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2007

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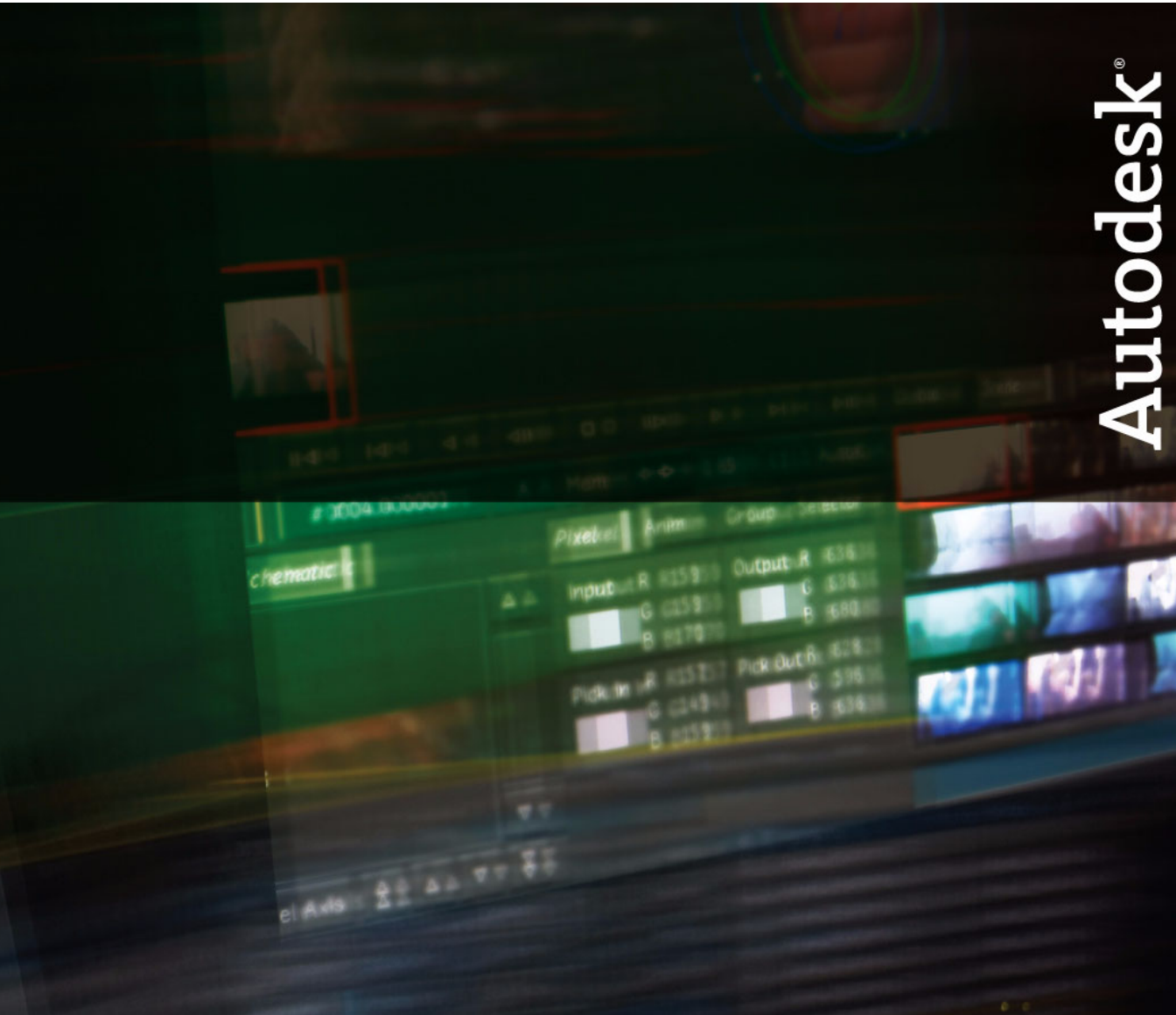
IBM® Z PRO 6223 WORKSTATIONS

Hardware Setup Guide



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Title:	Lustre 2007 Hardware Setup Guide for IBM 6223 Workstations
Document Version:	2
Date:	February 12, 2007

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1 Introduction

Summary

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About This Guide

This guide describes how to set up the IBM® IntelliStation® Z Pro 6223 workstation and the other hardware components of your Autodesk® Lustre® 2007 workgroup. Use this guide in conjunction with the *Autodesk Lustre 2007 Software Installation Guide* for your operating system and the *Stone Direct Configuration Guide* to install and configure the hardware and software components of Lustre.

NOTE: In most cases, both hardware setup and application installation is done on delivery by an authorized technician, so you may not need to perform some of the procedures in these guides.

The latest versions of all guides are available in PDF format from the Web at *www.autodesk.com/discreet-documentation*. For best results viewing and printing these PDF files, use Adobe® Acrobat® Reader™ 6 or later.

Revision History

This document is updated as necessary throughout the life cycle of the release. This section describes all additions and modifications made to this document since its initial publication.

The latest version of this document is available at *www.autodesk.com/discreet-documentation*. It is recommended that you always refer to the most recent version to ensure you are working with the most up-to-date information.

NOTE: Minor changes, such as typographical errors or changes to names of sections, that do not have an impact on the technical content of the guide are not included in this revision history.

Modification	Item	Page	Released At
Added	Revision History	2	2007
Updated	Contacting Customer Support; Japan and Australia	11	2007
Updated	Linux-Based Connection Diagrams for the IBM 6223	14	2007
Updated	Connecting the Monitor (EIZO 24-inch LCD)	20	2007
Updated	Monitor Calibration Device on Linux Workstations	20	2007
Updated	Connecting the Autodesk Control Surface	26	2007
Updated	Configuring the Autodesk Control Surface on Linux	30	2007
Updated	Connecting the Tangent CP100 Control Surface	31	2007
Updated	Connecting the Slave Renderer	33	2007
Updated	Connecting Video I/O to a Master or HD Station	34	2007

The Lustre Workgroup

Lustre is a modular system that you can configure and expand to suit your needs. The features you purchase determine the hardware included with your system.

Central to any system is the Master Station or HD Station. The Master Station is a high-end Windows®- or Linux®-based PC designed to accommodate real-time interactivity in a client-attended or supervised session. You can add a Lustre Station to improve the efficiency of your pipeline.

Master Station — Includes the full Lustre toolset and is designed for GPU-accelerated sessions where the colorist works together with the cinematographer. Contains an extensive creative toolset for more elaborate visual design and grading using up to 4K resolution and 16-bit files and for completing tasks like dust removal, conforming, rotoscoping and capture/playout.

HD Station — Cost-effective GPU workstation for conforming, preparing, grading and mastering short-form and long-form HDTV projects, as well as HD film projects. Input up to 10-bit 2K and output HD and SD.

Lustre Station — Tasks that do not require the direct intervention or supervision of the colorist can be efficiently handled by a Lustre Station. Multiple Lustre Stations can work in parallel to increase throughput and can be used for tasks such as dust removal, preparatory work, fine-tuning creative sessions, conforming data from EDLs, updating editorial changes using change lists, and mastering to different formats using the real-time deliverables function.

Lustre Workstation Features

The following table describes the features available to each Lustre workstation.

NOTE: The features of Lustre 2007 may vary based on your hardware platform. Consult the *Autodesk Lustre 2007 Release Notes* for details.

Station	Configuration
Master Station	**Default —** All features are available including SD and HD I/O, dual link and HSDL video formats and the DI Pack, which consists of infrared channel dust removal and support for all standard input and output resolutions and bit-depths. Certain features require add-on licensing. **Add-Ons —** The following features can be added to the Default configuration: the Slave Renderer and up to three panels for the Autodesk control surface. The Slave Renderer requires a separate license.
Lustre HD Station	**Default —** Includes all features except for the DI Pack (see the Master Station description). File input is limited to 2K resolution. File output is limited to HD resolution, 10-bit. Certain features require add-on licensing. **Add-Ons —** The following features can be added to the Default configuration: SD and HD I/O, dual link and HSDL video formats, the Slave Renderer, and up to three panels for the Autodesk control surface. The Slave Renderer requires a separate license.
Lustre Station	**Default —** All features are available except for primary and secondary colour grading. The DI Pack (see the Master Station description) is also included, along with full dust removal functionality, and the ability to create geometries and masks. **With Primary Colour Correction —** Includes all features of the default configuration as well as primary colour grading. **Add-Ons —** The following features are available for either the Default configuration or the With Primary Colour Correction configuration, and require an additional license: SD and HD I/O, dual link and HSDL video formats, and up to three panels for the Autodesk control surface. The Slave Renderer requires a separate license.

Optional Lustre Components

You can expand the features of your Lustre system and improve the efficiency of your workflow by adding any of the following components.

Control Surface — The Autodesk control surface provides improved interactivity when colour grading film and video footage. You can perform many of the same tasks you do in the Lustre user interface using the control surface.

Video I/O — Video I/O is provided by the DVS Centaurus® board, which consists of an HD/SD board and a breakout box. This configuration provides real-time SDI input and output of uncompressed 8- or 10-bit HD or SD video in both YUV (4:2:2) and RGB formats (4:4:4 or 4:2:2).

For a list of supported video formats, see the *Autodesk Lustre 2007 User's Guide*.

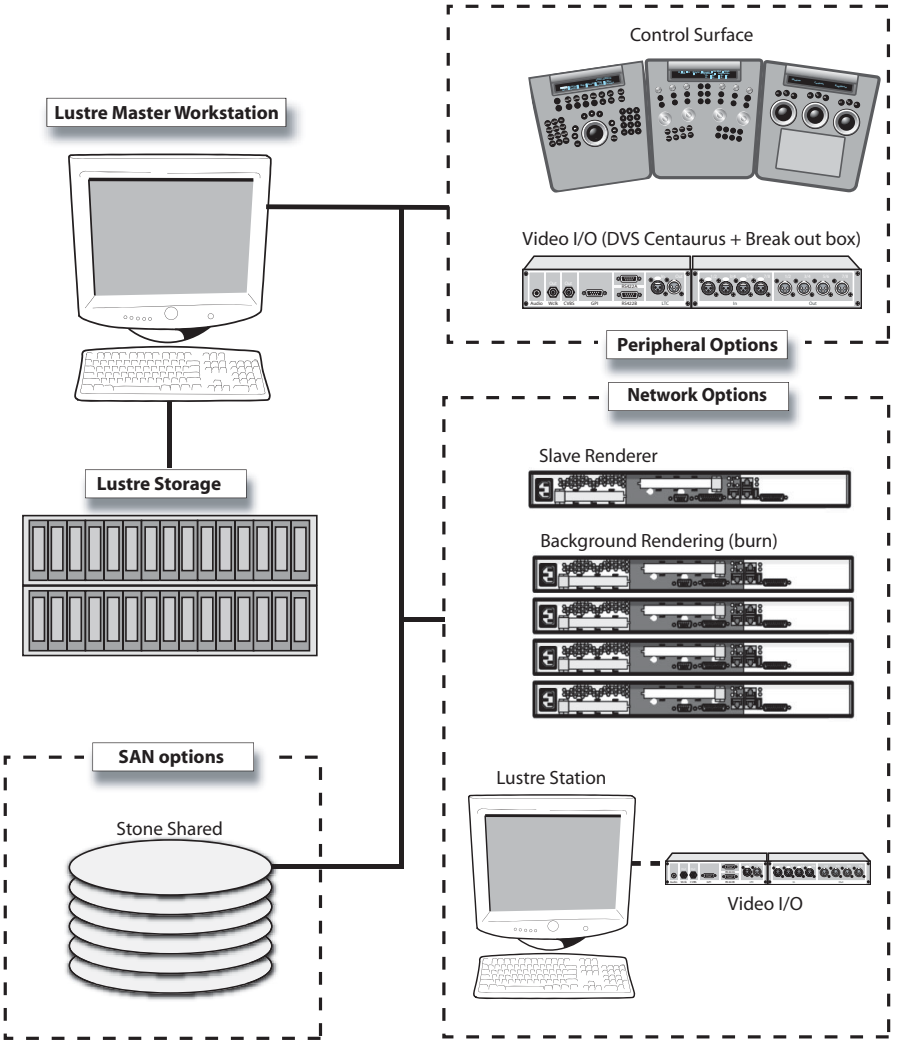
Slave Renderer — The Slave Renderer is a rack-mounted server that is connected directly to the Lustre workstation. It frees system resources by off-loading render tasks on an 'as-needed' basis, thus ensuring real-time interaction on the Lustre system.

Background Renderer — Background rendering frees up Lustre workstations for colour grading. You can use up to eight background rendering machines to process your final frames.

NOTE: For a list of Incinerator system components, refer to the *Autodesk Incinerator 2007 Installation and User's Guide*.

Typical Lustre Configuration Overview

The following illustration shows a typical configuration, including the Master Station, Lustre Station, and other optional components.



NOTE: For an Incinerator system configuration overview, refer to the *Autodesk Incinerator 2007 Installation and User's Guide*.

Workflow for Hardware Setup and Application Installation

The following procedure provides the general workflow for installing Lustre on an IBM 6223 workstation.

To install Lustre on an IBM 6223 workstation:

1. Review the guidelines for working with hardware components. See "Hardware Configuration Guidelines" on page 7.
2. Connect all peripherals (mouse, keyboard, graphics monitor, storage, etc.) to each workstation in your workgroup, and connect each workstation to the network. See Chapter 2, "Connecting Peripherals," on page 13.
3. Connect your workstation to Autodesk Stone® Direct storage. See the *Stone Direct Configuration Guide*.
4. Connect your Master or HD Station to a Slave Renderer, a control surface, tablet, and video I/O components. See Chapter 3, "Connecting System Components," on page 25.
5. Perform the procedures in the *Autodesk Lustre 2007 Software Installation Guide* for your operating system to install and license Lustre.

Related Documentation

The following table describes the documentation associated with your application. For a detailed list of the latest documentation, see your release notes.

User Guides	Provides
Autodesk Lustre 2007 User's Guide	Detailed instructions on using the software.
Autodesk Control Surface User's Guide	Detailed instructions on using the Autodesk control surface and the Tangent CP100.
Autodesk Lustre 2007 What's New	A complete list of the new features for this release.
Autodesk Lustre 2007 Hot Keys Card	A list of the most frequently used hot keys.
Autodesk Lustre 2007 Release Notes	A complete list of documentation and information on late-breaking features.
Autodesk Lustre 2007 Fixed and Known Bug List	A complete list of fixed and known bugs for this release.

Installation and Configuration Guides	Provides
Hardware Setup Guide (for your workstation)	Information on how to set up your workstation and video I/O peripherals.
Stone Direct Configuration Guide (for this release)	Provides detailed connectivity diagrams and configuration procedures for your Stone storage arrays.

Installation and Configuration Guides	Provides
Autodesk Lustre 2007 Software Installation Guide (for your operating system)	Information about installing and licensing your Autodesk Lustre software.
Stone and Wire Filesystem and Networking Guide (for this release)	Procedures for configuring your Wiretap™ services.

Other Guides	Provides
Autodesk Lustre Sparks API Reference Guide	Instructions for developing Sparks® plugins for Lustre.
Autodesk Backburner 2007 Installation and User's Guide	Information on how to install, set up, and use Autodesk Backburner™.

Consult the Autodesk Web site at *www.autodesk.com/discreet-documentation* for the latest version of guides, release notes, and fixed and known bugs documents.

Hardware Configuration Guidelines

In most cases, hardware integration and application installation is done on delivery by an authorized technician, and some of the procedures in this guide may not be necessary. Still, it is a good idea to read through all chapters to familiarize yourself with the configuration procedures for the following reasons:

- Many suspected problems with your Lustre system may be due to loosened connections or improperly configured devices. This guide helps you troubleshoot problems by providing information about properly configured systems.
- If you need to call Customer Support, familiarity with this guide puts you in a better position to provide diagnostic information.
- If you want to move your Lustre system at any time, or upgrade certain hardware components, information in this guide is crucial.

Although this guide, in conjunction with the *Autodesk Stone Direct 2007 Configuration Guide*, provides complete information regarding configuring hardware components, hardware configuration should only be performed by an experienced hardware integrator familiar with Windows or Linux operating systems, IBM Z Pro workstations, and peripherals associated with professional high-performance video and post production of film.

Your Lustre system consists of high-performance hardware that must be configured in an environment suited to its operational needs. Other considerations include minimizing the risk of damage due to static discharge and ensuring all components are properly grounded.

Verifying System BIOS Version and Settings

There are two models of the IBM ZPro 6223. Model 64U was the first model shipped for Incinerator systems. This model was replaced by the 7DU model when the Restriction of Hazardous Substances (RoHS) European Union directive took effect.

• The current certified system BIOS version for the 64U model is 1.52A.

• The current certified system BIOS version for the 7DU model is 1.66A.

If the IBM workstation is using a different BIOS version, you must update it for this release. Instructions for updating the BIOS on your IBM 6223 workstation are provided in articles available on the IBM Web site.

For model 64U, refer to:

http://www-307.ibm.com/pc/support/site.wss/document.do?sitestyle=ibm&lndocid=MIGR-56667

For model 7DU, refer to:

http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/docdisplay?lndocid=MIGR-57658&brandind=5000004

NOTE: You do not normally need to adjust these settings. BIOS settings for the workstation are provided here for informational purposes only.

To enter the system BIOS, you must press **F1** while booting the workstation.

The following table lists the proper Autodesk certified BIOS settings. Items not listed are set to their default factory settings.

BIOS Menu	Item	Value
Devices and I/O ports	Parallel Port	Disabled
	Serial ATA	Disabled
Startup Options, Startup Sequence Options, Primary Startup Sequence	First Startup Device	Removable
	Second Startup Device	Hard Disk
	Third Startup Device	CD/DVDROM
	Fourth Startup Device	Disabled
Startup Options, Startup Sequence	Wake on LAN	Off
Startup Options	Planar PXE/DHCP Priority	Normal
	PCI Device Boot Priority	SLOT 1

BIOS Menu	Item	Value
	Boot Fail Count (only in version 1.66 A on model 7DU)	Disabled
Advanced Setup, CPU Options	Hyper Threading Technology	Disabled

Ensuring Proper Environmental Conditions

You should consider the following environmental guidelines for all hardware configurations:

- Make sure the rack in which hardware components are installed is open or ventilated. Follow the ventilation specifications that apply to your system.
- Place all components in an air-conditioned environment. All hardware components generate heat and must be kept cool. See "Power and Air Conditioning Requirements" on page 9.
- Keep all hardware components in a clean, dust-free location.
- Minimize vibration and humidity.
- Do not block the vents on the component housing.
- Do not drape anything, such as a jacket or a blanket, over hardware components.
- Minimize electromagnetic noise by separating digital data and power cables from analog audio cables and running them in different cable ducts.

Power and Air Conditioning Requirements

The values for power consumption and heat output were recorded on an Autodesk certified system with all of the required peripheral and certified components.

NOTE: These values can fluctuate if uncertified hardware components or third-party applications are added to your system. The use of uncertified hardware components or third-party applications is not supported. Please consult the manufacturer's documentation for standardized minimum and maximum values.

The following table summarizes the power consumed by the IBM 6223 system and the heat it generates under the maximum processing load produced by your Lustre system. For detailed specifications, including noise output, see the documentation provided by the manufacturer.

Component	Quantity	Startup Amps (120V / 240V)	Max. Amps (120V / 240V)	Watts	Heat (BTUs)
IBM Z Pro 6223	1	3.5/1.8	2.6/1.3	420	1433

You must be able to meet the startup power requirement and have a climate control system with the capacity to maintain the temperature of this component under the maximum processing load. Refer to the following table for standard conversion benchmarks and an example of how they are used to establish climate control requirements.

Unit Conversion	Example
1 Watt = 3.413 BTU	480 Watts = 1638 BTU
12000 BTU = 1 Ton of air conditioning	1638 BTU = 0.137 Ton of air conditioning

For Incinerator power consumption and air conditioning requirement values, refer to the *Connecting Components and Peripherals* chapter of the *Autodesk Incinerator 2007 Installation and User's Guide*.

Avoiding Damage from Static Electricity

When installing any hardware equipment, take the following precautions to prevent damage to sensitive components from static discharge:

- Make sure power is turned off on the component you are working on. It is a good idea to unplug components until all other connections are configured.
- Always wear a grounded static wrist strap. Attach the strap's alligator clip to any grounded metal surface on the component's chassis that you are working on. Place the wristband around your wrist.
- Do not handle any components unnecessarily, particularly boards and cards that slide in and out of slots on their parent hardware components.

Grounding Hardware Components

It is important to properly ground any audio components used with Lustre to avoid ground loops and humming. To ensure audio components are properly grounded, use the XLR-3 cables. Using any other cables may cause humming in the system.

Receiving Your Lustre

When you receive the shipment containing your Lustre, check all the boxes for dents or other markings that may indicate damage during transport. If you suspect a component is damaged, carefully inspect it before setting up the system. If you receive a damaged component, call Customer Support.

Use the enclosed packing checklist to ensure you received all parts.

Notation Conventions

A number of style conventions are used throughout this guide. These conventions and examples of their use are shown as follows.

Convention	Example
Text that you enter in a command line or shell appears in Courier bold. You must press the Enter key after each command.	**`rpm -qa`**
Variable names appear in Courier, enclosed in angle brackets. No spaces are allowed in variable names.	`<variable_name>`
Variables that appear enclosed in square brackets are optional.	`[<filename>]`
Feedback from the command line or shell appears in Courier.	`limit coredumpsize`
Directory names, filenames, URLs, and command line utilities appear in italics.	*/usr/discreet*

Contacting Customer Support

You can contact Autodesk Media and Entertainment Customer Support at *www.autodesk.com/support* or through one of the following ways:

Location:	Contact Information:
Within the Americas:	Hotline (North America): 1-800-925-6442 Direct dial: 415-507-5256 (Country code = 1) 8 AM to 8 PM EST Monday to Friday, excluding holidays *me.support@autodesk.com*
Within Europe, Middle-East and Africa:	Hotline (from London, UK): +44-207-851-8080 9 AM to 5:30 PM (local time) Monday to Friday, excluding holidays *me.emea.support@autodesk.com*
Within Asia Pacific: (Excluding India, China, Australia, New Zealand and Japan)	Hotline (from Singapore): +65-6555-0399 9 AM to 6 PM (local time) Monday to Friday, excluding holidays *me.support.singapore@autodesk.com*
Within India:	Hotline (from Mumbai): +91-22-6695-2244 9:30 AM to 6:30 PM (local time) Monday to Friday, excluding holidays *me.support.india@autodesk.com*
Within Japan:	Hotline (from Tokyo): 0120-107-290 Direct dial: +81-3-6221-1810 10 AM to 6 PM (local time) Monday to Friday, excluding holidays *med-sys-support-jp@autodesk.com*

Location:	Contact Information:
Within China:	Direct dial: +86-10-6505-6848 9 AM to 6 PM (local time) Monday to Friday, excluding holidays *me.support.china@autodesk.com*
Within Australia and New Zealand:	Hotline (from Melbourne): +1-300-36-8355 Direct dial: +61-3-9876-8355 8 AM to 6 PM AEST Monday to Friday, excluding holidays *me.support.anz@autodesk.com*

Customer support is also available through your Autodesk reseller. To find a reseller near you, consult the reseller look-up database on the Autodesk web site at *www.autodesk.com/resellers*.

2 Connecting Peripherals

Summary

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Workflow for Connecting Peripherals

You must connect peripherals (monitor, keyboard, mouse, storage, and network) to each Lustre workstation before you connect the workstations to video I/O, a control surface, or to other components in the workgroup.

Connect all hardware peripherals before you boot your workstation.

See the following table for a summary of the steps necessary to connect peripherals to your Lustre workstation.

Step:	Refer to:
1. Review the connection diagram for your workstation.	• "Connection Diagrams for the IBM 6223/FX5500 with SDI Card in Punchout" on page 14. • "Connection Diagram for the IBM 6223/FX5500 with SDI Card in PCI Slot" on page 16. • "Connection Diagrams for the IBM 6223 / NVIDIA FX4000" on page 17.
2. Connect a keyboard and mouse to your workstation.	"Connecting the Keyboard and Mouse" on page 20.
3. Connect a monitor to the workstation.	"Connecting the Monitor" on page 20.
4. Connect a calibration device to the workstation.	"Connecting the Monitor Calibration Device" on page 20.
5. Connect the workstation to storage.	"Connecting Storage" on page 21.
6. Connect the workstation to your network.	"Network Connections" on page 23.
7. After you connect all the peripherals to your Lustre workstations, you can connect the workgroup components together.	Chapter 3, "Connecting System Components," on page 25.

Connection Diagrams for the IBM 6223/FX5500 with SDI Card in Punchout

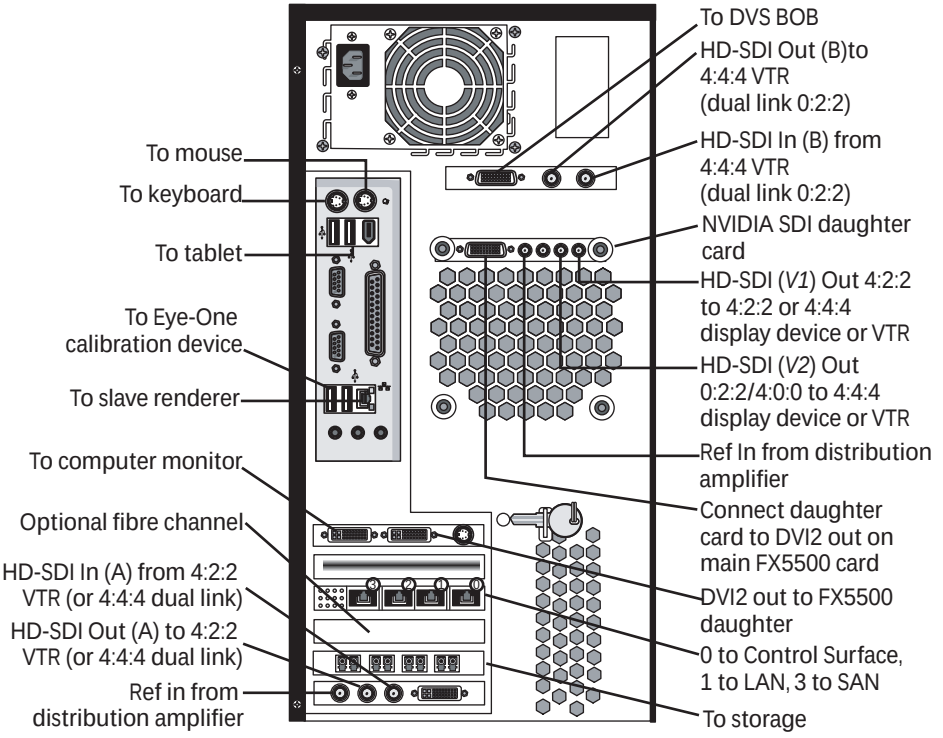
The following diagrams show the connections for an IBM 6223 workstation with a punchout to accommodate the NVIDIA® FX5500 SDI card. This configuration leaves an open slot for an optional card. On Windows-based workstations an optional QLA adapter is available. On Linux workstations you can select either an optional QLA adapter or an Infiniband adapter (standard on Incinerator).

You can upgrade your FX4000 card to an FX5500 yourself if you have enough slots for the main board and the NVIDIA SDI daughter card, or if you have a punchout to accommodate the SDI card.

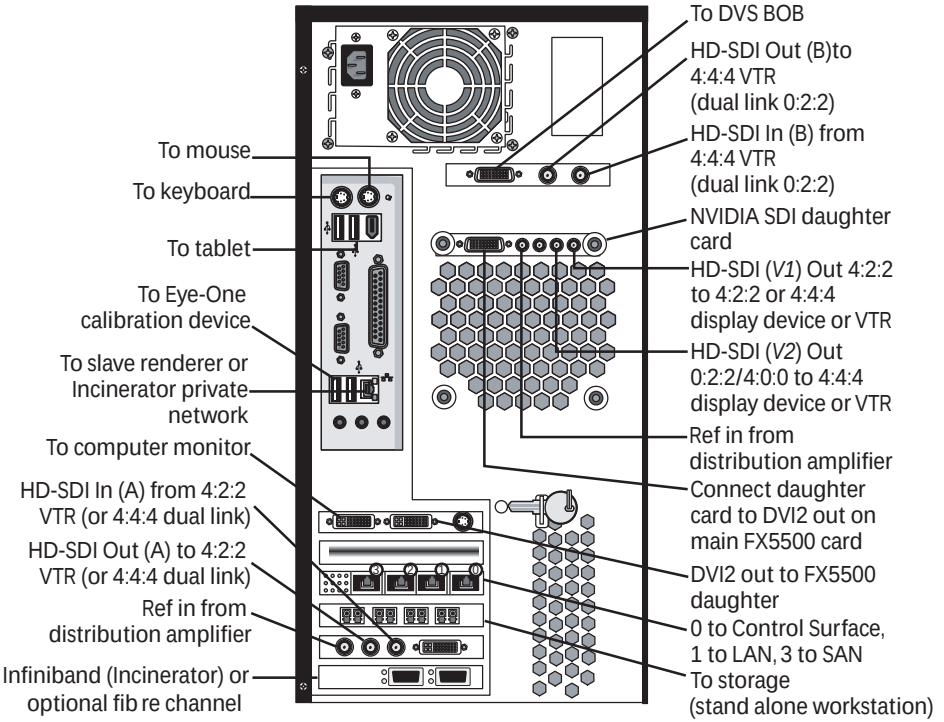
The following configurations require a punchout for the NVIDIA SDI card. The punchout must be performed by an authorized Autodesk technician. Contact your sales representative if you want to upgrade your workstation to this configuration.

NOTE: These diagrams provide an overview of video I/O connections. For more details, see "Connecting Video I/O to a Master or HD Station" on page 34.

Windows-Based
IBM IntelliStation Z Pro 6223
NVIDIA FX5500 with SDI Card in Punchout



Linux-Based
IBM IntelliStation Z Pro 6223
NVIDIA FX5500 with SDI Card in Punchout

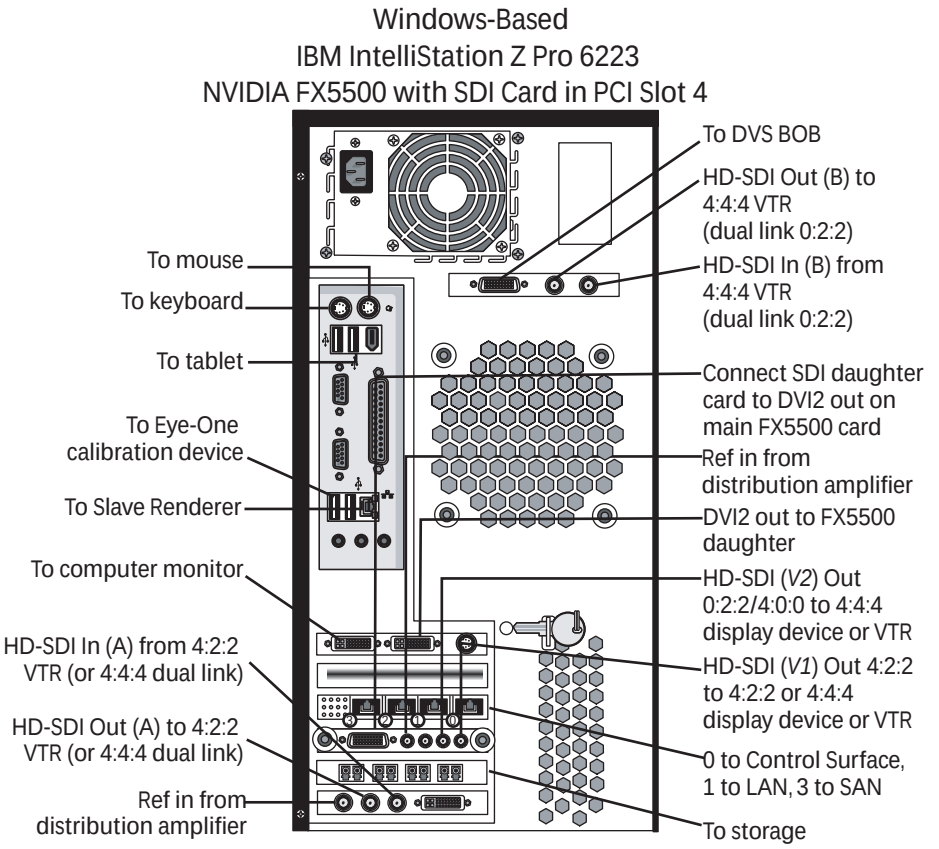


Connection Diagram for the IBM 6223/FX5500 with SDI Card in PCI Slot

The following diagram shows the connections on a Windows-based 6223 workstation with the NVIDIA FX5500 SDI card in PCI slot 4, leaving no open slots for optional cards.

You can upgrade your workstation from an FX4000 to this configuration if slot 4 on your workstation is vacant. See "Upgrading the FX4000 to the FX5500" on page 19.

NOTE: This diagram provides an overview of video I/O connections. For more details, see "Connecting Video I/O to a Master or HD Station" on page 34.

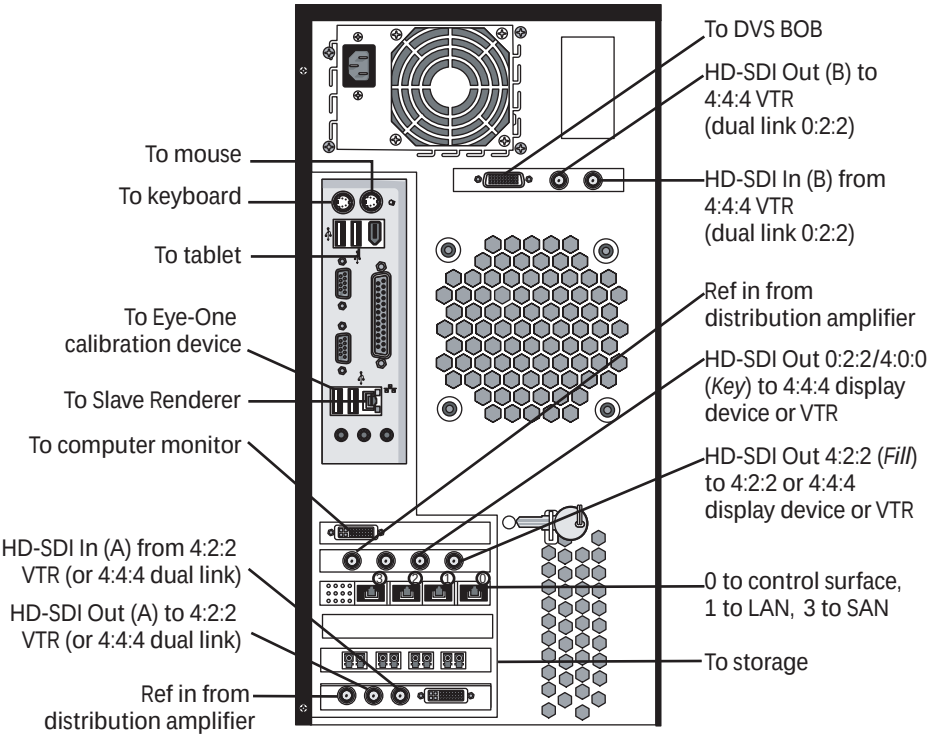


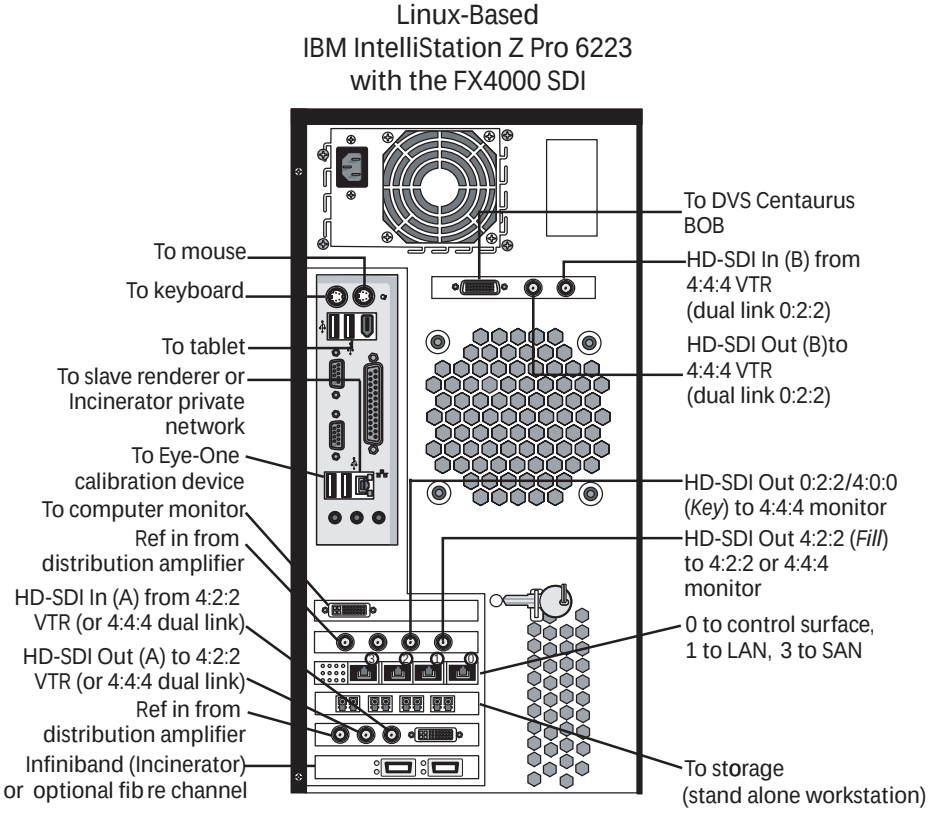
Connection Diagrams for the IBM 6223 / NVIDIA FX4000

The following diagrams show the connections on Windows- and Linux-based IBM 6223 workstations with the FX4000 graphics card.

NOTE: These diagrams provide an overview of video I/O connections. For more details, see "Connecting Video I/O to a Master or HD Station" on page 34.

Windows-Based
IBM IntelliStation Z Pro 6223
NVIDIA FX4000





Upgrading the FX4000 to the FX5500

You can upgrade your FX4000 card to an FX5500 yourself if you have enough slots for the main board and the SDI daughter board or if you have a punchout. The punchout must be performed by an authorized Autodesk technician. Contact your sales representative if you want to upgrade your workstation to this configuration.

After you upgrade to the FX5500 card, you must upgrade the driver. See the *Autodesk Lustre 2007 Release Notes* for the latest drivers and installation instructions.

NOTE: Contact your sales representative if you want to purchase an upgrade to the FX5500 that includes installation.

To upgrade from the FX4000 to the FX5500:

1. Follow the instructions provided by NVIDIA to remove the FX4000 card.
2. Follow the instructions provided by NVIDIA to install the FX5500 in the slot that was used by the FX4000 card.
3. Install the SDI daughter board in slot 4 on Windows-based workstations or in the punchout on Windows- and Linux-based workstations that have one.

   NOTE: The DVI-D cable that is supplied by NVIDIA to connect to the SDI daughter board is short. You may need to purchase a longer cable to connect the main board to the SDI daughter board.

Connecting the Keyboard and Mouse

The mouse and keyboard are connected to ports on the back of the 6223 workstation. Refer to the hardware configuration documentation provided with the workstation for information on connecting these devices.

Cable kits are included to extend both the mouse and the keyboard connections.

Connecting the Monitor

Connect the EIZO® 24-inch or Sony™ 21-inch LCD monitor to the DVI connection on the Lustre workstation's graphics card.

To connect the monitor:

➤ Do one of the following:

- Connect the Gefen HDTV DVI-D fiber cable from the DVI OUT port of the NVIDIA FX4000 SDI PCI-E graphics card to the DVI IN port of the monitor.
- Connect the Gefen HDTV DVI-D fiber cable from the DVI OUT1 port of the NVIDIA FX5500 SDI PCI-E graphics card to the DVI IN port of the monitor.

NOTE: Although the DVI fiber cable connectors are identical, their functions are different. Ensure that the connector labeled Send is connected to the Lustre workstation, and that the connector labeled Receive is connected to the monitor.

Connecting the Monitor Calibration Device

Lustre uses the Eye-One Display 2 device for both LCD and CRT monitors. The calibration device is automatically detected when you launch Lustre.

To connect the monitor calibration device:

1. Connect the MINI2 USB extender for PC from either USB port on the Lustre workstation to the Eye-One Display 2 device.
2. On Windows-based workstations, you will be prompted to install the Eye-One USB driver when you restart the workstation if the driver is not already installed. The driver is available from the *C:\Program Files\discreet\lustre3.0\Utils\Calibration\Eye-One USB Driver* directory.

   On Linux-based workstations, start the *eyeone27* daemon on the workstation. Type:

   ```
   /etc/init.d/eyeone27 start
   ```

Connecting Storage

You can connect your workstation to two types of storage:

- One or more Stone Direct disk arrays that provide storage to individual workstations. Refer to the *Stone Direct 2007 Configuration Guide* for information on connecting disk arrays to your workstation.

  NOTE: Incinerator workstations do not connect to Stone Direct disk arrays. Instead, they connect to a Lustre Media Server. For more information, refer to the *Autodesk Incinerator 2007 Installation and User's Guide*.

- A Stone Shared storage area network (SAN) that provides shared storage for multiple workstations. Refer to the *Autodesk Stone Shared Installation and Configuration Guide* for information on connecting your workstation to a SAN.

Consult the Autodesk Web site at *www.autodesk.com/discreet-documentation* for the latest version of these guides.

Connecting and Configuring QLogic Fibre Channel Adapters

Your workstation is configured with a single QLogic™ QLA 2344 fibre channel adapter.

Consult the "Connection Diagrams for the IBM 6223/FX5500 with SDI Card in Punchout" on page 14, "Connection Diagram for the IBM 6223/FX5500 with SDI Card in PCI Slot" on page 16, and"Connection Diagrams for the IBM 6223 / NVIDIA FX4000" on page 17 as a reference for QLogic fibre channel adapter locations.

The BIOS settings for these adapters must be properly configured. Each port on the QLogic boards that Autodesk shipped with your workstation have BIOS settings already configured. You can use the following procedure to verify and, if necessary, change the BIOS settings for each port on each adapter.

To verify and/or change the QLogic BIOS settings:

1. Reboot the system and, when the QLogic board starts initializing during the boot process, press **CTRL+Q** to enter the QLogic BIOS settings.

   NOTE: The QLogic board takes only a few seconds to initialize, so you should follow the boot messages closely and be ready to press **CTRL+Q** as soon as you see the QLogic QLA board referenced in the boot messages.

2. For each port on each QLA adapter, verify the settings are as follows.

Adapter Settings	Value
BIOS Revision	1.43 **NOTE:** If the BIOS Revision is not 1.43, you must update the QLogic QLA board BIOS. Contact Autodesk Media and Entertainment Customer Support. Refer to "Contacting Customer Support" on page 11. A representative will guide you through the update process.
Fiber Channel Tape Support	Disabled for ports attached to Stone Direct storage or a SAN. Enabled for ports attached to a fiber channel tape device.
Data Rate	1, for ports attached to Stone Direct storage. Ports connected to an archiving device should be set to 0. This configures the port to Auto Select throughput.

Advanced Settings	Value
Execution Throttle	255 When connected to a SAN, set to 5.
LUNs per Target	64

NOTE: This table only contains settings that have non-default values. Do not change any other settings. To restore all values to their default settings, refer to "Restoring Default QLogic BIOS Settings" on page 22.

NOTE: If you are not connecting the two outermost ports of a QLA 2344 fibre channel adapter to a storage device, you must terminate those ports using the terminators that shipped with your workstation. Terminating these ports significantly decreases the time required to boot your workstation.

Restoring Default QLogic BIOS Settings

If you are no longer certain which QLogic BIOS settings contain default values, you can use the following procedure to restore all settings to their default values.

To restore all QLogic BIOS settings to their default values:

1. Reboot the system and, when the QLogic board starts initializing during the boot process, press **CTRL+Q** to enter the QLogic BIOS settings.

   NOTE: The QLogic board takes only a few seconds to initialize so you should follow the boot messages closely and be ready to press **CTRL+Q** as soon as you see the QLogic QLA board referenced in the boot messages.

2. Select Configuration Settings from the main menu of the QLogic BIOS settings.
3. Select Restore Default Settings.

   All settings are reset to their factory defaults.

Network Connections

Connect each Lustre workstation to your facility's network to access background rendering (render farm), the Lustre Station, and the facility's NAS or SAN centralized storage (if applicable).

Connect Port 1 on the Broadcom card of the Lustre workstation to your house network.

Connect your Incinerator workstation to your facility's Incinerator private network. For instructions on how to connect to the Incinerator private network, consult the *Autodesk Incinerator 2007 Installation and User's Guide*.

3 Connecting System Components

Summary

Workflow for Connecting System Components in the Lustre Workgroup 25
Connecting the Autodesk Control Surface 26
Assigning an IP Address to the Autodesk Control Surface 28
Configuring Lustre to Connect to the Autodesk Control Surface 31
Connecting the Tangent CP100 Control Surface 31
Connecting a Stand-Alone Tablet 33
Connecting the Slave Renderer to a Lustre Workstation 33
Connecting Video I/O to a Master or HD Station 34
Connecting to a High-Speed Data Link Device (HSDL) 43

Workflow for Connecting System Components in the Lustre Workgroup

After you have connected peripherals to each Lustre workstation in your workgroup, you are ready to connect them to a control surface, to video I/O hardware, and to a slave renderer.

See the following table for a summary of the steps necessary to connect components in your workgroup.

Step:	Refer to:
1. Connect the control surface to your workstation.	For the Autodesk control surface: "Connecting the Autodesk Control Surface" on page 26, "Assigning an IP Address to the Autodesk Control Surface" on page 28, and "Configuring Lustre to Connect to the Autodesk Control Surface" on page 31. For the Tangent CP100 control surface: "Connecting the Tangent CP100 Control Surface" on page 31.
2. If necessary, connect a tablet to your workstation.	"Connecting a Stand-Alone Tablet" on page 33.
3. Connect a Slave Renderer to the Lustre workstation.	"Connecting the Slave Renderer to a Lustre Workstation" on page 33.
4. Connect the workstation to video I/O components.	"Connecting Video I/O to a Master or HD Station" on page 34.
5. Connect the workstation to a high-speed data link device.	"Connecting to a High-Speed Data Link Device (HSDL)" on page 43.

Connecting the Autodesk Control Surface

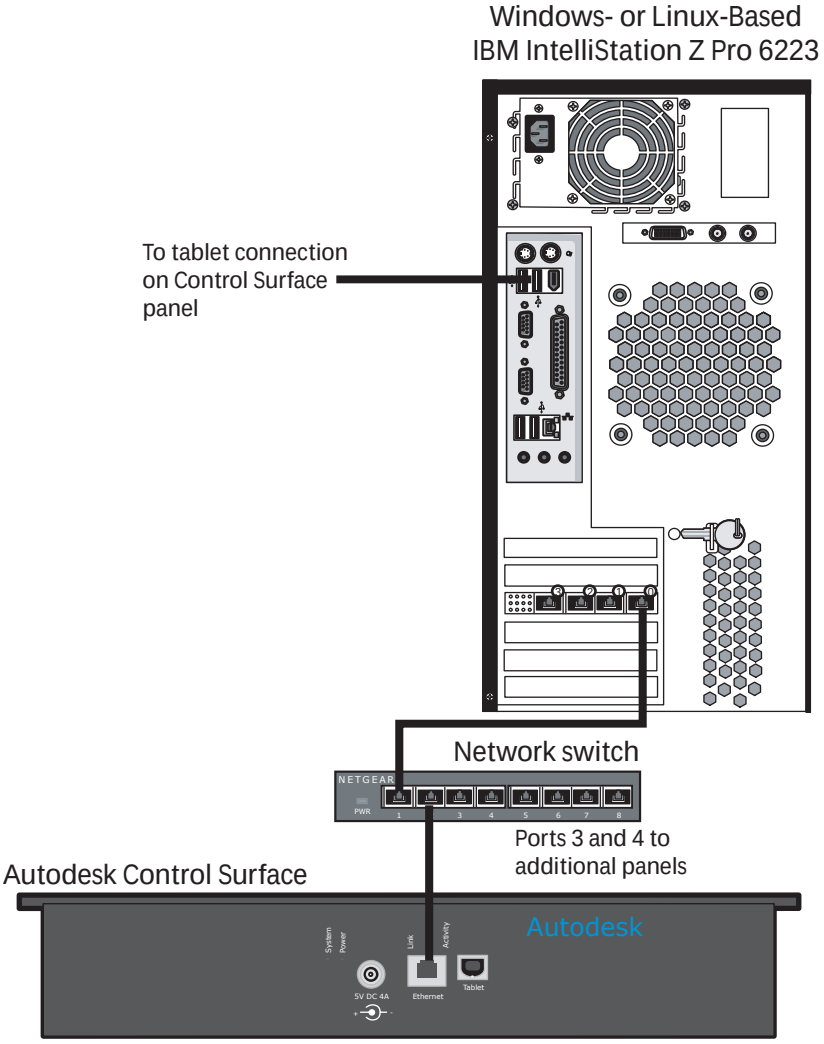
The Autodesk control surface consists of three panels. You can use any combination of one or all of the panels.

If you will use more than one panel of the control surface, you must use the four port network switch to cross-connect all of the panels.

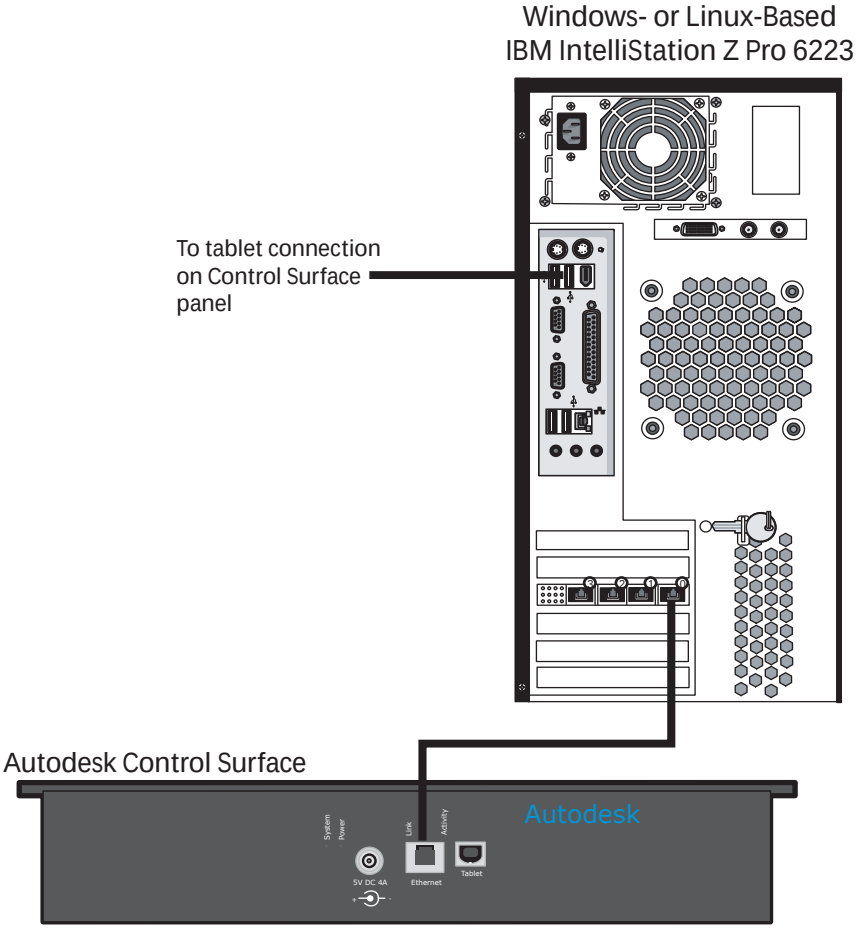
NOTE: The illustrations in this procedure contain a comprehensive IBM IntelliStation Z Pro 6223 backplane, since the Broadcom network card is in the same location independent of the platform running on the workstation. The illustrations also show the colour grading panel. The colour grading panel is the only one that has a USB connection for the integrated tablet.

To connect the Autodesk control surface:

1. Use the AC power adapter cables to connect each panel to a power supply.
2. Use a crossover cable to connect port 0 (the far right port) on the Broadcom network card on your workstation to port 1 on the network switch.



If you are using only one panel, you can connect that panel directly to the workstation, instead of using the switch.



3. If you are using more than one panel, use network cables to connect each of the panels to the network switch.
4. If you are using the panel that includes the tablet, use a USB cable and extender to connect the panel to a USB port on the back of your workstation.

Assigning an IP Address to the Autodesk Control Surface

After you have connected the Autodesk control surface, you must assign it an IP address.

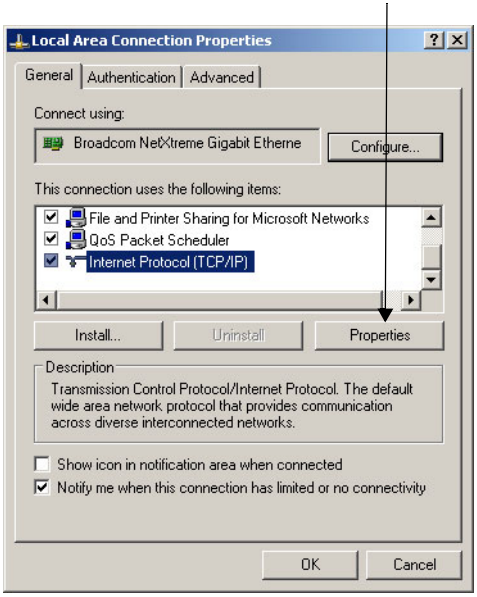
To assign an IP address to the Autodesk control surface on Windows-based workstations:

1. Click Start | Settings | Network Connections.

   NOTE: You can also access Network Connections from the Control Panel.

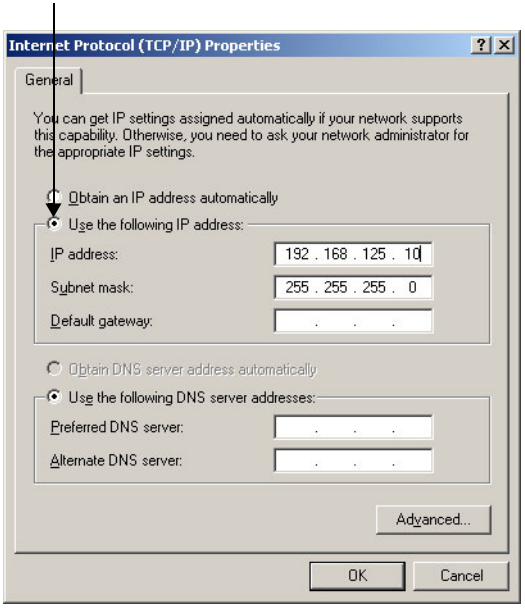
2. Right-click the port that the control surface switch or panel is connected to and choose Properties.

3. In the Properties dialog box, select Internet Protocol (TCP/IP) and click Properties.



The Internet Protocol (TCP/IP) Properties dialog box opens.

4. Select the Use the following IP address option.



5. Set a static IP and Subnet mask address for the port. Select values that do not conflict with any other machine on your network. Consider using the following values:

   • IP address: 192.168.125.10

   • Subnet mask: 255.255.255.0

⚠ **WARNING:** The last digits of the IP address must not conflict with the panel IDs included in the *lustre.config* file.

6. Click OK twice.

To assign an IP address to the Autodesk control surface on Linux-based workstations:

➤ On the Lustre workstation, use a text editor such as *nedit* to configure the port connected to the control surface with an unrelated static IP address that will not interfere with any of the IP addresses on the network. Also assign an appropriate subnet mask. Type:

```
nedit /etc/sysconfig/network-scripts/ifcfg-eth<port#>
```

For example:

• IP address: 192.168.125.10

• Subnet mask: 255.255.255.0

WARNING: The last digits of the IP address must not conflict with the panel IDs included in the *lustre.config* file.

Configuring Lustre to Connect to the Autodesk Control Surface

After you have configured the IP address of the control surface, you must configure Lustre to use the control surface.

To configure Lustre to use the Autodesk control surface on Windows- or Linux-based workstations:

1. Turn the power on to each of the modules and look at the top display panel on the module. It should display the panel name and ID.
2. After you install Lustre 2007, open the *lustre.config* file for each project and the *lustre.config* template file. See the *Autodesk Lustre 2007 Software Installation Guide*.
3. Enter the following keywords for each of the panels you want to enable.

Uncomment Keyword:	To enable:
`AutodeskPanels`	The Autodesk control surface
`Panel-BT <panel_ID>`	The Colour Grading panel
`Panel-K <panel_ID>`	The Function panel
`Panel-T <panel_ID>`	The Navigation panel

4. After each panel keyword, enter the panel ID.

   The keyword section should look similar to the following example.

   ```
   AutodeskPanels
   Panel-BT 1
   Panel-K 2
   Panel-T 3
   ```

5. Start Lustre. The following message should appear in the Console:

   ```
   Panel #<panel_ID> is detected
   ```

   The Autodesk control surface should now work.

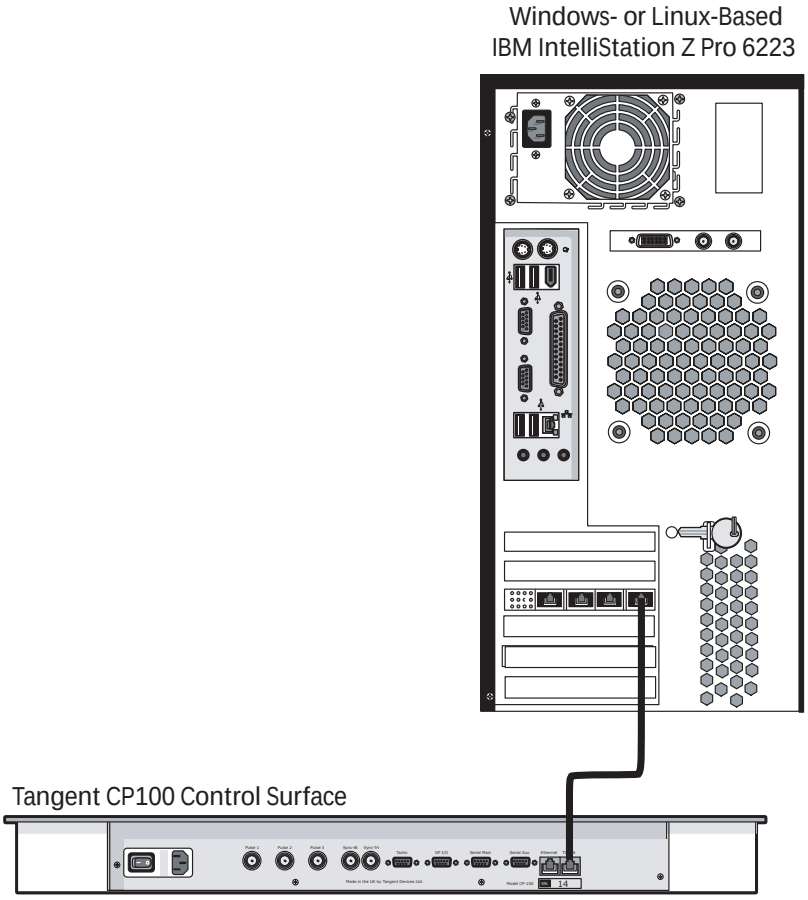
Connecting the Tangent CP100 Control Surface

The Tangent CP100 control surface is usually connected to the Master Station. You connect the control surface to the Master Station network port using a Category 5 crossover network cable. The control surface is automatically detected when Lustre is launched.

NOTE: The illustration in this procedure contains a comprehensive IBM IntelliStation Z Pro 6223 backplane, since the Broadcom network card is in the same location independent of the platform running on the workstation.

To connect the Tangent CP100 control surface:

1. Insert a crossover cable into port 0 (the far right port) on the Broadcom network card.
   The Tangent CP100 control surface should be connected as shown in the following diagram.



2. Connect the other end of the network cable to the TDLAN port of the Tangent control surface.

Connecting a Stand-Alone Tablet

If you do not have the modular Autodesk control surface panel that includes the tablet, you can connect a stand-alone tablet to a USB port on the workstation.

To connect the tablet:

➤ Connect the tablet to the serial or USB port of the station, depending on the model you are using.

You may extend this serial or USB connection using the cable extension provided in the DL.CAB-500 cable kit and labeled as DL.CAB-23A.

NOTE: You may need to restart Windows for the tablet to be recognized. If using the Linux version of Lustre, starting Xserver will prompt tablet recognition. Press **CTRL+ALT+BACKSPACE** to start the Xserver.

Connecting the Slave Renderer to a Lustre Workstation

The Slave Renderer is available for the Master Station, the Lustre Station, and the Lustre HD Station. Although the Slave Renderer is connected using a network connection, a higher Category 6 grade cable is needed to accommodate the data that is transmitted.

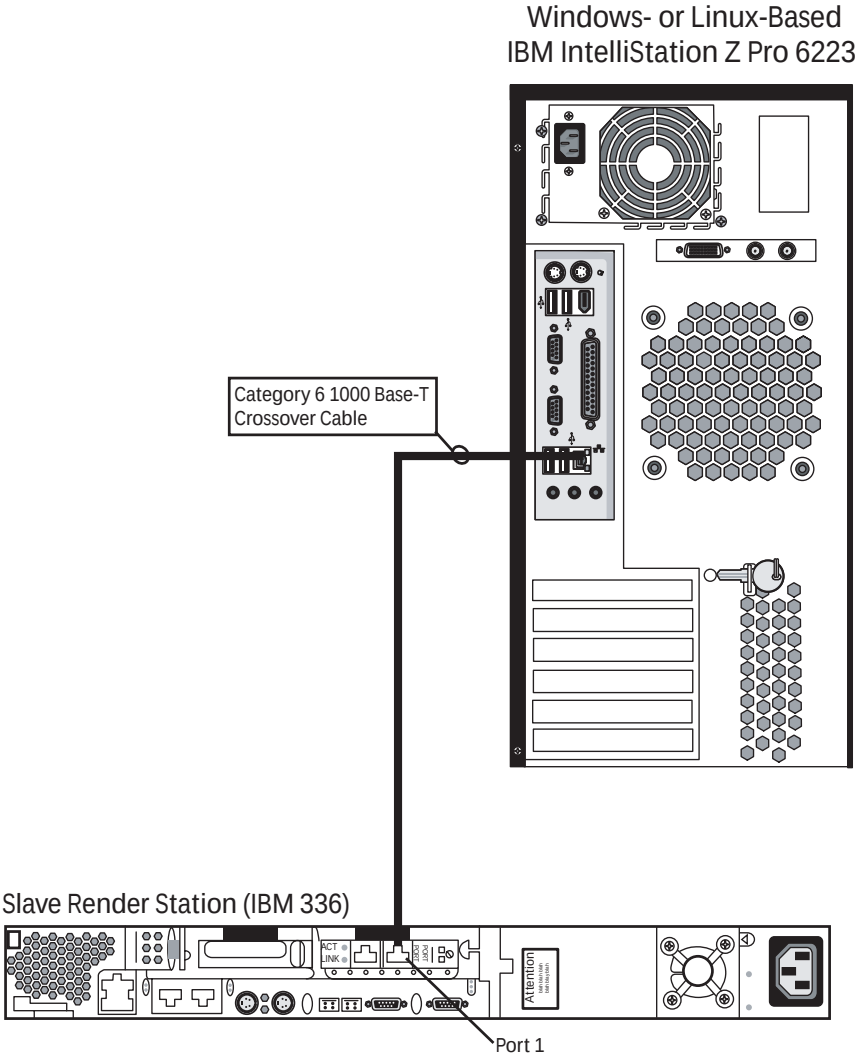
For information on configuring the IP addresses of the network ports that connect the two workstations, see the *Autodesk Lustre 2007 Software Installation Guide* for your operating system.

NOTE: The illustration in this procedure contains a comprehensive IBM IntelliStation Z Pro 6223 backplane, since the on-board network port is in the same location independent of the platform running on the workstation.

To connect the Slave Renderer:

1. Connect the Category 6 crossover cable to the on-board network port at the back of the Lustre workstation.
2. Connect the other end of the cable to the 1000Base-T port 1 of the Slave Renderer machine.

The Slave Renderer should be connected as shown in the following diagram.



Connecting Video I/O to a Master or HD Station

Use the Lustre video components to set up video I/O and a broadcast monitor. The only video hardware you must provide are a sync generator, a VTR, and an SD or HD SDI broadcast monitor. The following components are included in your hardware shipment.

DVS Centaurus board and DVS Breakout Box II (optional) — The DVS Centaurus board provides video I/O. Use the DVS Breakout Box II for serial control of a VTR or other slave device and LTC output to an audio device.

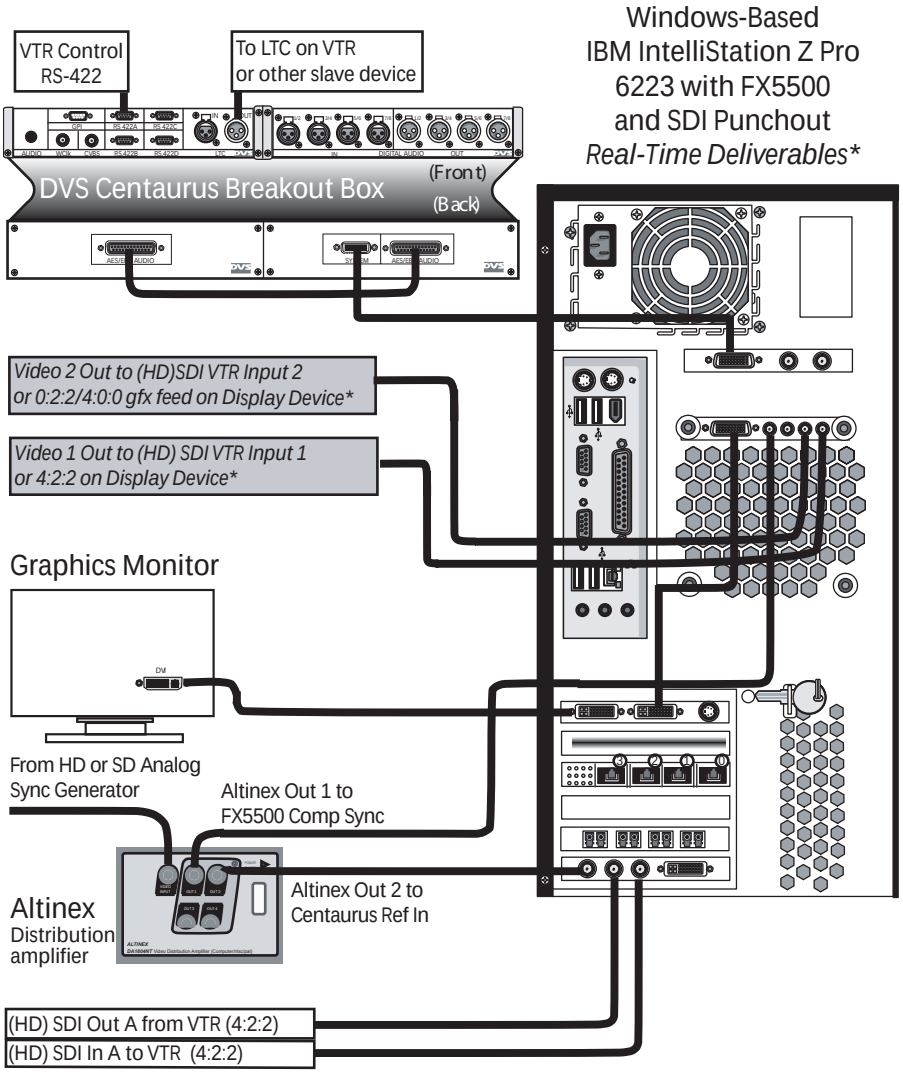
NVIDIA Quadro® FX graphics board — The NVIDIA Quadro FX graphics board provides output to your computer monitor, to the broadcast monitor, and to a VTR (for real-time deliverables).

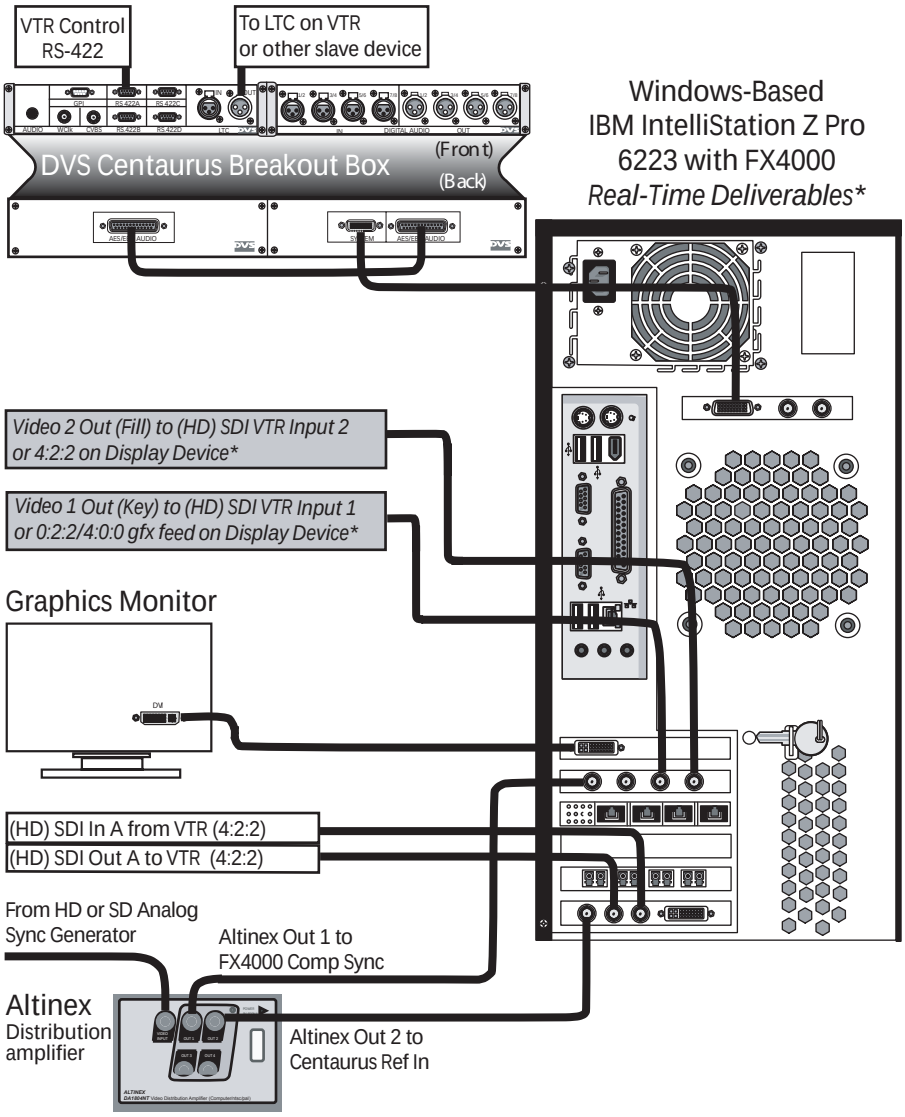
EIZO 24-inch or Sony 21-inch wide screen LCD graphics monitor — The EIZO and Sony LCD graphics monitors feature a wide screen that makes a 16:9 aspect ratio possible for HD projects. With these monitors, the application runs at a maximum resolution of 1920x1200. For instructions on connecting the graphics monitor, see "Connecting the Monitor" on page 20.

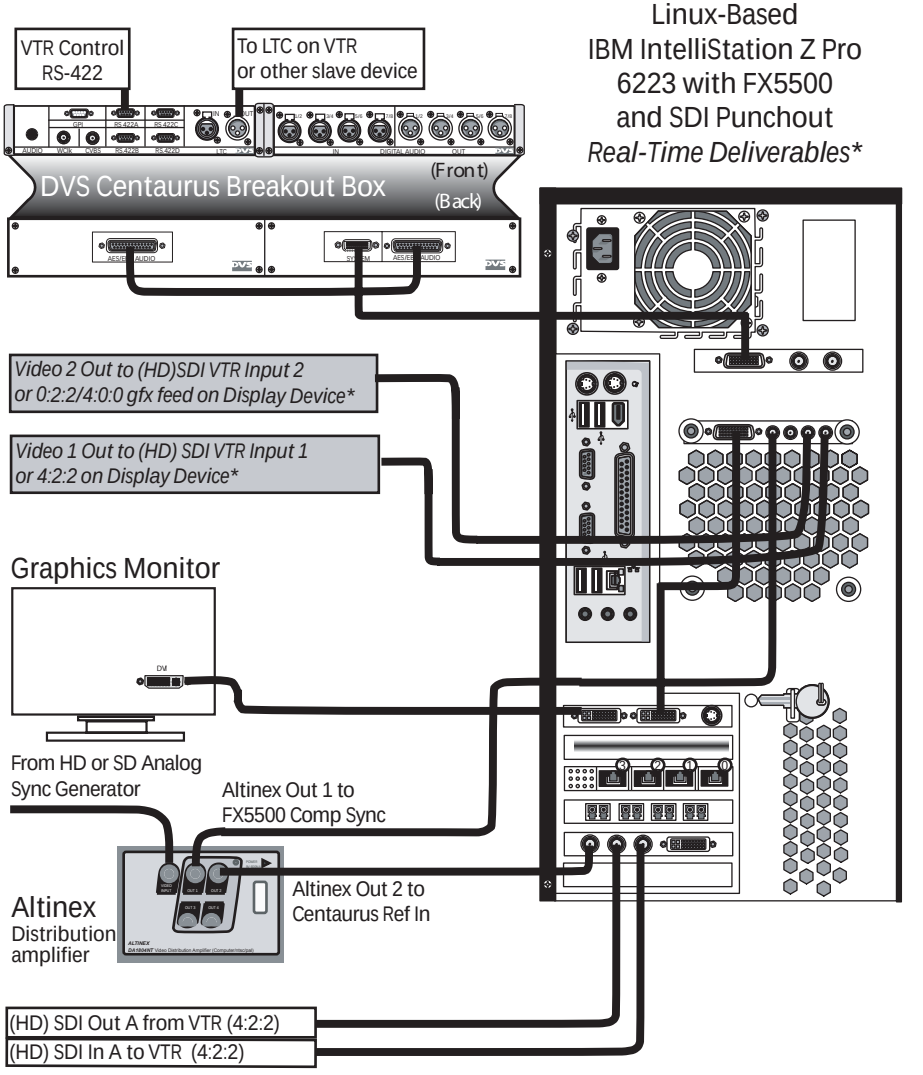
Altinex® DA1804NT video distribution amplifier — The Altinex video distribution amplifier can serve a bi-level (SD) or tri-level (HD) sync signal to up four video hardware devices from a single sync source/generator. It serves the sync signal to the NVIDIA graphics board and the DVS Centaurus board.

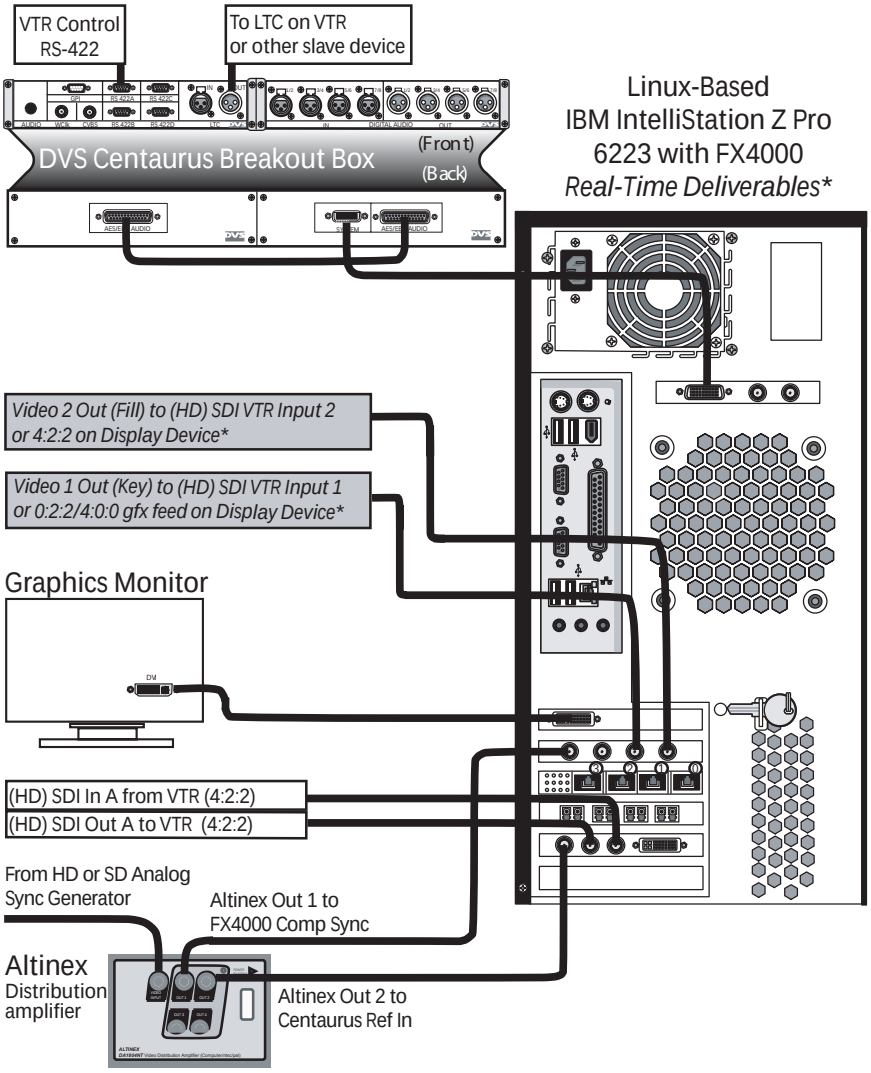
Video I/O for Real-Time Deliverables

The following illustrations show the video I/O wiring for FX5500 and FX4000 workstations that can play out to a VTR through the NVIDIA board (real-time deliverables).


VTR Control
RS-422
To LTC on VTR
or other slave device
Windows-Based
IBM IntelliStation Z Pro
6223 with FX5500
and SDI Punchout
*Real-Time Deliverables**
DVS Centaurus Breakout Box
(Front)
(Back)
Video 2 Out to (HD)SDI VTR Input 2
or 0:2:2/4:0:0 gfx feed on Display Device*
Video 1 Out to (HD) SDI VTR Input 1
or 4:2:2 on Display Device*
Graphics Monitor
From HD or SD Analog
Sync Generator
Altinex Out 1 to
FX5500 Comp Sync
Altinex
Distribution
amplifier
Altinex Out 2 to
Centaurus Ref In
(HD) SDI Out A from VTR (4:2:2)
(HD) SDI In A to VTR (4:2:2)

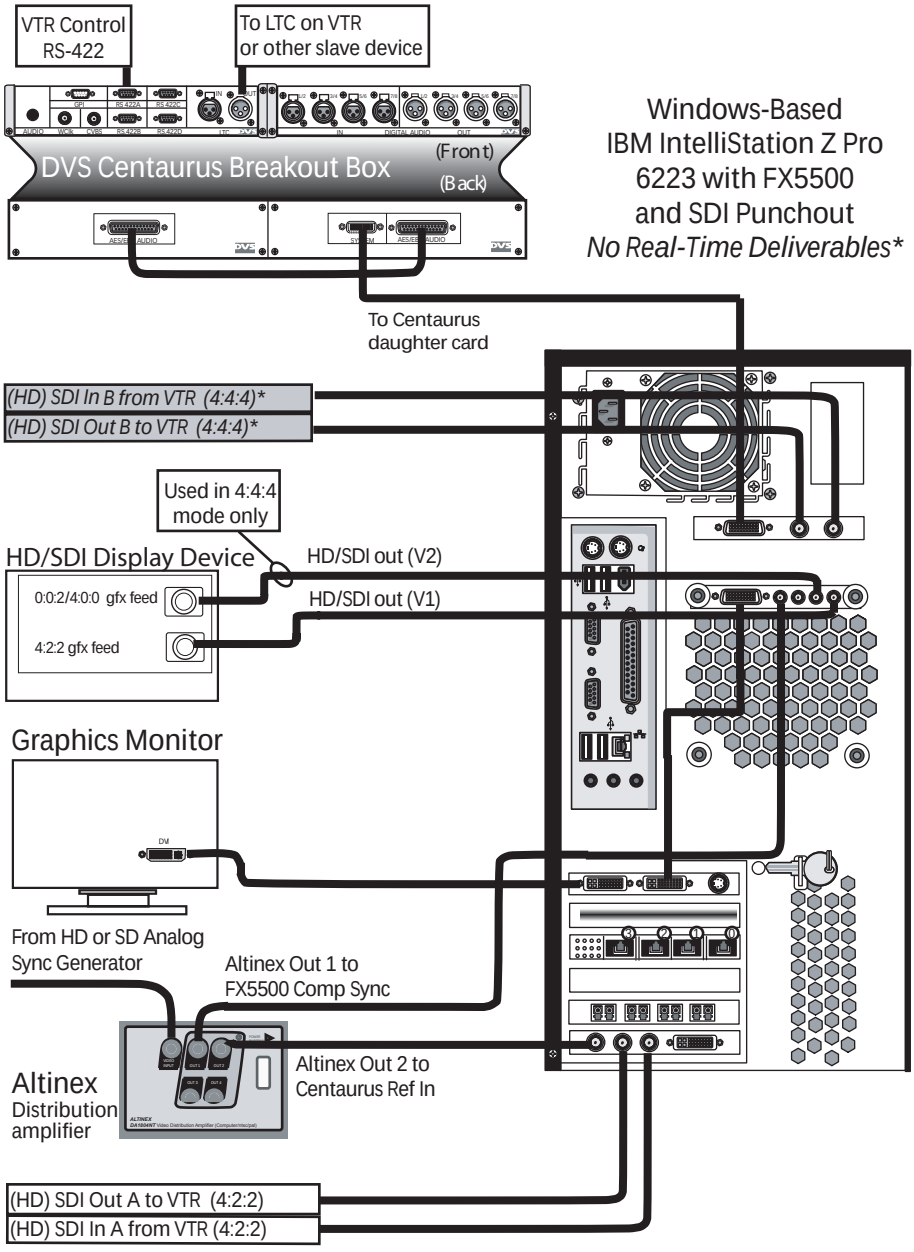

VTR Control
RS-422
To LTC on VTR
or other slave device
DVS Centaurus Breakout Box
(Front)
(Back)
Windows-Based
IBM IntelliStation Z Pro
6223 with FX4000
*Real-Time Deliverables**
Video 2 Out (Fill) to (HD) SDI VTR Input 2
or 4:2:2 on Display Device*
Video 1 Out (Key) to (HD) SDI VTR Input 1
or 0:2:2/4:0:0 gfx feed on Display Device*
Graphics Monitor
(HD) SDI In A from VTR (4:2:2)
(HD) SDI Out A to VTR (4:2:2)
From HD or SD Analog
Sync Generator
Altinex Out 1 to
FX4000 Comp Sync
Altinex
Distribution
amplifier
Altinex Out 2 to
Centaurus Ref In

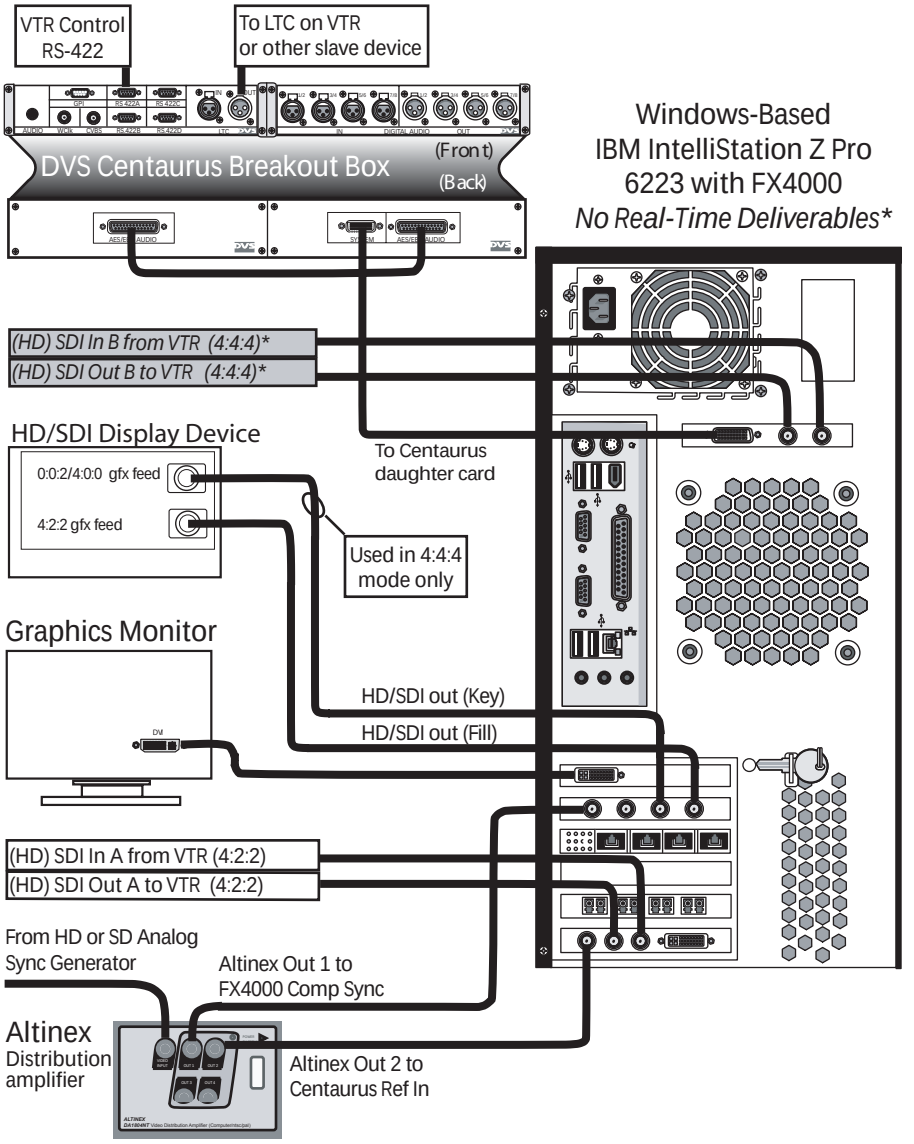

VTR Control
RS-422
To LTC on VTR
or other slave device
Linux-Based
IBM IntelliStation Z Pro
6223 with FX5500
and SDI Punchout
*Real-Time Deliverables**
DVS Centaurus Breakout Box
(Front)
(Back)
Video 2 Out to (HD)SDI VTR Input 2
or 0:2:2/4:0:0 gfx feed on Display Device*
Video 1 Out to (HD) SDI VTR Input 1
or 4:2:2 on Display Device*
Graphics Monitor
DVI
From HD or SD Analog
Sync Generator
Altinex Out 1 to
FX5500 Comp Sync
Altinex
Distribution
amplifier
Altinex Out 2 to
Centaurus Ref In
(HD) SDI Out A from VTR (4:2:2)
(HD) SDI In A to VTR (4:2:2)

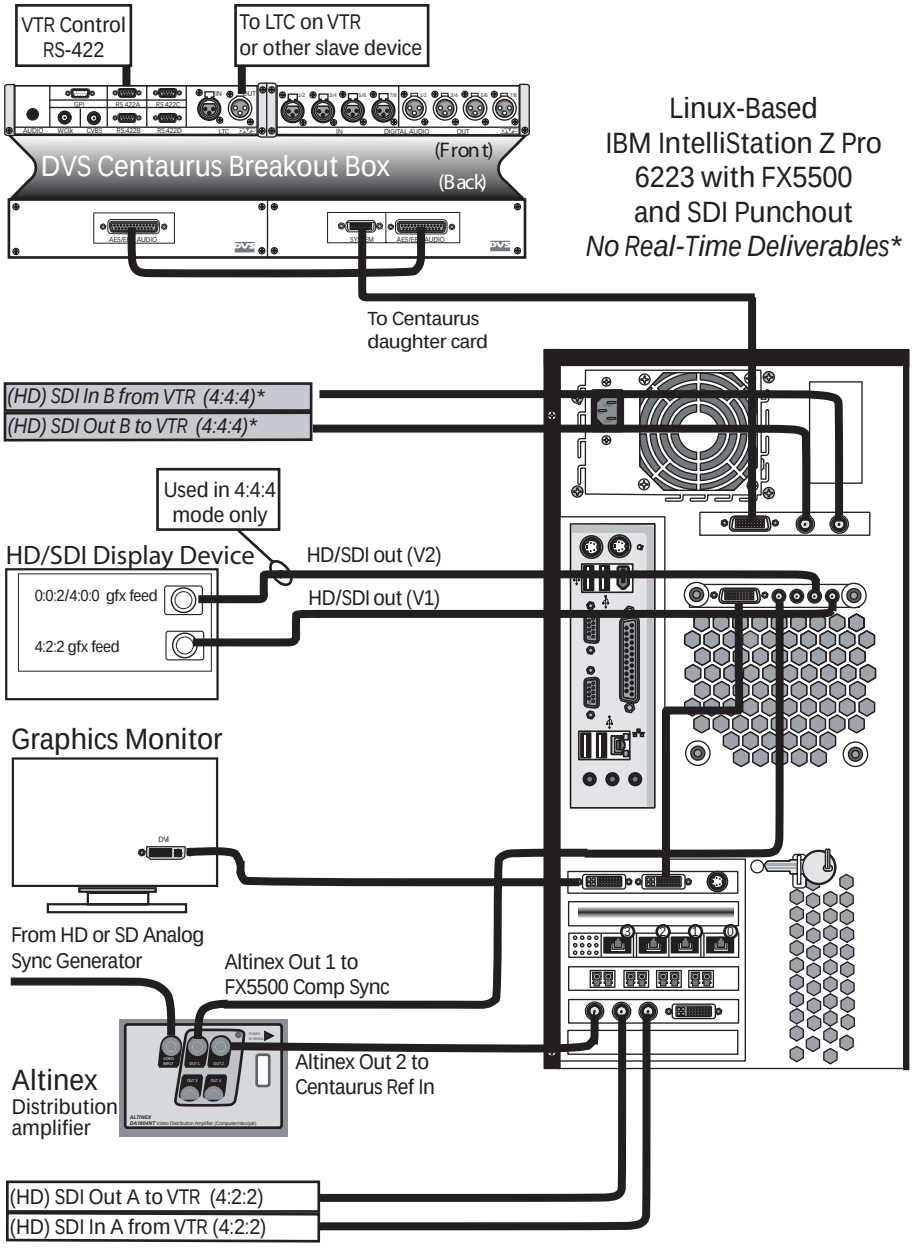


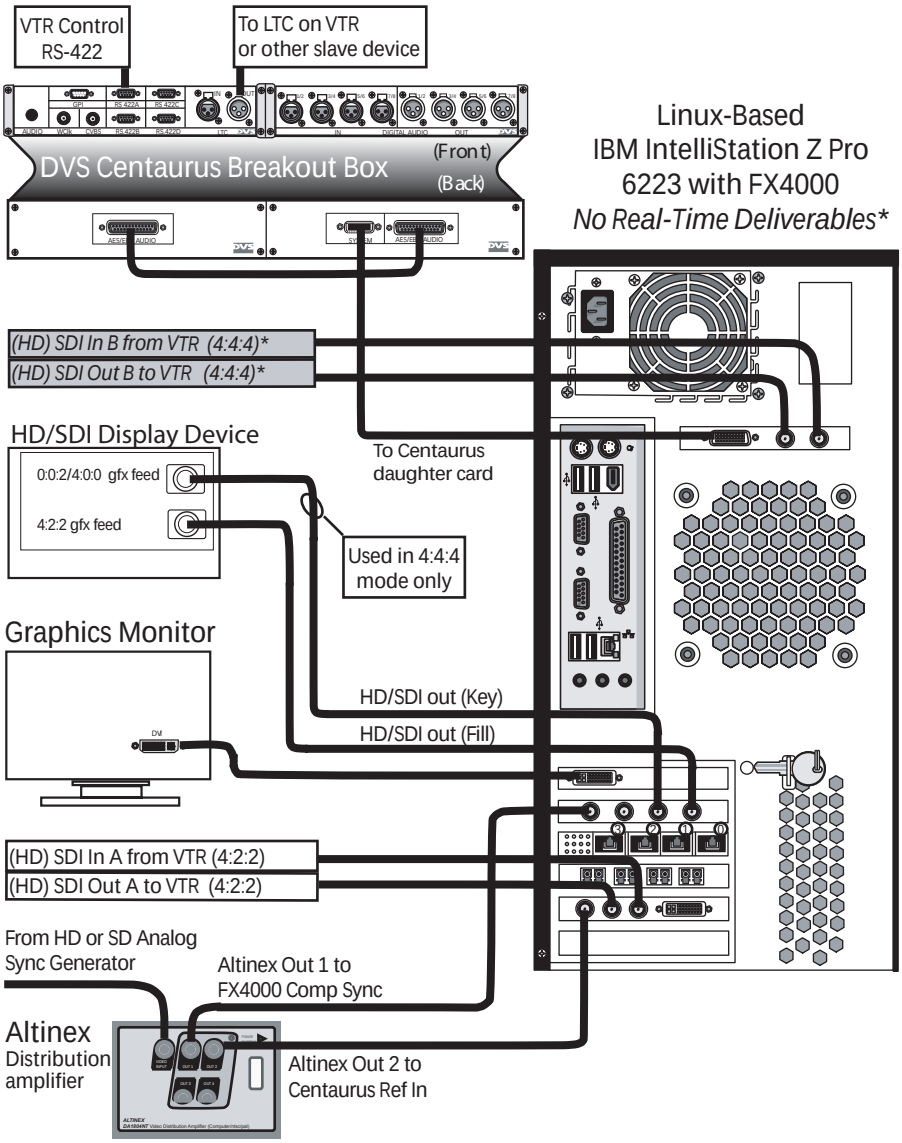
Video I/O without Real-Time Deliverables

The following illustrations show the video I/O wiring for FX5500 and FX4000 workstations that do not support play out to a VTR through the NVIDIA board (real-time deliverables).


VTR Control
RS-422
To LTC on VTR
or other slave device
DVS Centaurus Breakout Box
(Front)
(Back)
Windows-Based
IBM IntelliStation Z Pro
6223 with FX5500
and SDI Punchout
No Real-Time Deliverables*
To Centaurus
daughter card
(HD) SDI In B from VTR (4:4:4)*
(HD) SDI Out B to VTR (4:4:4)*
Used in 4:4:4
mode only
HD/SDI Display Device
HD/SDI out (V2)
HD/SDI out (V1)
0:0:2/4:0:0 gfx feed
4:2:2 gfx feed
Graphics Monitor
From HD or SD Analog
Sync Generator
Altinex Out 1 to
FX5500 Comp Sync
Altinex
Distribution
amplifier
Altinex Out 2 to
Centaurus Ref In
(HD) SDI Out A to VTR (4:2:2)
(HD) SDI In A from VTR (4:2:2)


VTR Control
RS-422
To LTC on VTR
or other slave device
DVS Centaurus Breakout Box
(Front)
(Back)
Windows-Based
IBM IntelliStation Z Pro
6223 with FX4000
*No Real-Time Deliverables**
(HD) SDI In B from VTR (4:4:4)*
(HD) SDI Out B to VTR (4:4:4)*
HD/SDI Display Device
0:0:2/4:0:0 gfx feed
4:2:2 gfx feed
To Centaurus
daughter card
Used in 4:4:4
mode only
Graphics Monitor
HD/SDI out (Key)
HD/SDI out (Fill)
(HD) SDI In A from VTR (4:2:2)
(HD) SDI Out A to VTR (4:2:2)
From HD or SD Analog
Sync Generator
Altinex Out 1 to
FX4000 Comp Sync
Altinex
Distribution
amplifier
Altinex Out 2 to
Centaurus Ref In


VTR Control
RS-422
To LTC on VTR
or other slave device
DVS Centaurus Breakout Box
(Front)
(Back)
Linux-Based
IBM IntelliStation Z Pro
6223 with FX5500
and SDI Punchout
*No Real-Time Deliverables**
To Centaurus
daughter card
(HD) SDI In B from VTR (4:4:4)*
(HD) SDI Out B to VTR (4:4:4)*
Used in 4:4:4
mode only
HD/SDI Display Device
0:0:2/4:0:0 gfx feed
4:2:2 gfx feed
HD/SDI out (V2)
HD/SDI out (V1)
Graphics Monitor
DVI
From HD or SD Analog
Sync Generator
Altinex Out 1 to
FX5500 Comp Sync
Altinex
Distribution
amplifier
Altinex Out 2 to
Centaurus Ref In
(HD) SDI Out A to VTR (4:2:2)
(HD) SDI In A from VTR (4:2:2)



Connecting to a High-Speed Data Link Device (HSDL)

If you have purchased an HSDL license, you can connect to an HSDL device through the DVS Centaurus.

Connect both the A and B in/out ports on the DVS main board and daughter card to your HSDL device.

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Unresolved Cross-References