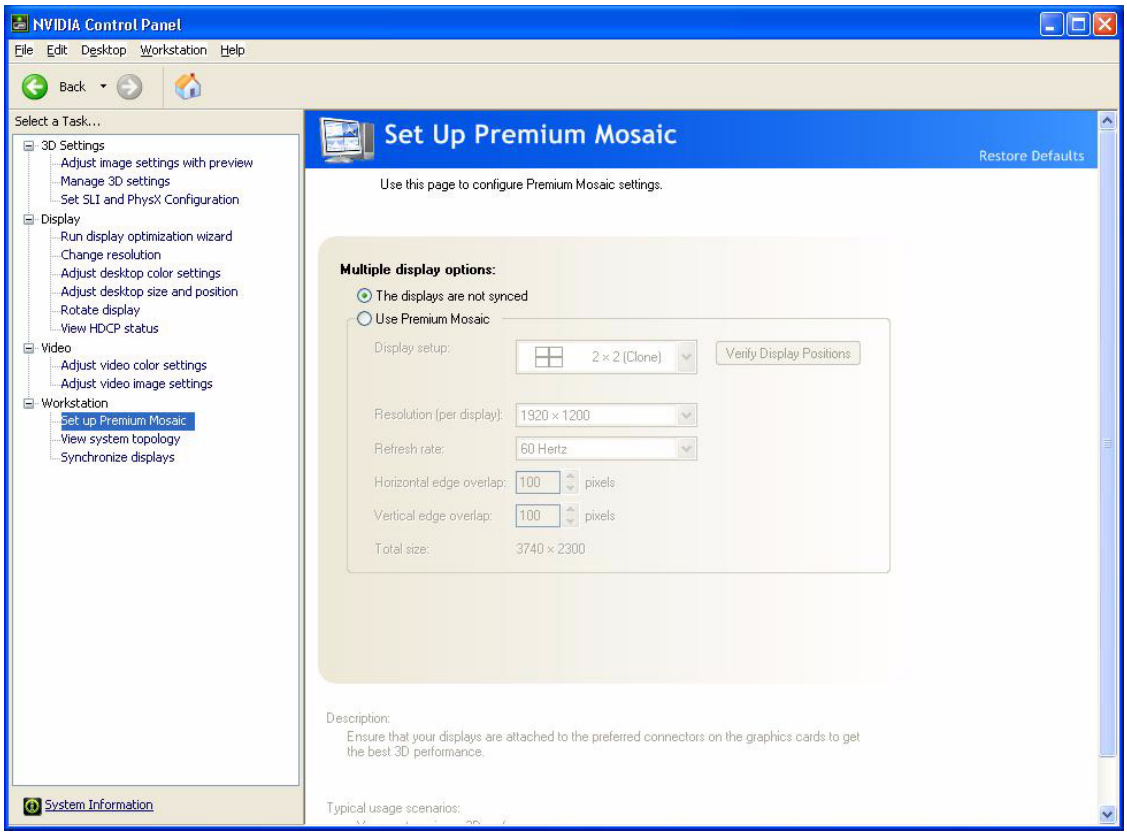


Figure 2.2 NVIDIA Control Panel Set Up Premium Mosaic

2. Click the **Use Premium Mosaic** check box to enable Mosaic settings.
3. Click the **Display setup** list arrow and then select the display configuration that matches your arrangement.
4. Click **Verify display positions** to make sure your displays are attached to the correct Quadro connectors.

A diagram appears on each display in the mosaic surface and indicates which Quadro output is being driven.

Figure 2.3 shows an example of the diagrams that should appear in each display of a 2x2 SLI Mosaic arrangement.

Figure 2.3 2x2 Verify Display Example

If the diagrams match your display layout, you can close all the diagrams by clicking the "X" in the upper right corner of any of the diagrams.

If the diagrams do not match your display layout, then make the necessary corrections as follows:

Note: Do not disconnect the displays while the system is still powered on. Doing so can disable Mosaic functionality.

a Determine and make a note of the correct connections, using the diagrams as a guide.

b Close all applications and shut down your system.

c Rearrange the display connections.

d Turn your system back on and verify the configuration.

5 Set the resolution per display.

Click the **Resolution (per display)** list arrow and then select the resolution to which you want each display set. Make sure your settings fall within the following limits:

- Maximum total resolution (horizontal or vertical): 8192 for older Quadro products, and 16,384 for newer Quadro products. See "Maximum Resolution" on page 5.

- Minimum individual resolution: 800x600

6 Set the refresh rate.

Click the **Refresh rate** list arrow and then select the refresh rate you want applied to all displays.

Note: The refresh rate list box contains the refresh rates that are available for the resolution selected. The Set Up Premium Mosaic page shows a limited number of refresh rates. For VGA displays, you may not see a refresh rate that you know is supported. If a refresh rate supported by your display is not listed, you can set it by locating and then setting it using the Windows Display Properties page. Alternatively, you can define a custom mode using the NVIDIA Control Panel->Change resolution page and then the refresh rate should appear on the Set Up Premium Mosaic page.

7 Set the Horizontal and/or Vertical edge overlap as needed to accommodate a variety of configurations.

For example, you can introduce gaps (negative overlap) to accommodate bezeled displays.

8 Click **Apply** to save your changes.

Set Up Premium Mosaic (Windows Vista and Windows 7)

1 From the *Select a Task* navigation pane, under *Workstation*, click **Set Up Premium Mosaic** to open the associated page.

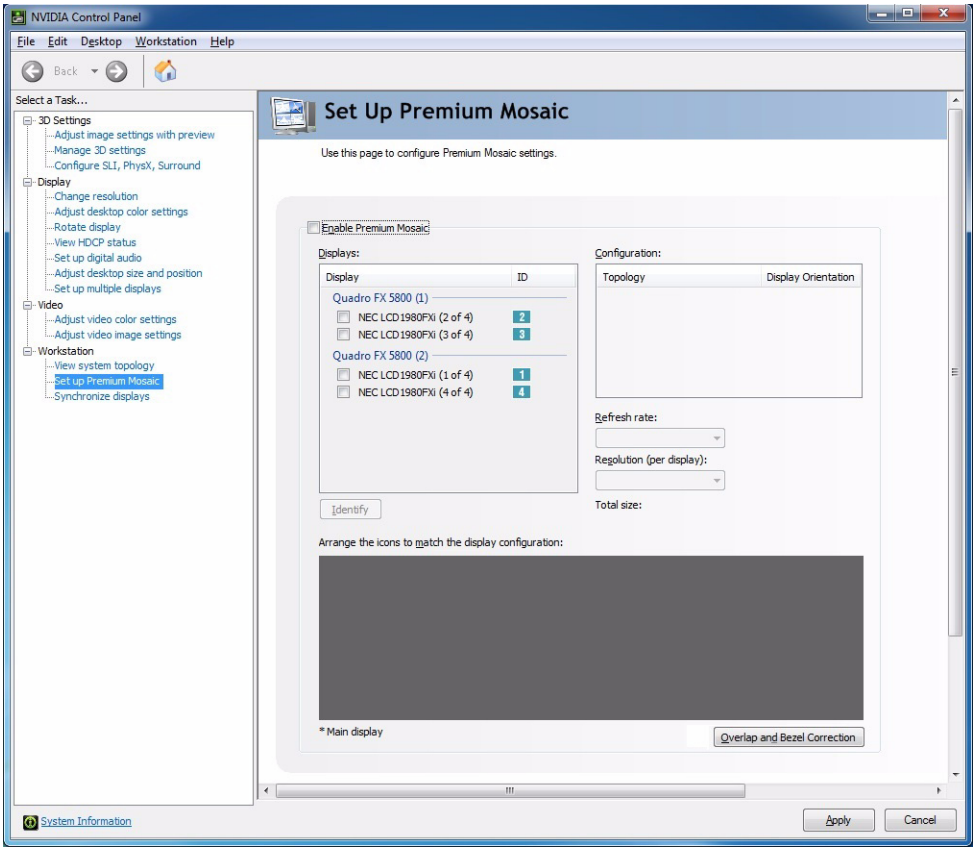


Figure 2.5 NVIDIA Control Panel Set Up Premium Mosaic Page

2 Click the **Enable Premium Mosaic** check box to enable Mosaic settings.

3 Under *Displays*, click the check boxes for the displays that you want to use for Mosaic.

Click **Identify** and the corresponding number appears on your displays to help you determine which displays you want to check.

4 Under *Configuration*, select the topology and display orientation you want to use.

The selection must match the number of displays you selected in the previous step.

5 Set the resolution per display.

Click the **Resolution (per display)** list arrow and then select the resolution to which you want each display set. Make sure your settings fall within the following limits:

- Maximum total resolution (horizontal or vertical): 8192 for older Quadro products, 16,384 for newer Quadro products. See "Maximum Resolution" on page 5.
- Minimum individual resolution: 800x600

6 Set the refresh rate.

Click the **Refresh rate** list arrow and then select the refresh rate you want applied to all displays.

Note: The refresh rate list box contains the refresh rates that are available for the resolution selected. The Set Up Premium Mosaic page shows a limited number of refresh rates. For VGA displays, you may not see a refresh rate that you know is supported. If a refresh rate supported by your display is not listed, you can set it by locating and then setting it using the Windows Display Properties page. Alternatively, you can define a custom mode using the NVIDIA Control Panel->Change resolution page and then the refresh rate should appear on the Set Up Premium Mosaic page.

7 Click and drag the icons at the bottom of the page to match your display configuration.

8 Click **Overlap and Bezel Correction** and then adjust the Horizontal and/or Vertical edge gap as needed to accommodate bezeled displays or projector overlap.

9 Click **Apply** to save your changes.

Set Up Mosaic (Windows 7)

1 From the *Select a Task* navigation pane, under *Workstation*, click **Setup Mosaic** to open the associated page.

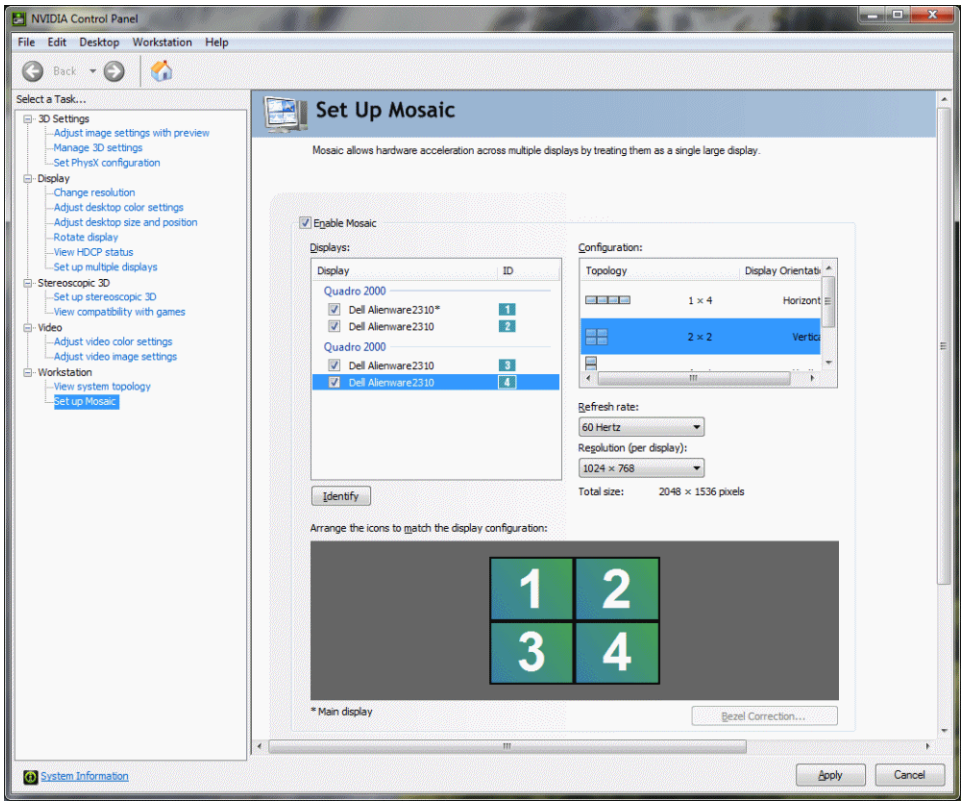


Figure 2.6 NVIDIA Control Panel Set Up Mosaic Page

2 Click the **Enable Mosaic** check box to enable Mosaic settings.

3 Under *Displays*, click the check boxes for the displays that you want to use for Mosaic.

Click **Identify** and the corresponding number appears on your displays to help you determine which displays you want to check.

4 Under *Configuration*, select the topology and display orientation you want to use.

The selection must match the number of displays you selected in the previous step.

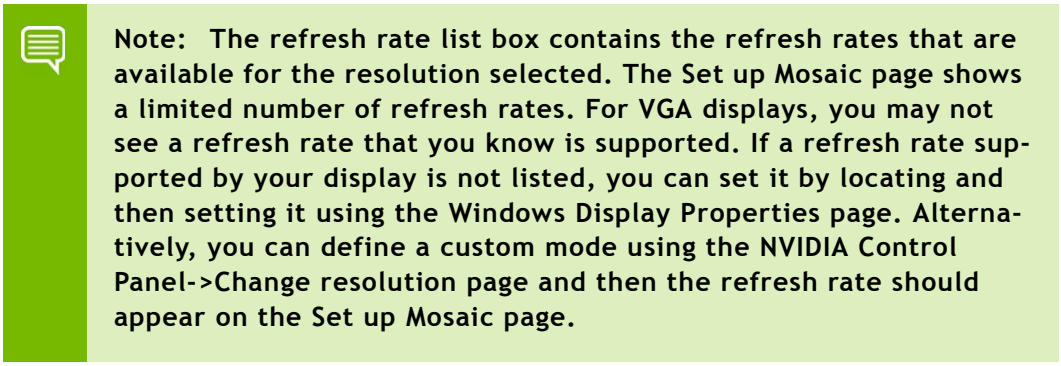
5 Set the resolution per display.

Click the **Resolution (per display)** list arrow and then select the resolution to which you want each display set. Make sure your settings fall within the following limits:

- Maximum total resolution (horizontal or vertical): 8192 for older Quadro products, 16,384 for newer Quadro products. See "Maximum Resolution" on page 5.
- Minimum individual resolution: 800x600

6 Set the refresh rate.

Click the **Refresh rate** list arrow and then select the refresh rate you want applied to all displays.



Note: The refresh rate list box contains the refresh rates that are available for the resolution selected. The Set up Mosaic page shows a limited number of refresh rates. For VGA displays, you may not see a refresh rate that you know is supported. If a refresh rate supported by your display is not listed, you can set it by locating and then setting it using the Windows Display Properties page. Alternatively, you can define a custom mode using the NVIDIA Control Panel->Change resolution page and then the refresh rate should appear on the Set up Mosaic page.

7. Click and drag the icons at the bottom of the page to match your display configuration.
8. Click **Bezel Correction** and then adjust the Horizontal and/or Vertical edge gap as needed to accommodate bezeled displays.
9. Click **Apply** to save your changes.

Troubleshooting

- Display position does not match the diagrams in Appendix A
- Only 800x600 resolution is available
- Mosaic options are missing from the Set Up (Premium) Mosaic page

Display position does not match the diagrams in Appendix A

Note: The diagrams in Appendix A apply only when setting up Premium Mosaic under Windows XP.

Due to differences in system BIOS configurations with respect to the GPU, the display positioning on your system may not match the arrangement given in Appendix A.

If this is the case,

- Use the "Verify Display" diagrams to determine the correct connections for your system, and then reconnect the displays accordingly.
- If you are using a configuration that does not use all of the display connections on the Quadro Plex unit and not all of your displays are lit, then connect displays to all of the connector outputs to determine which outputs are being used.

Only 800x600 resolution is available

Issue

On the *Set up Mosaic* page, only 800x600 is listed under **Resolutions (per display)**.

Resolution

Verify the following and make the necessary corrections:

- That all displays are the same type–all VGA or all DVI–and that they have the same EDID information and capabilities.
- Under Windows XP, that all the displays are connected to the connector locations as indicated in Appendix A.

Mosaic options are missing from the Set Up (Premium) Mosaic page

Issue

Some sections are missing from the *Set Up (Premium) Mosaic* page.

Resolution

1. With the system turned on and the NVIDIA Control Panel opened, disconnect (hot-unplug) all displays except for the primary boot display.
2. In the NVIDIA Control Panel, select **Set up (Premium) Mosaic** to open the associated page.
   - All appropriate display configurations should appear in the **Display setup** list.
   - Only 800x600 resolution is available.
3. Click the **Display setup** list arrow and then select the topology you wish to configure.

   The topology should be activated but only the first display will be visible. If VNC is available, the full topology can be viewed from a remote machine.
4. Connect (hot plug) the remaining displays until all are visible.

   The displays may not appear in the proper topology order. This can be corrected later.
5. Enable Mosaic, verify the display configuration, and make corrections as needed as described in "Set Up Mosaic Mode" on page 11.

APPENDIX A DISPLAY CONNECTIONS

To achieve proper performance, the individual displays within a mosaic pattern must be connected to specific connectors on the Quadro Plex unit.

This appendix describes the display positions and corresponding connections to use when configuring premium Mosaic under Windows XP.

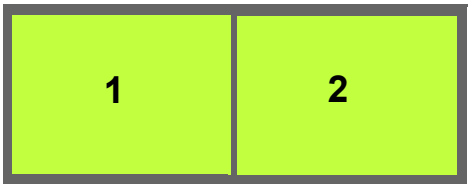
- "Quadro Plex D2 Display Connections" on page 21
- "Quadro Plex 7000 Display Connections" on page 33

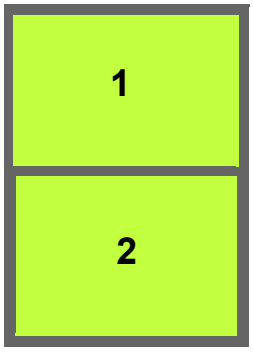
Quadro Plex D2 Display Connections

- "Quadro Plex D2: 2-Display Mosaic Connections" on page 22
- "Quadro Plex D2: 3-Display Mosaic Connections" on page 23
- "Quadro Plex D2: 4-Display Mosaic Connections" on page 24
- "Dual Quadro Plex D2: 6-Display Mosaic Connections" on page 25
- "Dual Quadro Plex D2: 8-Display Mosaic Connections" on page 26
- "Quadro Plex D2: 4-Display Connections for 2-Display Passive Stereo Mosaic" on page 27
- "Dual Quadro Plex D2: 6-Display Connections for 3-Display Passive Stereo Mosaic" on page 28
- "Dual Quadro Plex D2: 8-Display Connections for 4-Display Passive Stereo Mosaic" on page 30

Quadro Plex D2: 2-Display Mosaic Connections

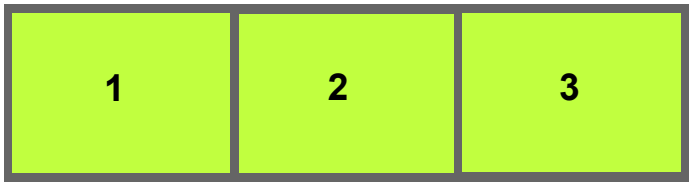
Connect the numbered connector to the display located at the corresponding mosaic position.

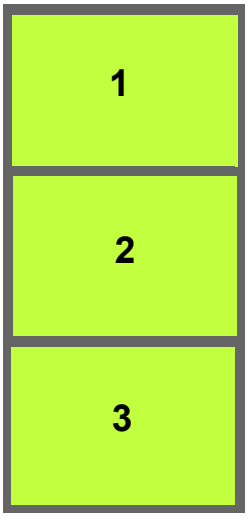




Quadro Plex D2: 3-Display Mosaic Connections

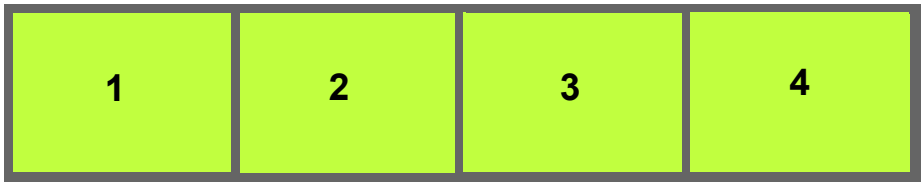
Connect the numbered connector to the display located at the corresponding mosaic position.

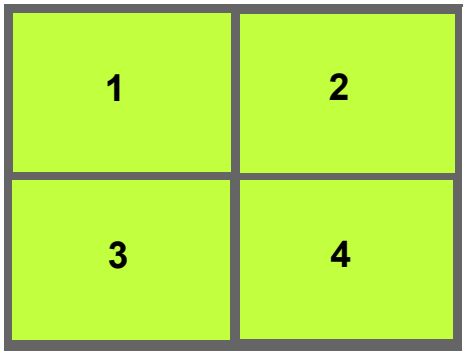




Quadro Plex D2: 4-Display Mosaic Connections

Connect the numbered connector to the display located at the corresponding mosaic position.

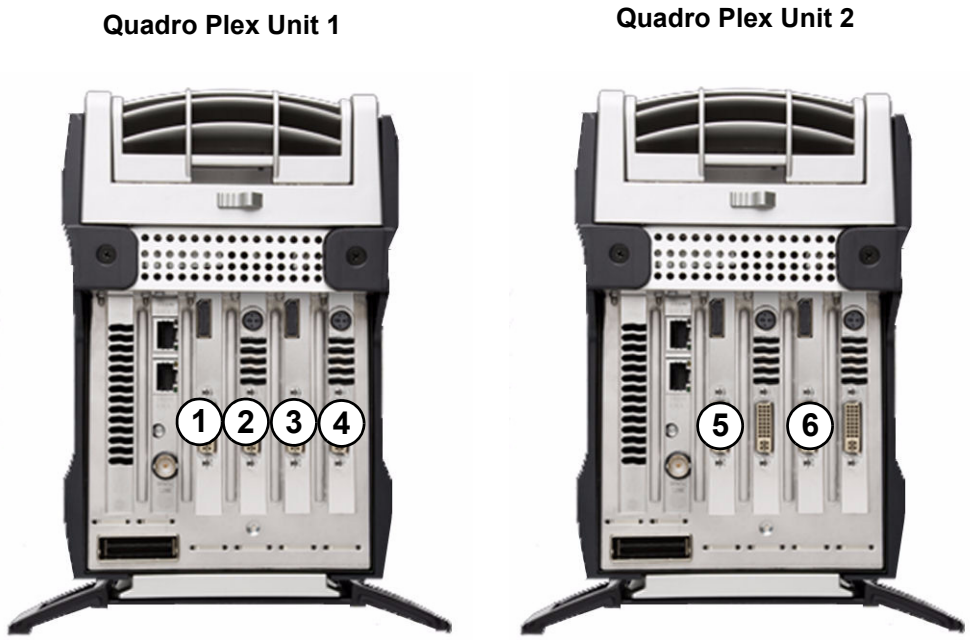


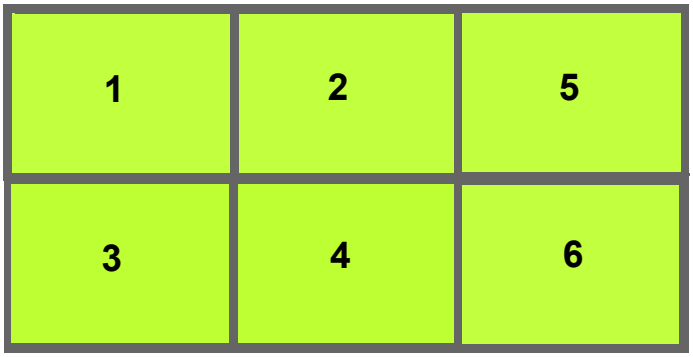


Dual Quadro Plex D2: 6-Display Mosaic Connections

This section describes the display connections to two Quadro Plex units (see"Connecting Two Quadro Plex Units" on page 7).

Connect the numbered connector to the display located at the corresponding mosaic position. Typically, the north connector on the NVIDIA DoHIC card is connected to the Quadro Plex unit 1, but you may need to experiment to determine the connection in your system. .

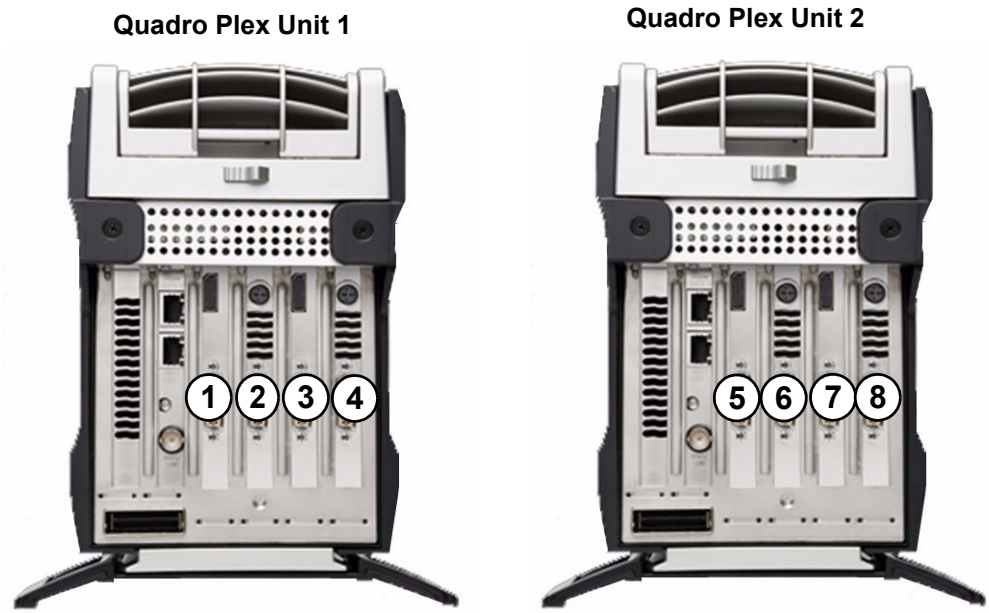




Dual Quadro Plex D2: 8-Display Mosaic Connections

This section describes the display connections to two Quadro Plex D2 units (see"Connecting Two Quadro Plex Units" on page 7).

Connect the numbered connector to the display located at the corresponding mosaic position. Typically, the north connector on the NVIDIA DoHIC card is connected to the Quadro Plex unit 1, but you may need to experiment to determine the connection in your system.



(Windows)

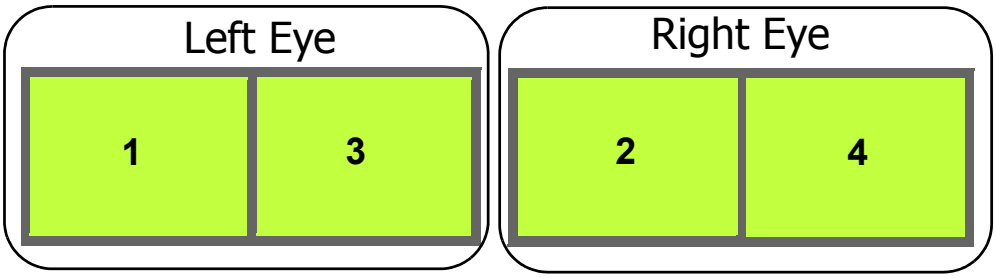
1	2	5	6
3	4	7	8

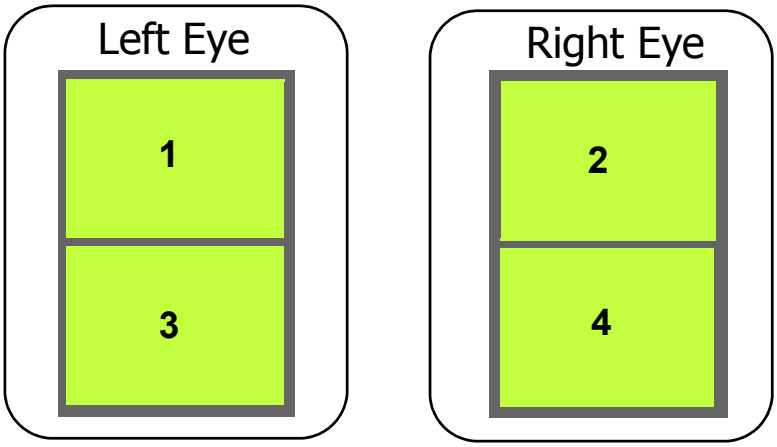
(Linux)

1	2	3	4
5	6	7	8

Quadro Plex D2: 4-Display Connections for 2-Display Passive Stereo Mosaic

Connect the numbered connector to the display located at the corresponding mosaic position.

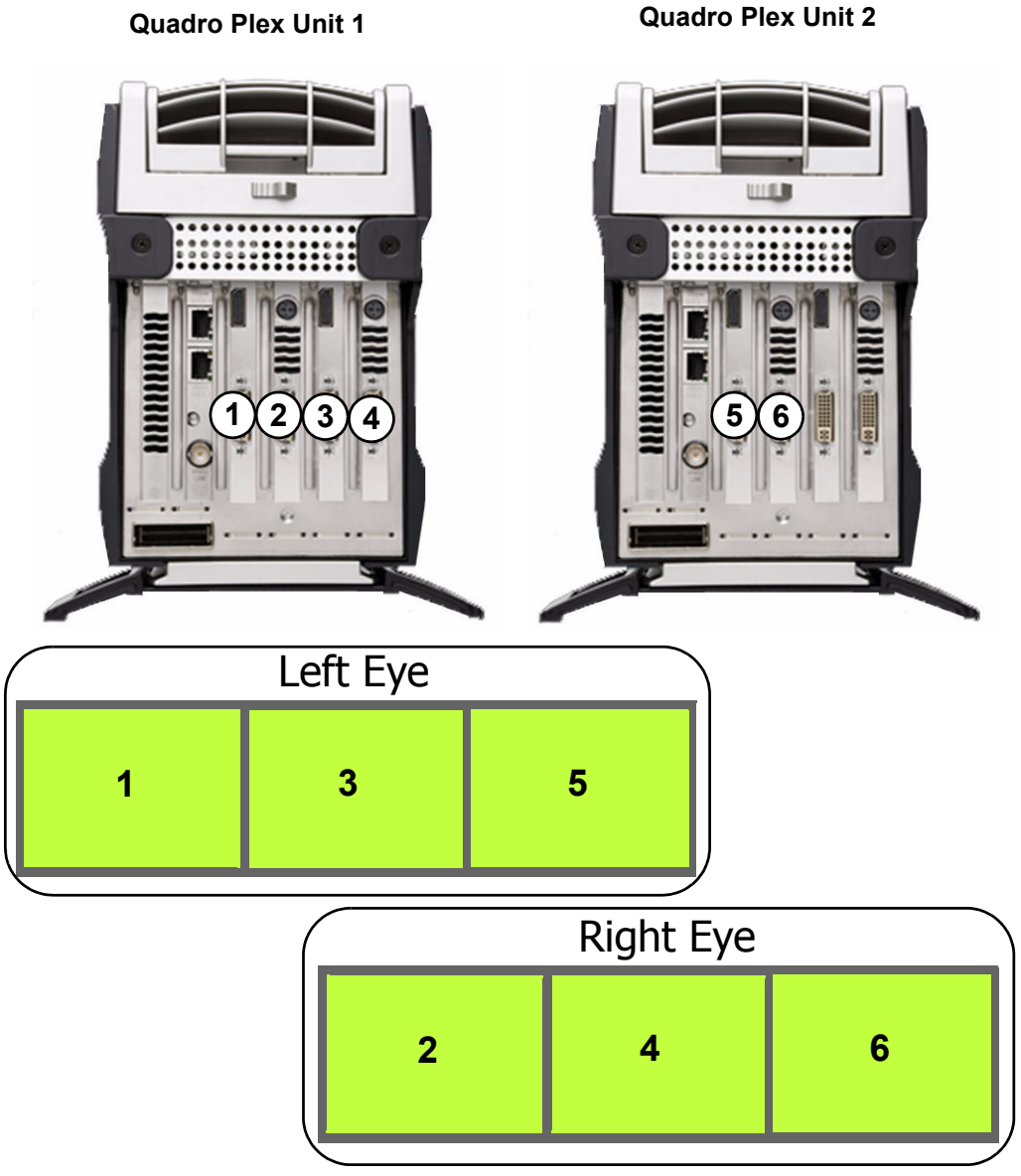


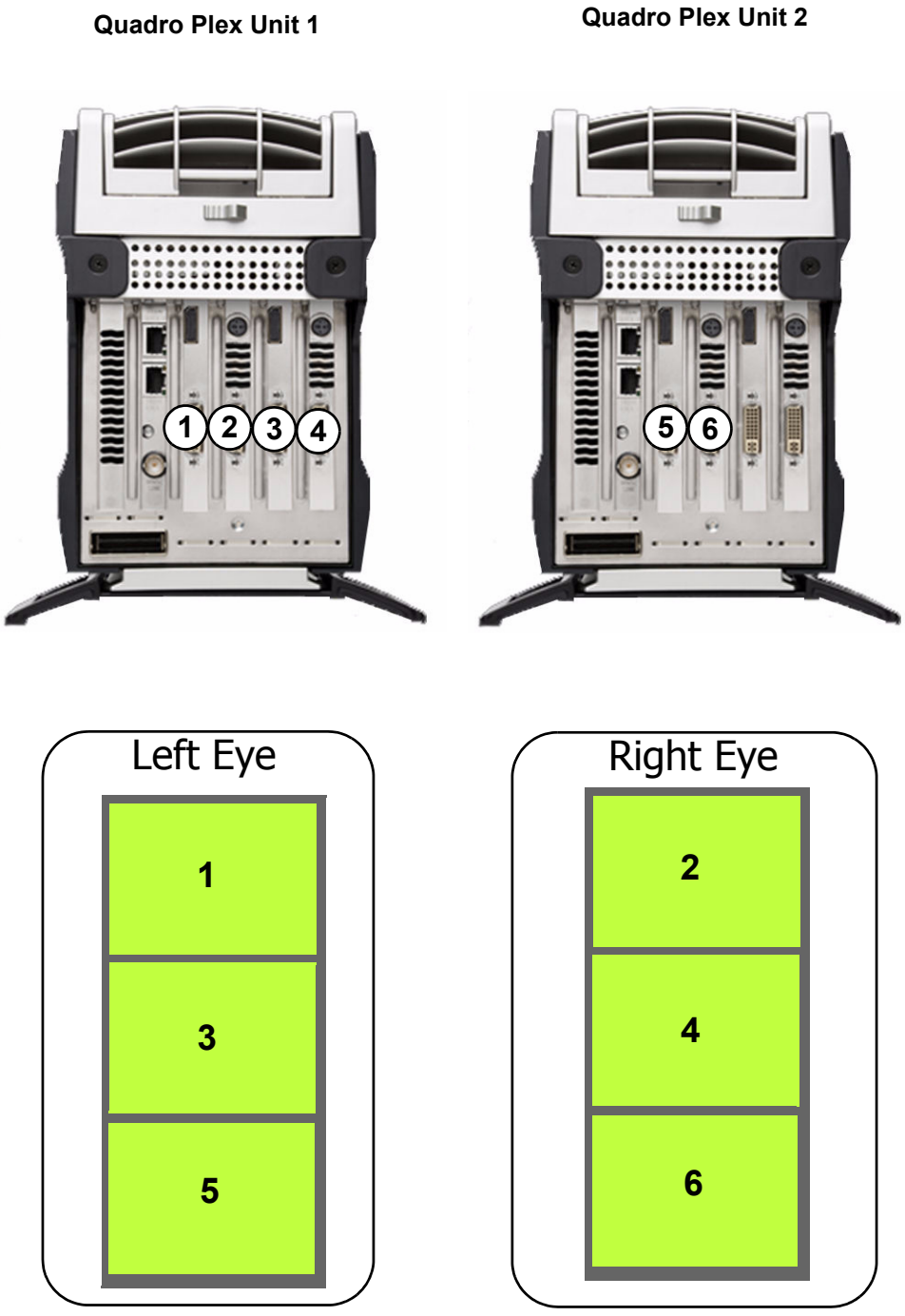


Dual Quadro Plex D2: 6-Display Connections for 3-Display Passive Stereo Mosaic

This section describes the display connections to two Quadro Plex units (see"Connecting Two Quadro Plex Units" on page 7).

Connect the numbered connector to the display located at the corresponding mosaic position. Typically, the north connector on the NVIDIA DoHIC card is connected to the Quadro Plex unit 1, but you may need to experiment to determine the connection in your system.

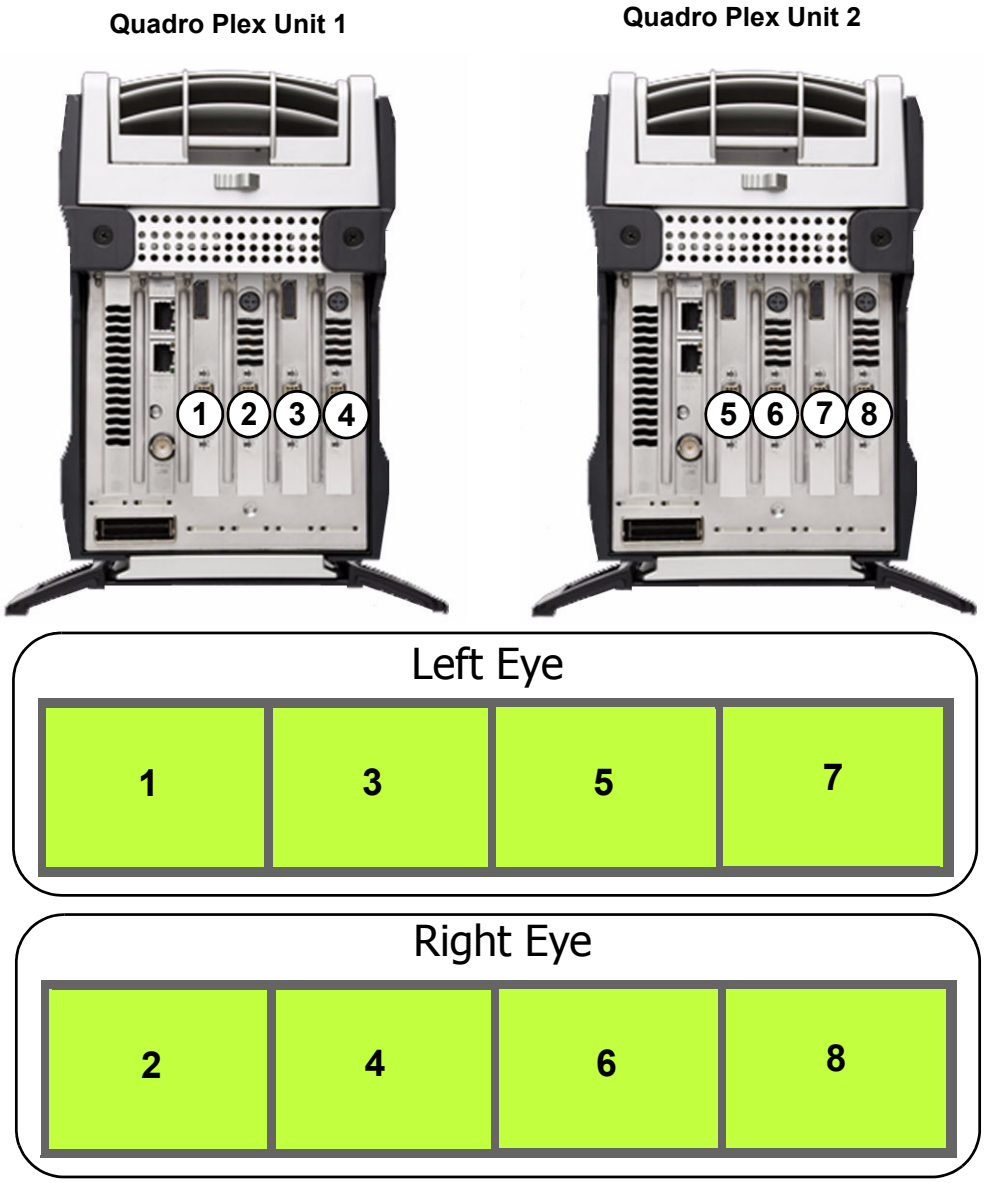


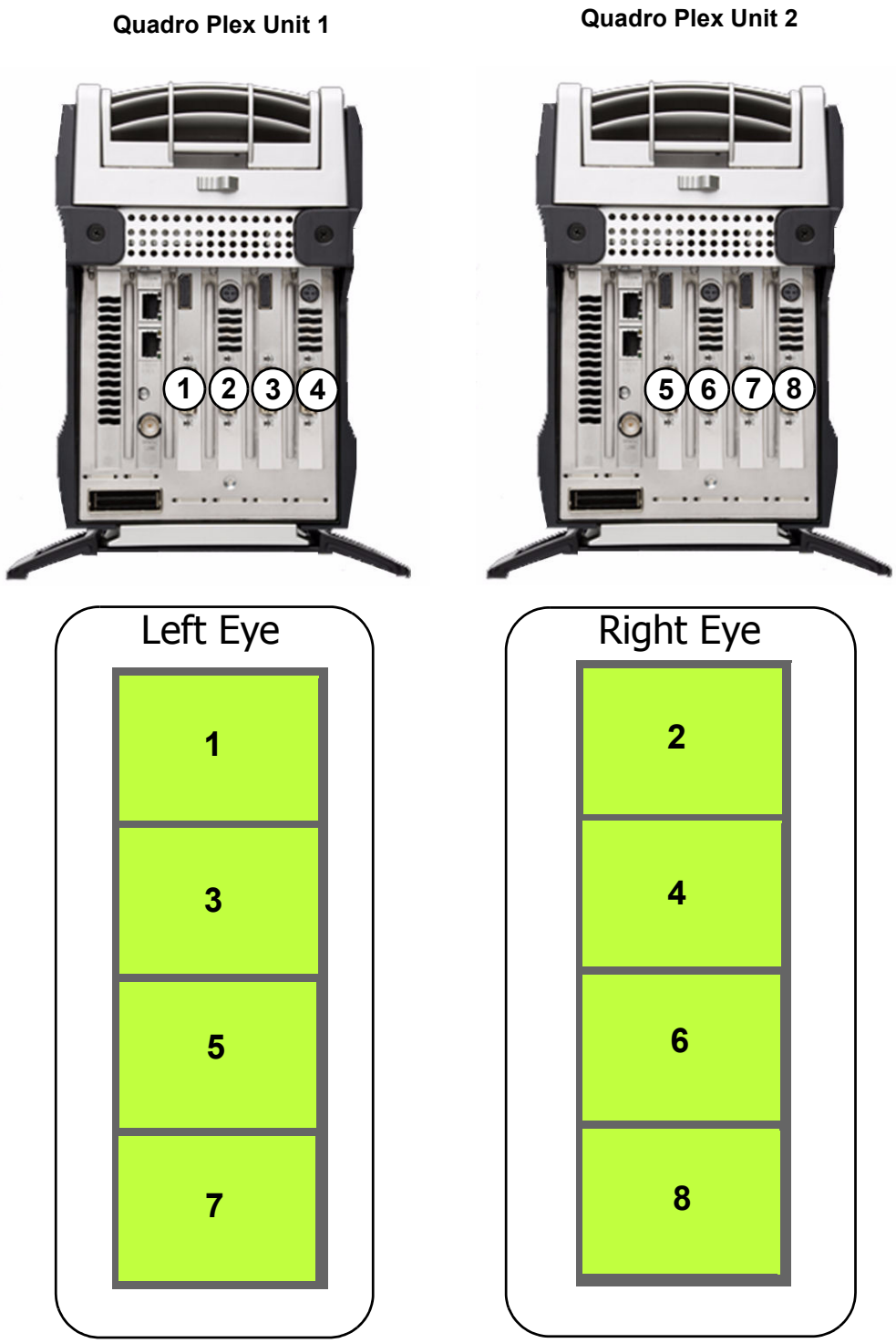

Quadro Plex Unit 1
Quadro Plex Unit 2
1
2
3
4
5
6
Left Eye
1
3
5
Right Eye
2
4
6

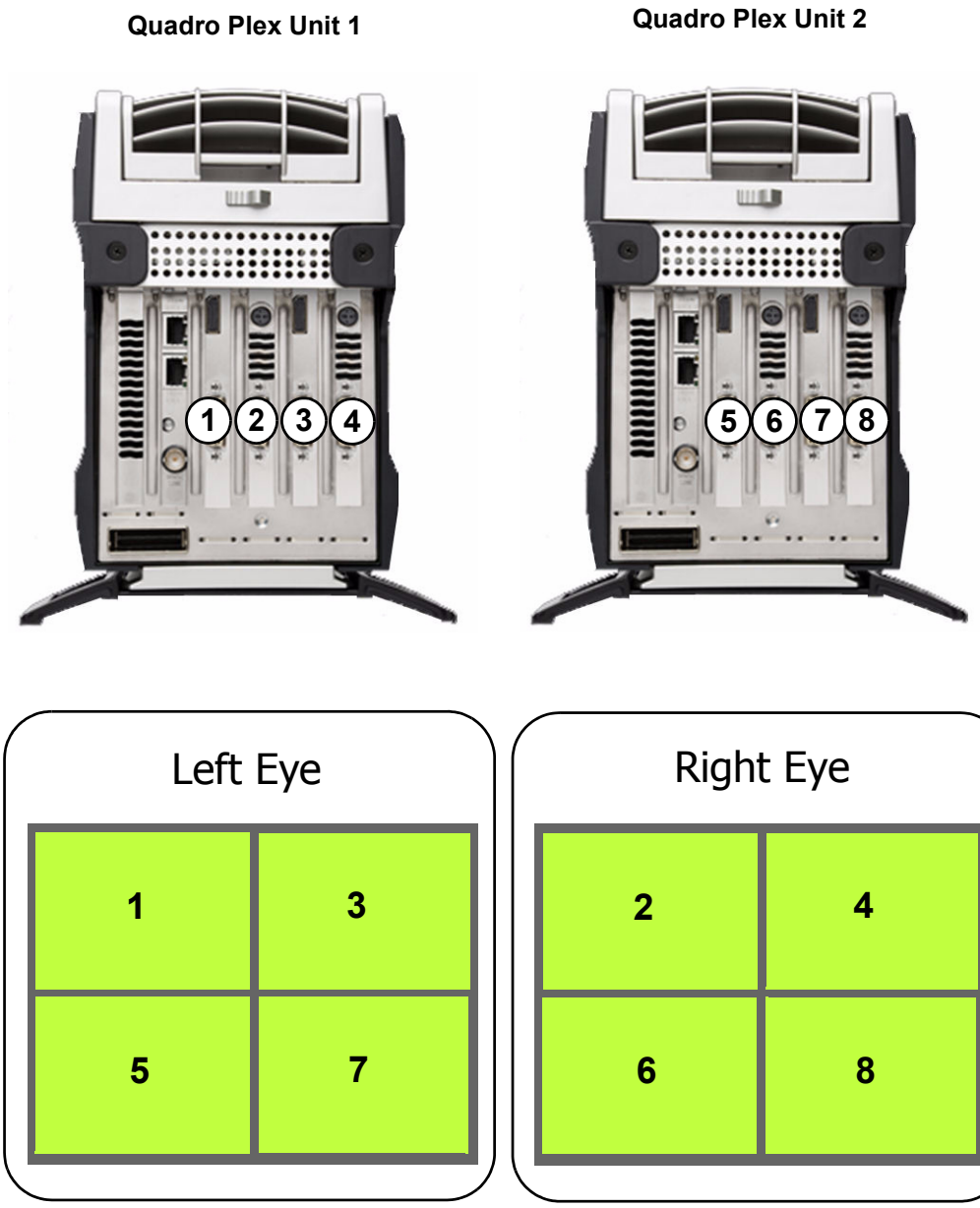
Dual Quadro Plex D2: 8-Display Connections for 4-Display Passive Stereo Mosaic

This section describes the display connections to two Quadro Plex units (see"Connecting Two Quadro Plex Units" on page 7).

Connect the numbered connector to the display located at the corresponding mosaic position. Typically, the north connector on the NVIDIA DoHIC card is connected to the Quadro Plex unit 1, but you may need to experiment to determine the connection in your system.




Quadro Plex Unit 1
Quadro Plex Unit 2
1 2 3 4
5 6 7 8
Left Eye
1
3
5
7
Right Eye
2
4
6
8

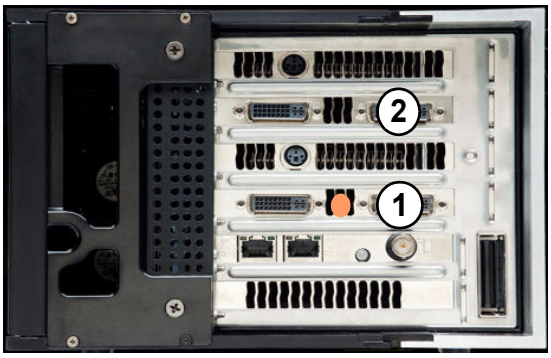

Quadro Plex Unit 1
Quadro Plex Unit 2
1
2
3
4
5
6
7
8
Left Eye
1
3
5
7
Right Eye
2
4
6
8

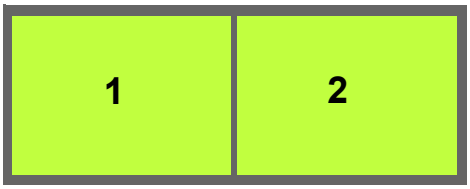
Quadro Plex 7000 Display Connections

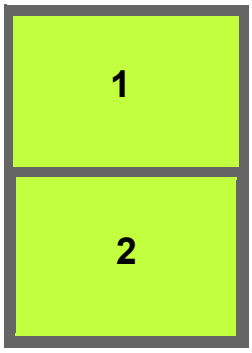
- "Quadro Plex 7000: 2-Display Mosaic Connections" on page 34
- "Quadro Plex 7000: 3-Display Mosaic Connections" on page 35
- "Quadro Plex 7000: 4-Display Mosaic Connections" on page 36
- "Dual Quadro Plex 7000: 6-Display Mosaic Connections" on page 37
- "Dual Quadro Plex 7000: 8-Display Mosaic Connections" on page 38
- "Quadro Plex 7000: 4-Display Connections for 2-Display Passive Stereo Mosaic" on page 39
- "Dual Quadro Plex 7000: 6-Display Connections for 3-Display Passive Stereo Mosaic" on page 40
- "Dual Quadro Plex 7000: 8-Display Connections for 4-Display Passive Stereo Mosaic" on page 42

Quadro Plex 7000: 2-Display Mosaic Connections

Connect the numbered connector to the display located at the corresponding Mosaic position.

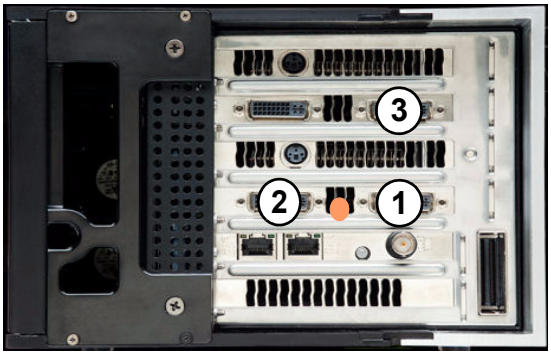


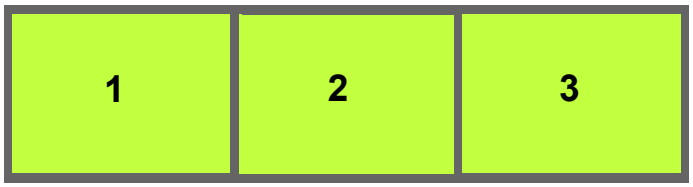


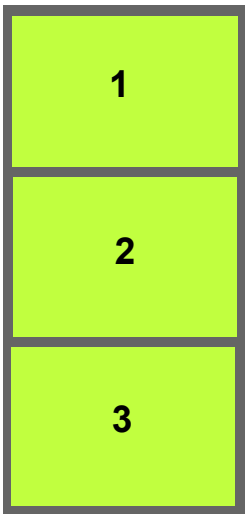


Quadro Plex 7000: 3-Display Mosaic Connections

Connect the numbered connector to the display located at the corresponding mosaic position.

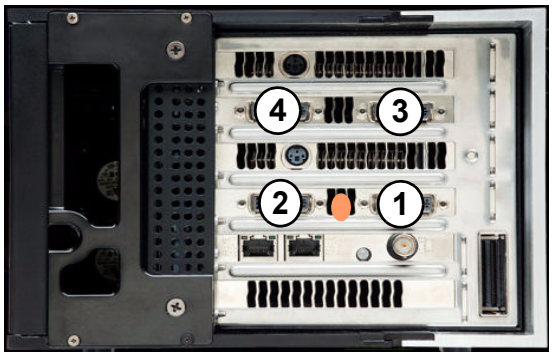


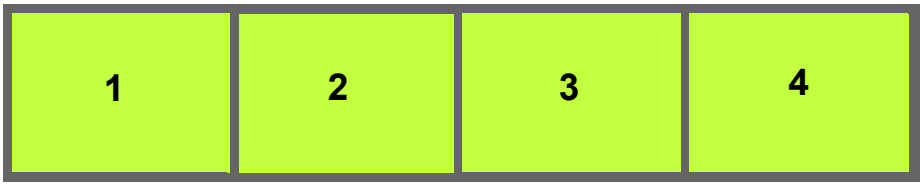


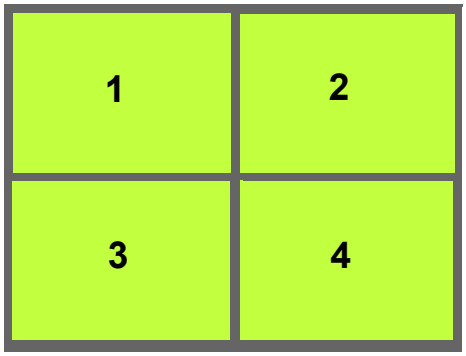


Quadro Plex 7000: 4-Display Mosaic Connections

Connect the numbered connector to the display located at the corresponding mosaic position.





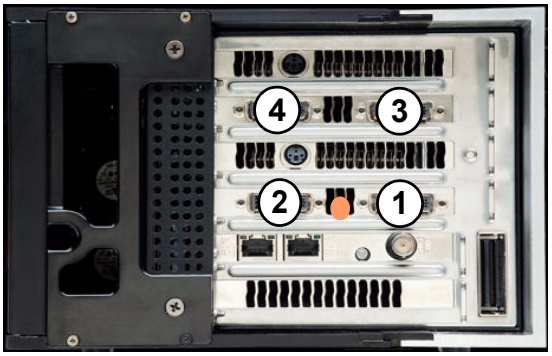


Dual Quadro Plex 7000: 6-Display Mosaic Connections

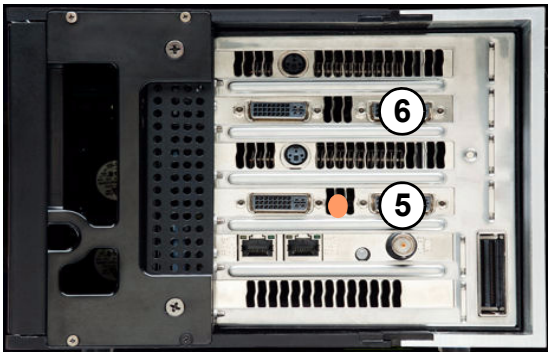
This section describes the display connections to two Quadro Plex units (see"Connecting Two Quadro Plex Units" on page 7).

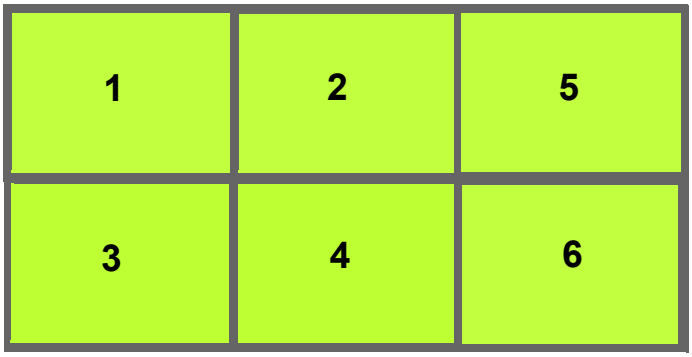
Connect the numbered connector to the display located at the corresponding mosaic position. Typically, the north connector on the NVIDIA DoHIC card is connected to the Quadro Plex unit 1, but you may need to experiment to determine the connection in your system.

Quadro Plex Unit 1



Quadro Plex Unit 2



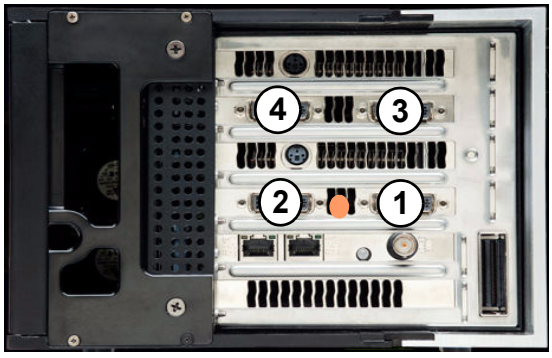


Dual Quadro Plex 7000: 8-Display Mosaic Connections

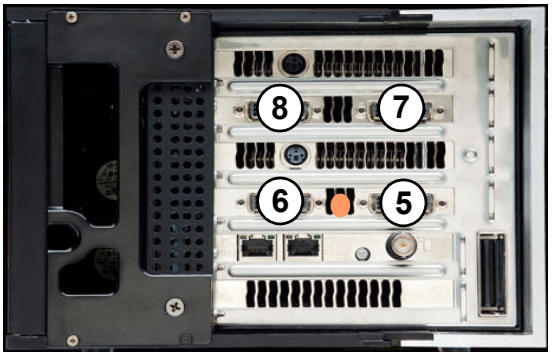
This section describes the display connections to two Quadro Plex D2 units (see"Connecting Two Quadro Plex Units" on page 7).

Connect the numbered connector to the display located at the corresponding mosaic position. Typically, the north connector on the NVIDIA DoHIC card is connected to the Quadro Plex unit 1, but you may need to experiment to determine the connection in your system.

Quadro Plex Unit 1



Quadro Plex Unit 2



(Windows)

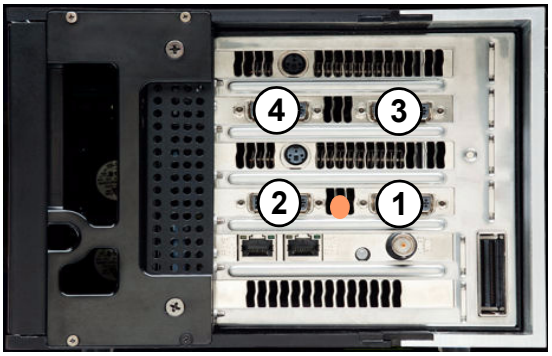
1	2	5	6
3	4	7	8

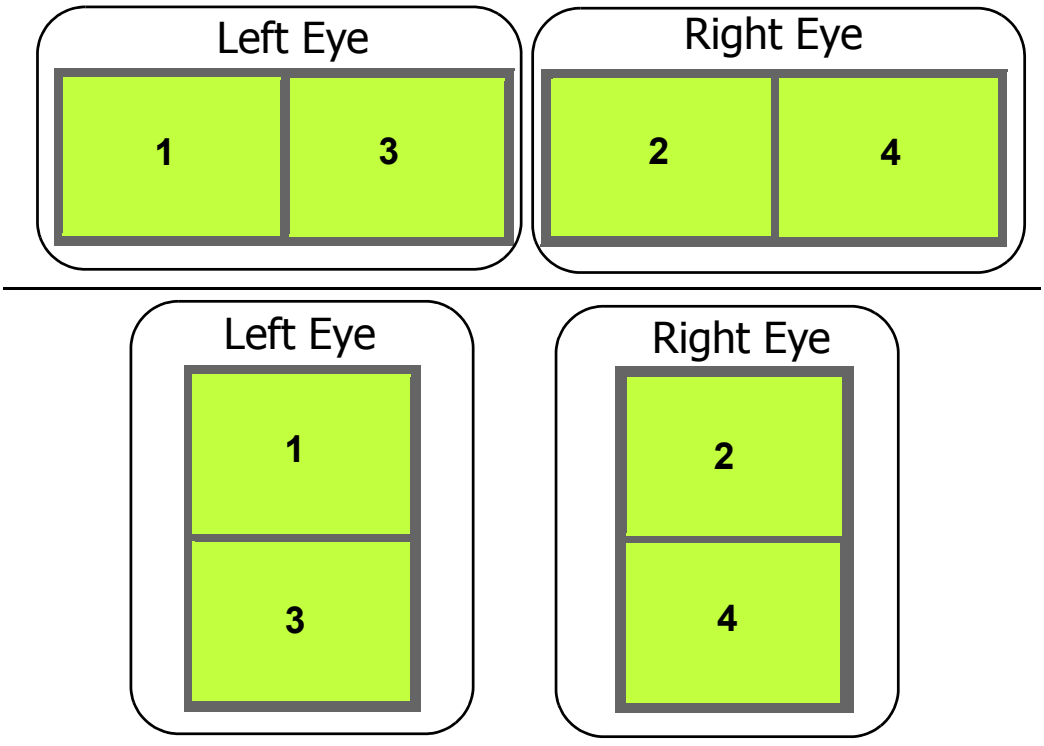
(Linux)

1	2	3	4
5	6	7	8

Quadro Plex 7000: 4-Display Connections for 2-Display Passive Stereo Mosaic

Connect the numbered connector to the display located at the corresponding mosaic position.



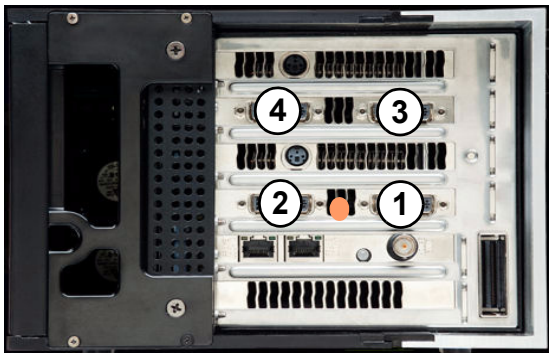


Dual Quadro Plex 7000: 6-Display Connections for 3-Display Passive Stereo Mosaic

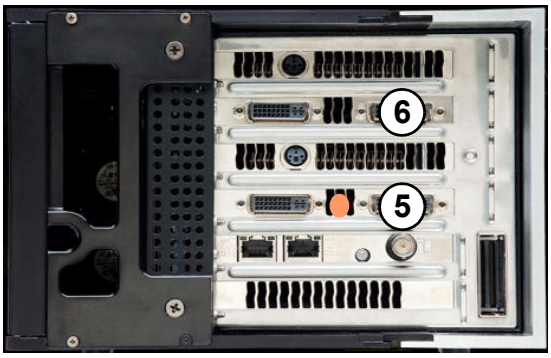
This section describes the display connections to two Quadro Plex units (see"Connecting Two Quadro Plex Units" on page 7).

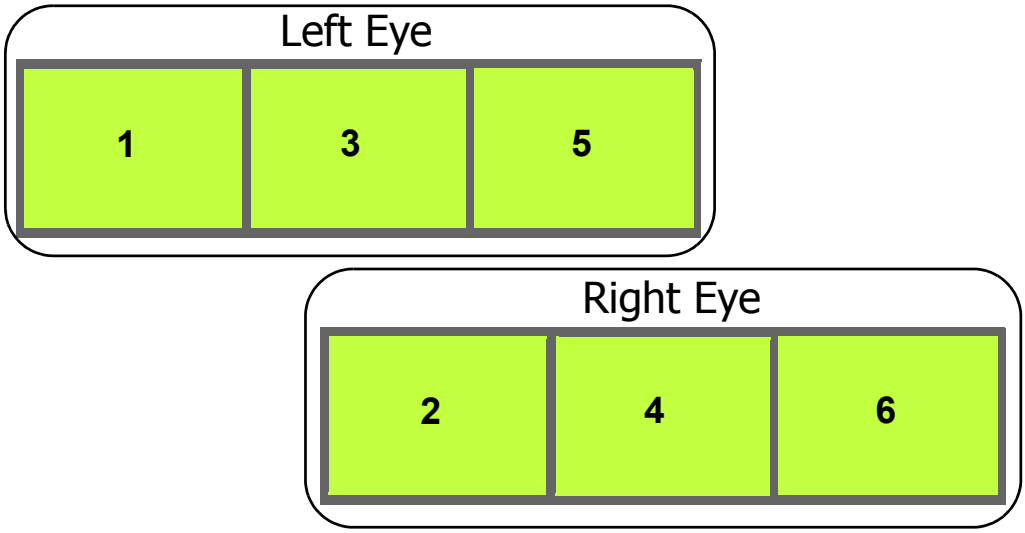
Connect the numbered connector to the display located at the corresponding mosaic position. Typically, the north connector on the NVIDIA DoHIC card is connected to the Quadro Plex unit 1, but you may need to experiment to determine the connection in your system.

Quadro Plex Unit 1

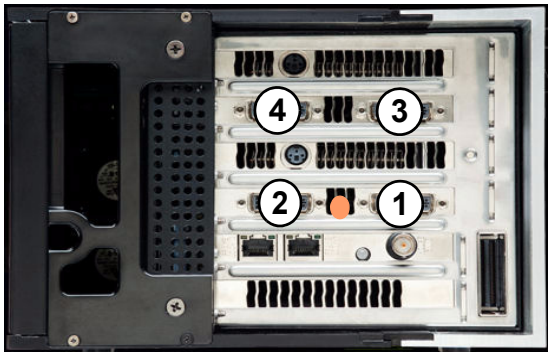


Quadro Plex Unit 2

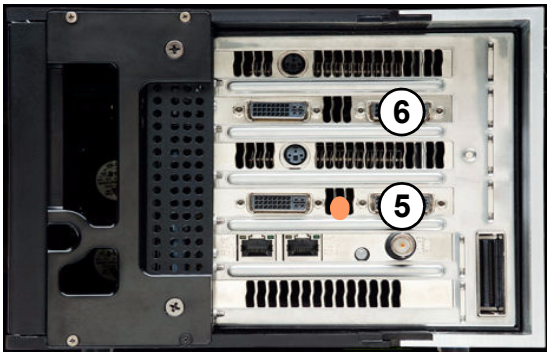


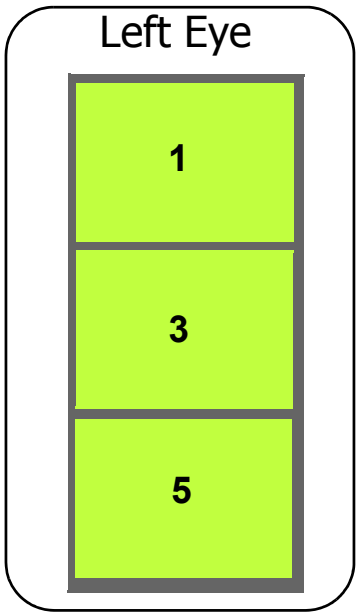


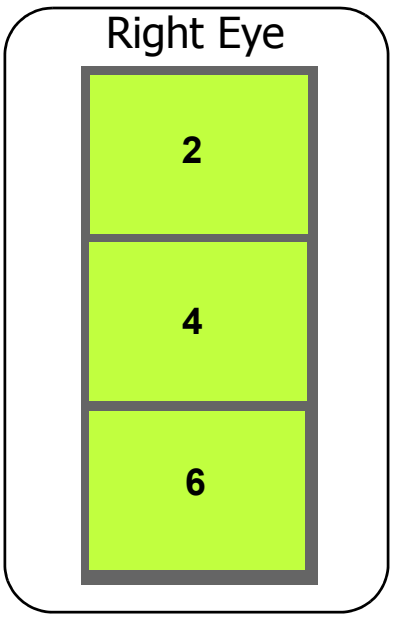
Quadro Plex Unit 1



Quadro Plex Unit 2





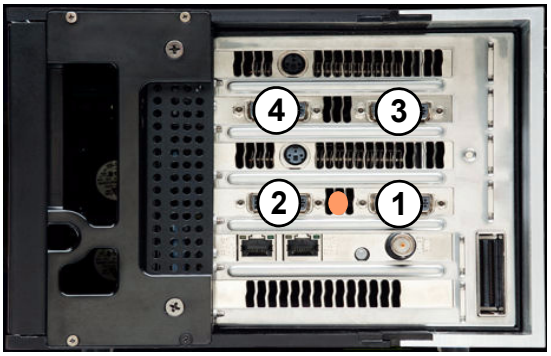


Dual Quadro Plex 7000: 8-Display Connections for 4-Display Passive Stereo Mosaic

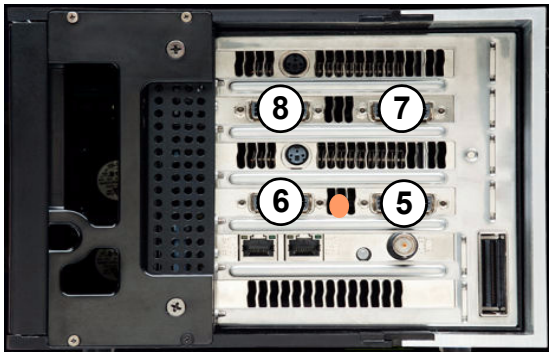
This section describes the display connections to two Quadro Plex units (see"Connecting Two Quadro Plex Units" on page 7).

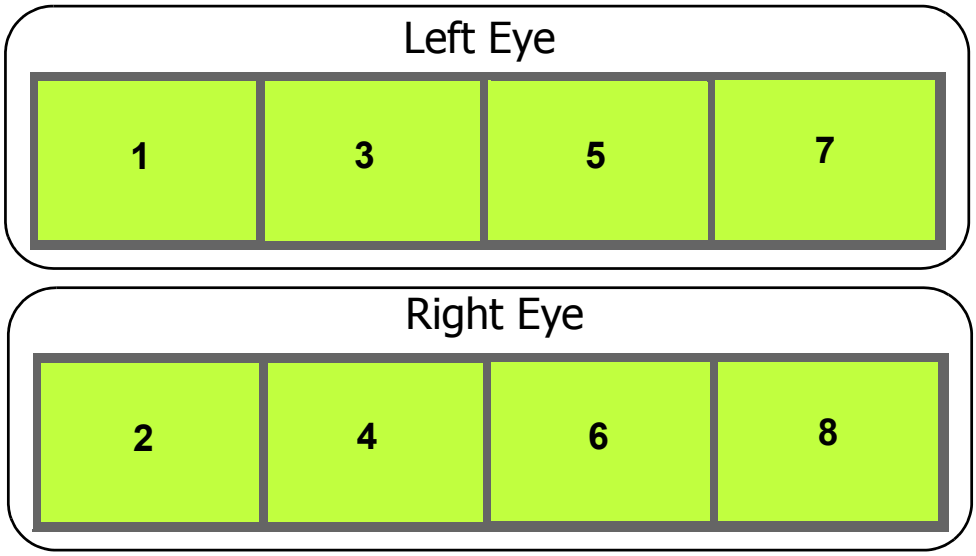
Connect the numbered connector to the display located at the corresponding mosaic position. Typically, the north connector on the NVIDIA DoHIC card is connected to the Quadro Plex unit 1, but you may need to experiment to determine the connection in your system.

Quadro Plex Unit 1



Quadro Plex Unit 2





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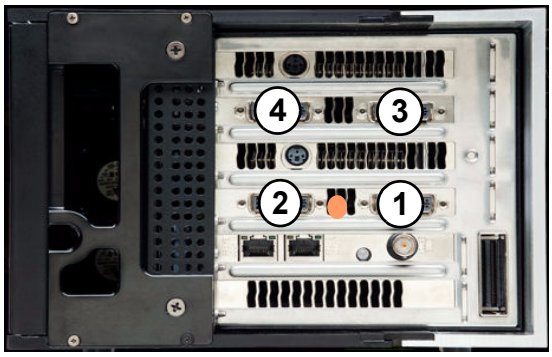
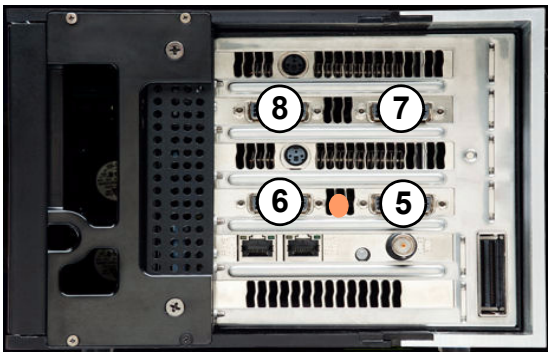
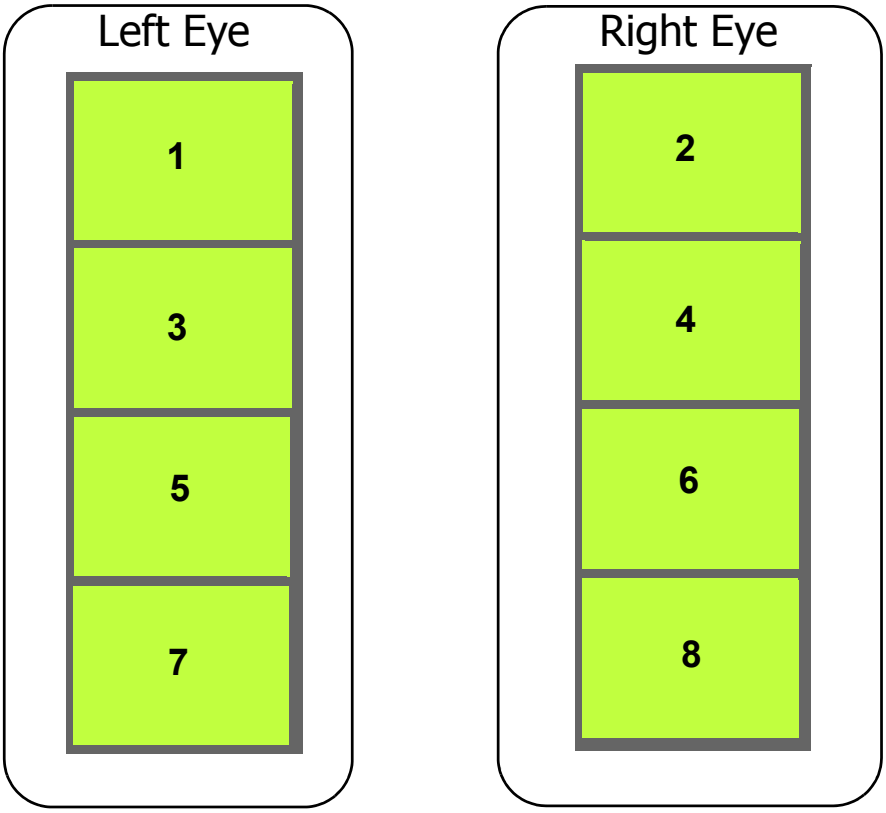
Quadro Plex Unit 1



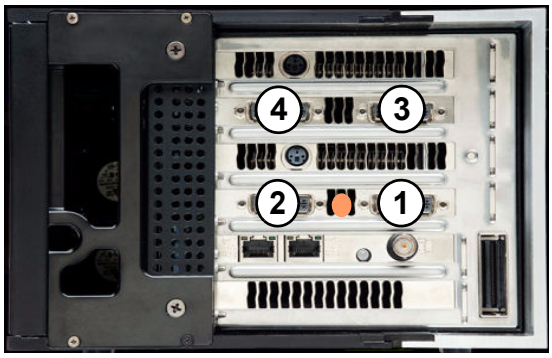
Quadro Plex Unit 2

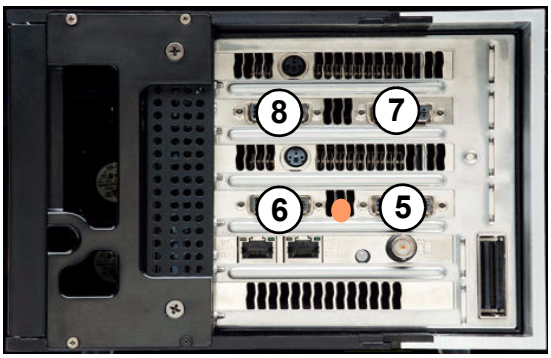


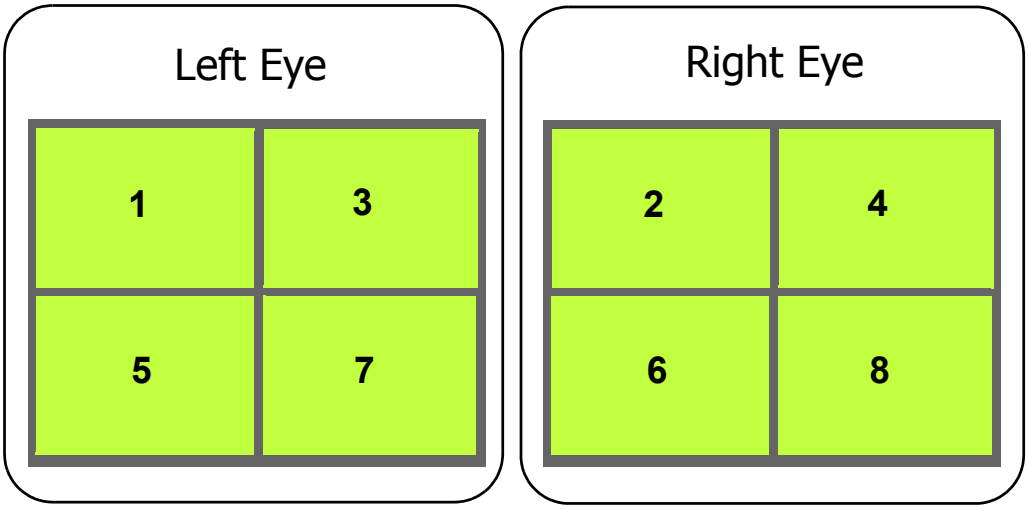


Quadro Plex Unit 1

Quadro Plex Unit 2







APPENDIX B SETTING UP MOSAIC MODE UNDER LINUX

This chapter explains how to set up NVIDIA SLI Mosaic mode under Linux. It contains the following sections:

- "Using the SLI Mosaic Settings Page" on page 46
- "Adjusting Display Positioning Using MetaModes" on page 47

Using the SLI Mosaic Settings Page

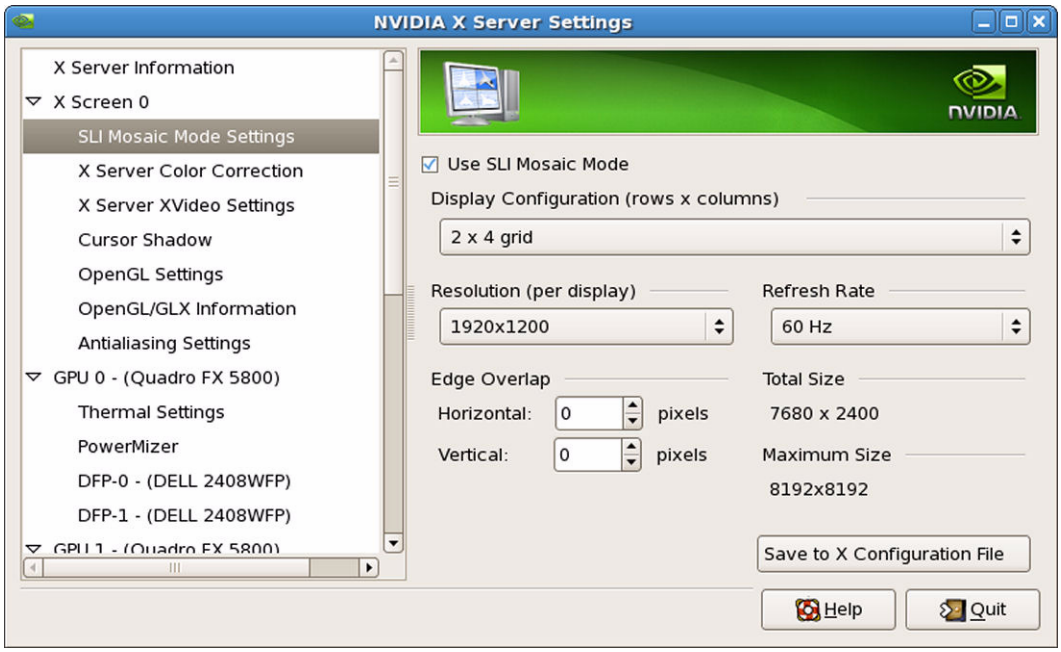
See "Connect Your Displays" on page 8 for information on connecting your QuadroPlex units and displays.

1. After starting X Windows, enter "**`nvidia-settings`**" from the command line.

   The NVIDIA X Server Settings page appears.

2. Click **SLI Mosaic Mode Settings** from the side navigation tree.

   The SLI Mosaic Mode page appears.



3. Click the **Use SLI Mosaic Mode** check box.
4. Use the corresponding up or down arrows to select the desired
   - Display Configuration (rows x columns)
   - Resolution (per display)
   - Refresh Rate
5. Under *Edge Overlap*, set the Horizontal and/or Vertical edge overlap as needed to accommodate a variety of configurations.

   For example, you can introduce gaps (negative overlap) to accommodate bezeled displays.
6. Click **Save to X Configuration File**.
7. Restart the Linux X server.

Adjusting Display Positioning Using MetaModes

You can modify the configuration file in order to adjust the screen positions within the mosaic in the event that your connections do not match the layout as described in “Display Connections” on page 20.

About MetaModes and SLI Mosaic

Mosaic mode under Linux is an extension of Linux "TwinView", which uses MetaModes to control each display. MetaModes are "containers" that store information about what mode should be used on each display device at any given time. See http://us.download.nvidia.com/XFree86/Linux-x86/185.18.14/README/chapter-13.html for more information about NVIDIA TwinView and Linux MetaModes.

For SLI Mosaic mode, MetaModes let you specify the mode and offset (within the X screen) of each display.

Syntax

“<[GPU/Display identifier] [Resolution] [Offset], ... >”

Description

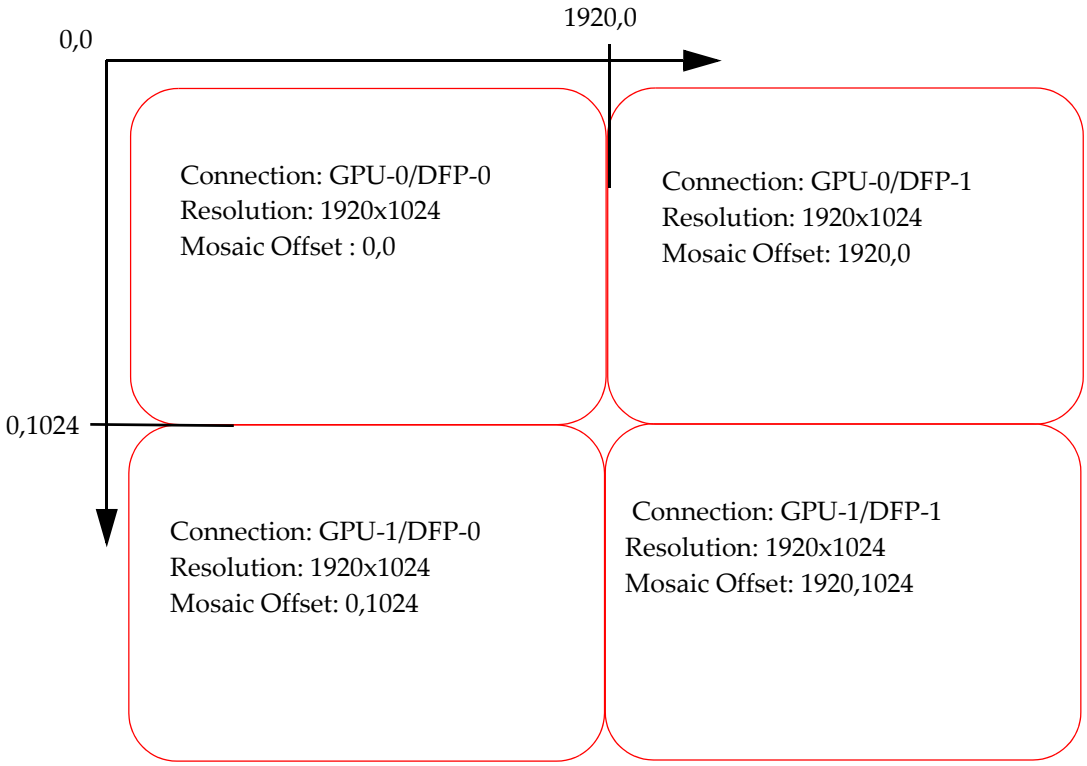
Following are descriptions of each element:

- **GPU/Display identifier forma**t: Each display can be identified by GPU and display. For CRTs, use “GPU-#.CRT-#” and for digital displays use “GPU-#.DFP-#”.
- **Resolution format**: horizontal x vertical pixels
- **Offset format**: +[horizontal pixel offset]+[vertical pixel offset]

  You can also specify offsets to produce arbitrary overlap.

Example: Using MetaModes to Set Up a 2x2 Mosaic

As an example, a particular 2x2 mosaic might be described by the information in the following figure:



Using the MetaModes option, specify this in the Device section of the X-Config file (xorg.config) as follows:

```
Option "MetaModes" "GPU-0.DFP-0: 1920x1024 +0+0, GPU-0.DFP-1: 1920x1024
+1920+0, GPU-1.DFP-0: 1920x1024 +1024+0, GPU-1.DFP-1: 1920x1024
+1920+1024"
```

This results in the following display positions:

- GPU-0's DFP-0 at the top left (+0+0)
- GPU-0's DFP-1 at the top right (+1920+0)
- GPU-1's DFP-0 at bottom left (+1024+0)
- GPU-1's DFP-1 at bottom right (+1920+1024)

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