Autodesk®
Visual Effects and Finishing
2010 Edition

Installation and Configuration Guide

Autodesk®

Trademarks

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Contents

Introduction 1

Topics in this chapter:

About This Guide

This guide provides information about installing the current version of Autodesk® Inferno®, Autodesk® Flame®, Autodesk® Flint®, Autodesk® Smoke®, and Autodesk® Backdraft® Conform.

NOTE For instructions on installing and configuring Autodesk® Flare™, see the *Autodesk Flare Installation and Configuration Guide*, available at *www.autodesk.com/me-documentation*.

Use this guide in conjunction with the *Autodesk Visual Effects and Finishing Hardware Setup Guide* for your platform to install and configure the hardware and software components of your Autodesk Visual Effects and Finishing workstation.

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

Intended Audience

This guide assumes you have knowledge of the Linux® operating system, preferably a distribution from Red Hat® Linux. It also assumes familiarity with Linux networking terms, tools, and procedures.

If you plan to reconfigure your workstation or your storage, knowledge of computer hardware, storage and networking in a professional video/film production environment is recommended.

Do not attempt to carry out the procedures in this guide if you are not familiar with the concepts they present. Contact Autodesk Media and Entertainment Customer Support if you require further assistance.

If you are upgrading an existing workstation without reinstalling Linux, this document assumes you have *root* access to your system. If you do not have root access, contact your system administrator. The default root account password on an Autodesk workstation is *password*.

Notation Conventions

A number of style conventions are used throughout your documentation. 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. Press the Enter key after each command.	**`install rpm -qa`**
Variable names appear in Courier, enclosed in angle brackets.	`<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*

Related Documentation

Documentation for this release is installed with the product as PDF files and as an HTML help system, and is also available on the Autodesk web site at *http://www.autodesk.com/me-documentation*. From this page you can access the complete documentation library.

You should also refer to the product release notes for all late-breaking release information.

Contacting Customer Support

For Autodesk Media and Entertainment Customer Support, visit *http://www.autodesk.com/support*.

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

Safety Guidelines

Consider the following environmental and safety guidelines when working with hardware components:

- When you receive your shipment, 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.

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

- Place all components in an air-conditioned environment. All hardware components generate heat and must be kept cool.
- Make sure the rack on which hardware components are mounted is open or well ventilated. Follow the ventilation specifications that apply to your system.
- 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.
- Make sure power is turned off on the components you are working on. It is a good idea to unplug components until all other connections are configured.
- Read and observe warning labels on hardware components, enclosures and drives.
- 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. Is is also recommended to wear a heel strap or boot strap.
- Do not handle any components unnecessarily, particularly cards that slide in and out of PCI slots on their parent hardware components.
- Properly ground your audio components. Otherwise, you may have ground loops, or humming in the system. To ensure audio components are properly grounded, use the XLR-3 cables shipped with your system. Using any other cables may cause humming in the system.
- Minimize electromagnetic noise by separating digital data and power cables from analog audio cables and running them in different cable ducts.

Installation Workflows 2

Topics in this chapter:

Overview

Your system is shipped with the operating system and the software already installed.

This chapter highlights three common installation workflows that you may need to perform, and lists the documentation relevant to each.

NOTE You should always identify and download the relevant documentation and software installation packages before proceeding with any installation procedures. Links to the software installation packages are provided in the release announcement you received from Autodesk.

- Workflow for Upgrading the Software on page 6
- Workflow for Reinstalling from Scratch or Upgrading Linux on page 7
- Workflow for Connecting New Stone Direct Storage on page 8

NOTE Each step in these workflows points to a section in this document for detailed instructions. The sections are in sequence, so once you finish performing the steps in one section, you do not need to come back to the high-level workflow, you can just continue to the next section for further instructions.

For details on the workstation hardware setup, it is recommended that you visit *www.autodesk.com/me-documentation*, select your application and version, and download the *Hardware Setup Guide* for your workstation model.

Workflow for Upgrading the Software

Follow this workflow to to upgrade your software to a new version, service pack, or extension without reconfiguring your hardware or upgrading your operating system.

To determine whether you need to upgrade Linux for a new software version or hardware platform, see Do I Need to Reinstall Linux? on page 25. If you do need to upgrade Linux, follow the steps in the Workflow for Reinstalling from Scratch or Upgrading Linux on page 7 rather than this workflow.

To upgrade the software:

1. Gather the necessary materials and documentation for your installation.

   NOTE Make sure you read the Release Notes for the software version or service pack you plan to install. The Release Notes contain important procedures that you might need to perform **before** upgrading your software, as well as information on supported hardware, required system memory, BIOS version, Linux distribution, DKU version and AJA OEM-2K firmware version.

   To download the latest Release Notes, go to *www.autodesk.com/me-documentation*, then select your application and the version or service pack you plan to install.

2. Make sure the hardware meets all the system requirements for the new software version or service pack, as specified in the Release Notes for the version you plan to install.

3. Upgrade the Discreet® Kernel Utilities (DKU) to the required version. Refer to the latest Release Notes for the required firmware version and for update instructions. DKU update instructions are also available in Installing the DKU on page 29.

4. Update the AJA OEM-2K card firmware if necessary. Refer to the latest Release Notes for the required firmware version and for update instructions. Firmware update instructions are also available in Upgrading the AJA OEM-2K Firmware on page 30.

5. Install the software. See Installing the Application on page 43.

6. If you are upgrading from a previous version, run the *copyProjects* utility to copy projects from previous versions of the application to the most recently installed version. See Upgrading Projects to the Current Version on page 53.

   NOTE This step is not necessary if you are upgrading to a service pack of the same application version or extension.

7. License your software, and start it for the first time. See Licensing and Starting the Application on page 57.

   NOTE Re-licensing is not necessary if you are upgrading to a service pack of the same software version or extension.

8. Read the Help to get familiar with your application. To open the Help, press **Ctrl+=** or click the Help button.

Workflow for Reinstalling from Scratch or Upgrading Linux

Follow this workflow when you need to completely rebuild your system: from cross-connecting the hardware peripherals and storage arrays, to installing the operating system, and installing, licensing, and configuring the software components.

Most of this workflow also applies when you need to upgrade the operating system without changing your hardware or storage setup. A new distribution of Linux may sometimes be required for a new version or service pack of the software, or for newer hardware platforms. To determine whether you need to upgrade Linux for a new application version or hardware platform, see Do I Need to Reinstall Linux? on page 25.

To reinstall your system from scratch or upgrade Linux:

1 Gather the necessary materials and documentation for your installation.

NOTE Make sure you read the Release Notes for the version or service pack you plan to install. The Release Notes contain important procedures that you might need to perform **before** upgrading your software, as well as information on supported hardware, required system memory, BIOS version, Linux distribution, DKU version and AJA OEM-2K firmware version.

To download the latest Release Notes for your application version, go to *www.autodesk.com/me-documentation*, then select your application and the version or service pack you plan to install.

2 Make sure the hardware meets all the system requirements specified in the Release Notes for the version you plan to install.

3 If you are reinstalling your hardware perform the following tasks:

NOTE Instructions and wiring diagrams for each of these steps can be found in Setting Up Your Workstation Hardware on page 9.

- Verify your hardware shipment, and make sure your facility meets the documented power and air conditinning requirements for the hardware components.
- Connect all peripherals (mouse, keyboard, Wacom® tablet, graphics monitor, house network) to the proper ports on the workstation.
- Connect your workstation to the Autodesk Wire® network, using either Gig-E or InfiniBand®.
- Connect a VTR and a broadcast monitor to your workstation.
- Connect and configure the audio hardware for your workstation.
- Connect your storage arrays to the workstation, but **DO NOT** power them on before having installed Linux, to prevent the Linux installer from attempting to format the arrays and use them as system drives.

4 If necessary, update and configure the BIOS of your workstation. See Configuring your System BIOS on page 21.

NOTE The BIOS settings must be properly configured **before** installing Linux.

5 Install the required Autodesk distribution of Red Hat Enterprise Linux. See Installing Red Hat Enterprise Linux on page 25.

6 Install the required version of the Discreet Kernel Utility (DKU). Refer to the latest Release Notes for the required version and for update instructions. DKU update instructions are also available in Installing the DKU on page 29.

7 Update the AJA OEM-2K card firmware on your workstation if necessary. Refer to the latest Release Notes for the required firmware version and for update instructions. Firmware update instructions are also available in Upgrading the AJA OEM-2K Firmware on page 30.

8 If you are using a new Stone® Direct storage array, configure the RAID volumes, mount the storage, and format it. See Configuring Storage on page 33 for LUN creation instructions and XFS filesystem creation instructions.

9 Install the software. See Installing the Application on page 43.

10 Configure the application to use your media storage filesystem. See Configuring Your Storage Filesystem as Media Storage on page 47.

11 Configure the Wire network, background Wire and proxy generation. See Setting up the Wire Network on page 51.

12 Optional: Install any additional Autodesk utilities if necessary. See Installing Additional Utilities on page 54.

13 License your software, and start it for the first time. See Licensing and Starting the Application on page 57.

NOTE Re-licensing is not necessary if you are upgrading to a service pack of the same software version or extension.

14 Read the Help to get familiar with your application. To open the Help, press **Ctrl+=** or click the Help button.

Workflow for Connecting New Stone Direct Storage

Follow this workflow when you need to rebuild your Stone Direct storage array. For instance, this may be required when you purchase supplementary storage enclosures to expand available disk space.

NOTE You do not need to reinstall or re-license the software after changing your storage configuration.

To connect new or expanded Stone Direct storage:

1 Connect your storage enclosures to the workstation. See Connecting Media Storage on page 15.

2 Configure the RAID volumes and mount the storage. See Configuring Storage on page 33 for instructions.

3 Configure your application to use the new media storage filesystem. See Configuring Your Storage Filesystem as Media Storage on page 47.

4 Your new storage is now ready to use.

Read the application Help to get familiar with your application. To open the Help, press **Ctrl+=** or click the Help button.

Setting Up Your Workstation Hardware

3

Topics in this chapter:

Overview

This section contains peripherals, video, and storage wiring diagrams, as well as BIOS settings for the HP Z800 workstation.

NOTE This section does not contain information and diagrams for the older workstations supported in this version. For detailed information about setting up each workstation, see the Hardware Setup Guide for the respective workstation.

If you are only upgrading an existing application, you do not need to reconfigure your workstation. In most cases, hardware integration and application installation were done on delivery by an authorized technician.

Still, it is a good idea to familiarize yourself with the configuration procedures for the following reasons:

- To make sure your workstation BIOS settings correspond to the recommended settings.
- Many suspected problems with your system may be due to loosened connections or improperly configured devices.

- If you need to call Customer Support, familiarity with the hardware setup helps you assist in diagnosing problems.
- If you want to move your system at any time, or upgrade certain components, this chapter contains crucial information.

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 peripherals and certified components.

The following table summarizes the peak (at startup) power consumed by the HP Z800 system and the heat it generates under the maximum processing load produced by a Visual Effects, Finishing, and Colour Grading application.

Component	Quantity	Startup Amps (120V / 240V)	Cont. Amps (120V / 240V)	Watts	Heat (BTUs)
HP Z800 (with cards)	1	4.0 / 2.0	3.8 / 1.9	456	1556
Lucid ADA 88192	1	0.5 / 0.25	0.5 / 0.25	60	205
Stone® Direct XR storage chassis	1	3.8 / 1.9	2.78 / 1.39	334	1140
Stone Direct XE expansion chassis	1	3.75 / 1.88	2.3 / 1.15	276	942
Stone Direct XR + Stone Direct XE	1	6.41 / 3.2	5.2 / 2.6	624	2130

You must be able to meet the startup power requirement and have a climate control system with the capacity to maintain the temperature of these components under the maximum processing load. For each Watt of power consumd by the system, you must provide 3.413 BTU of air conditionning.

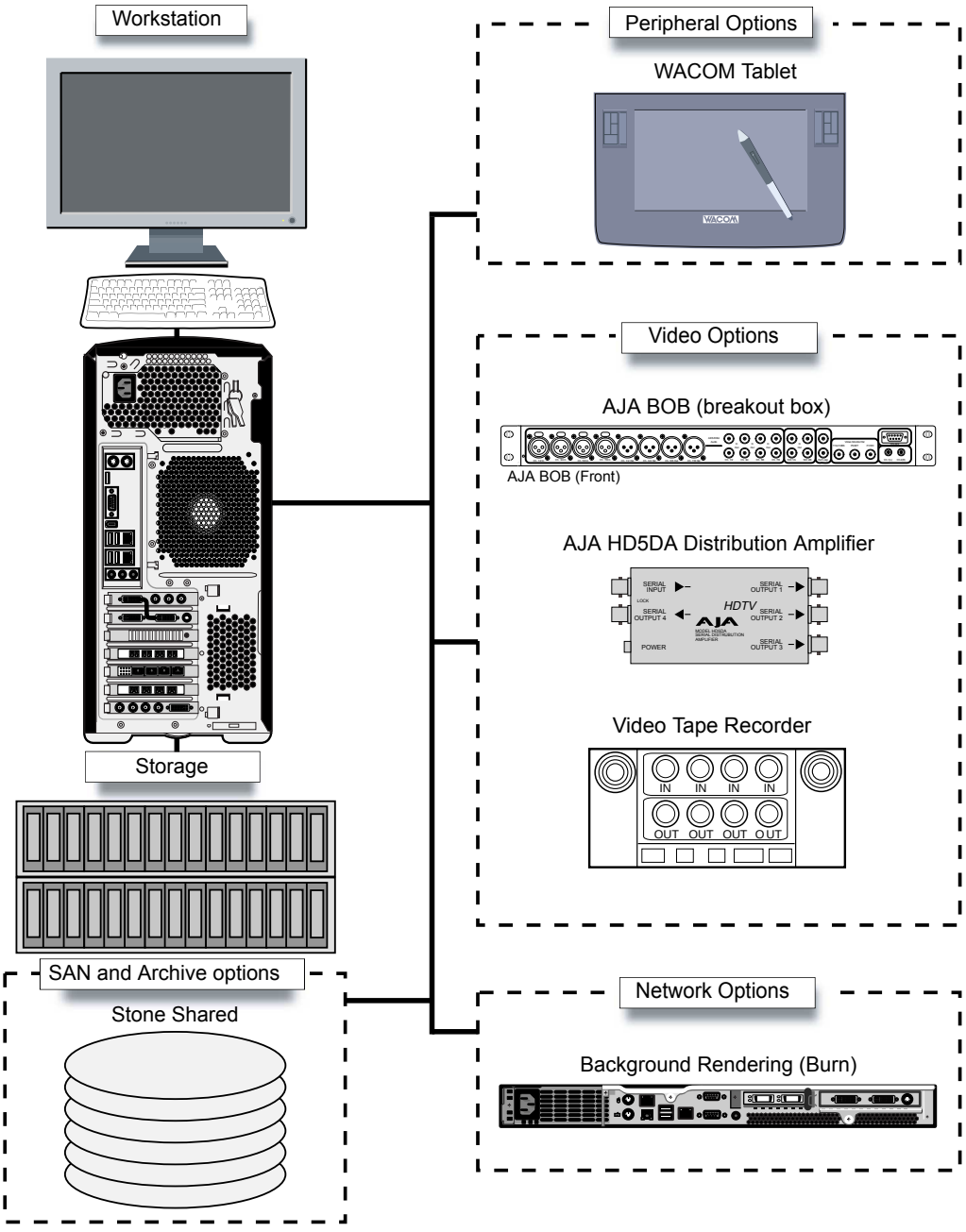
Rack Mount Requirements

You can rack mount your system. Plan for sufficient space in your rack mount chassis to install the following components:

- The workstation (required rack space: 5U)
- An AJA OEM-2K breakout box (required rack space: 1U)
- A Stone® Direct storage chassis (XR model) (required rack space: 5U)
- Additional Stone Direct expansion chassis (XE model), as required (required rack space: 5U each)

Typical System Configuration

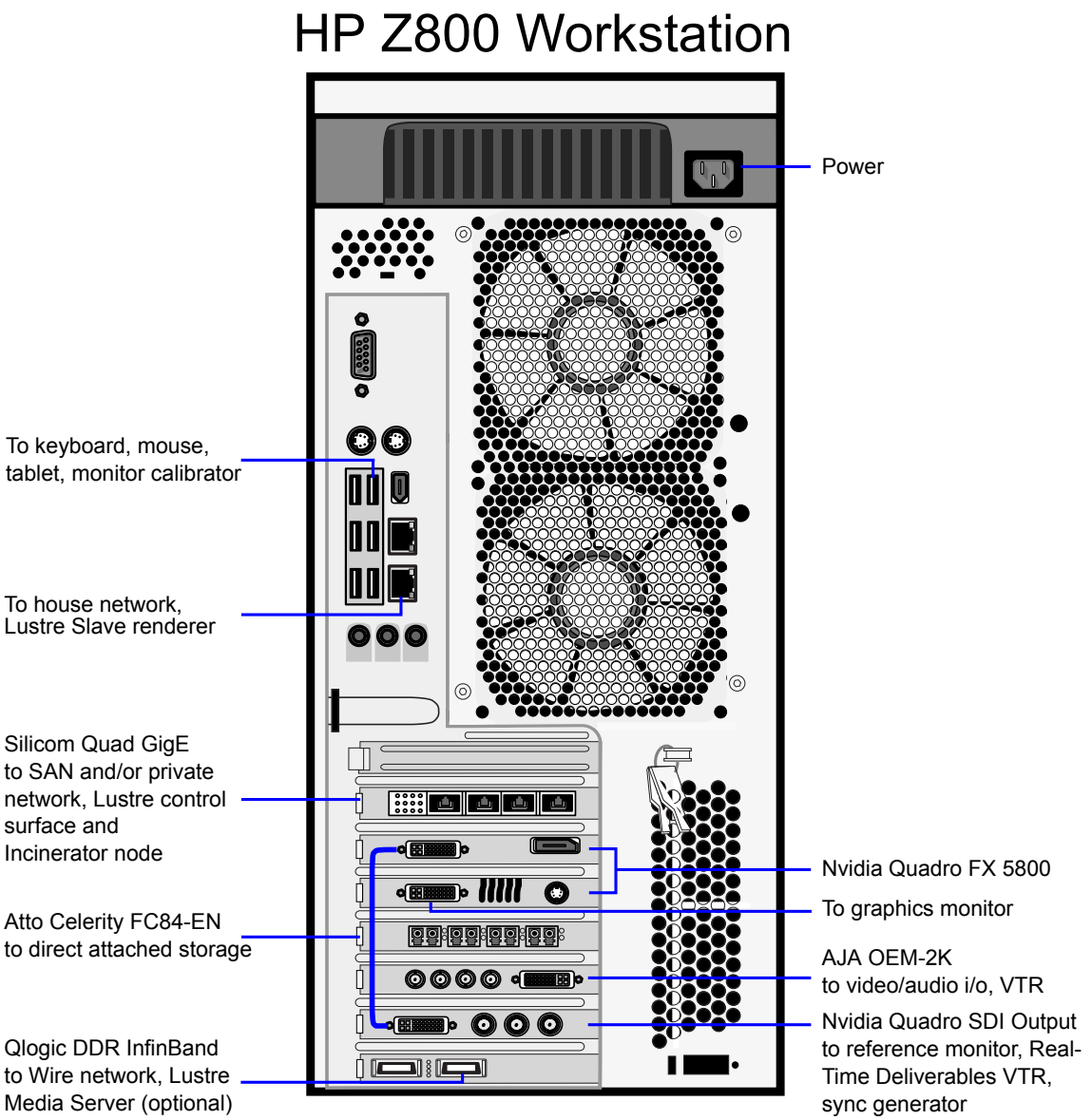
The following diagram illustrates a typical Autodesk Visual Effects and Finishing system configuration, including the Wacom® Intuos® pen tablet and optional components.



Connecting Peripherals

The following diagram illustrates how to connect peripherals, such as the graphics monitor, keyboard, mouse, Wacom Intuos pen tablet, and house network, to the HP Z800 workstation.

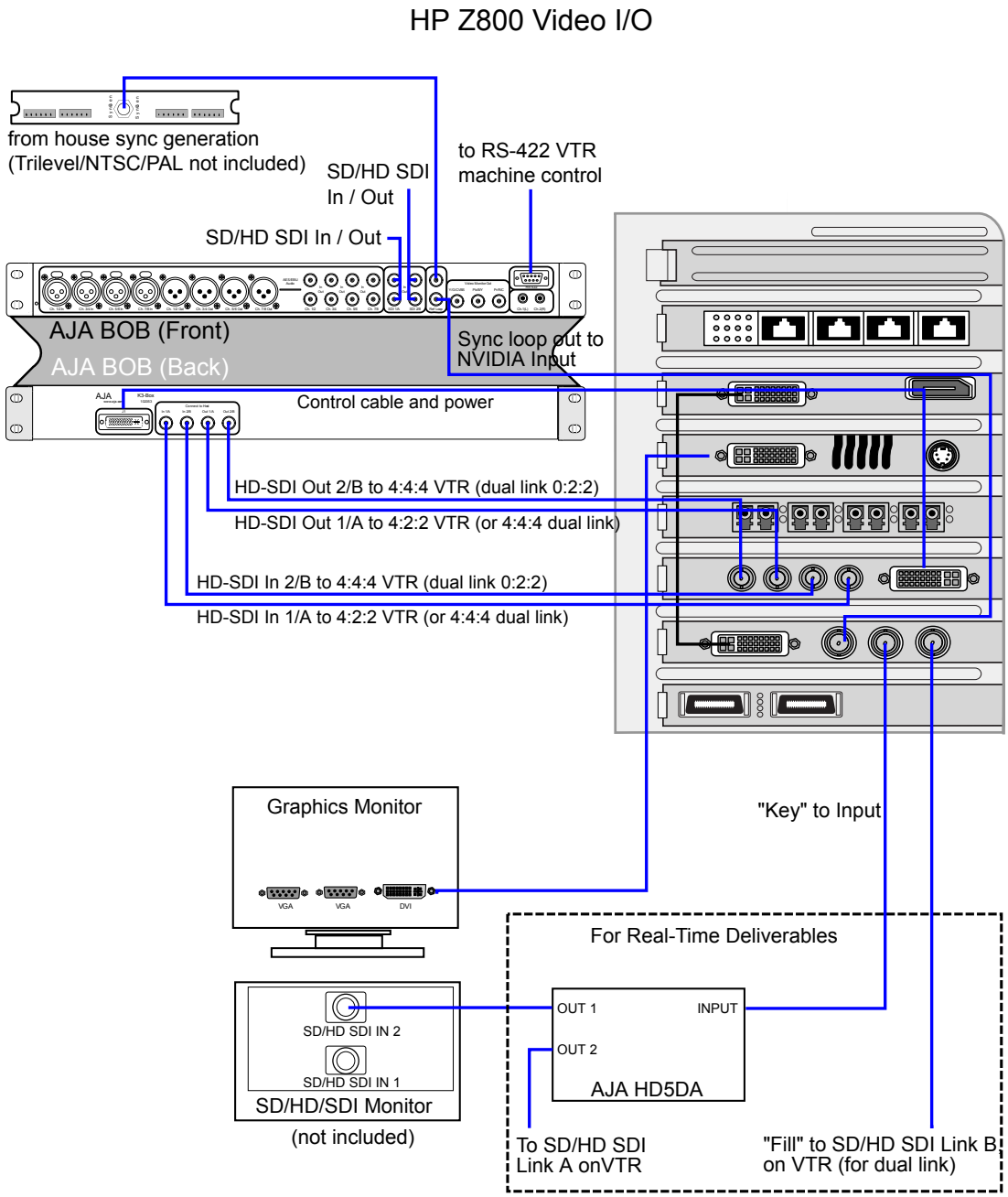
It is recommended you connect all hardware peripherals as instructed in this section before booting the workstation for the first time.



Connecting Video Components

The following diagram illustrates how to set up video I/O by connecting the hardware components included in your shipment. The only video hardware you must provide are a sync generator, VTR, HD/SDI-ready broadcast monitor and patch panel (if desired).

NOTE Do not use an SD (NTSC or PAL) sync generator for HD projects. Always use a tri-level sync generator for HD projects. Using the wrong sync generator for a project may impact the stability of your workstation.



Connecting Audio Components

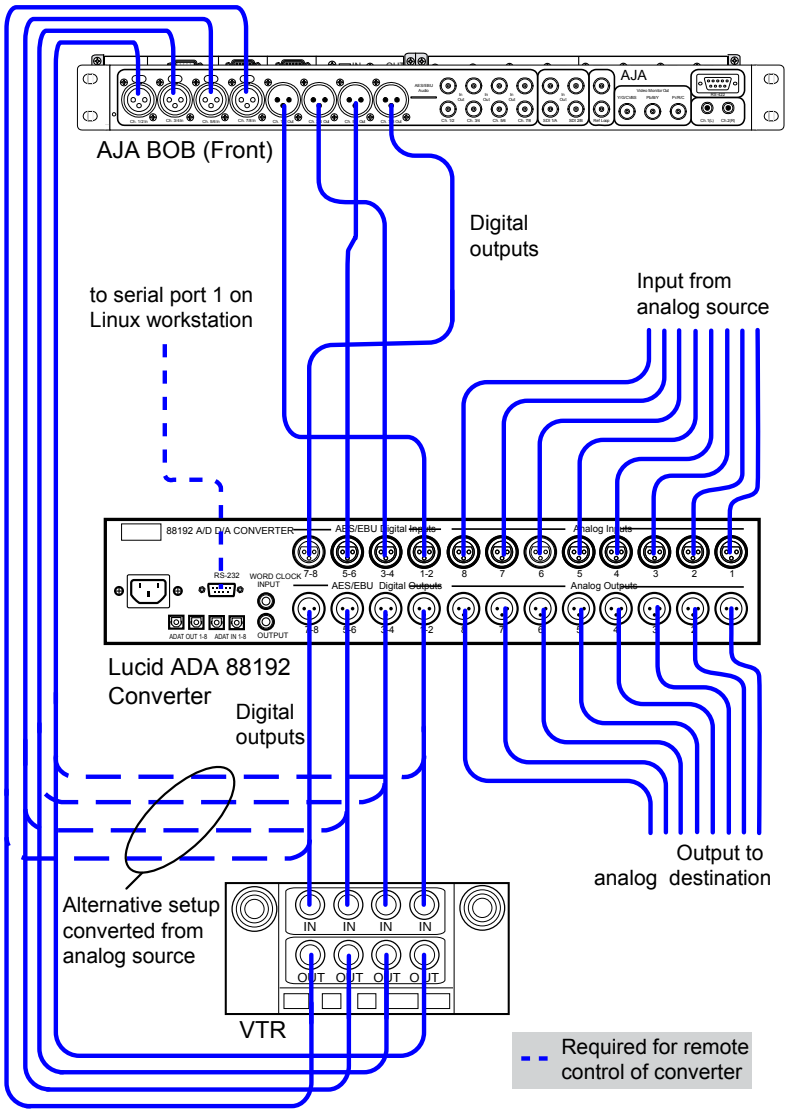
Your application uses the Discreet Native Audio subsystem. Discreet Native Audio uses the following hardware components:

Lucid ADA 88192 Audio Converter Converts signals between the workstation and all digital or analog audio I/O devices.

NOTE You can control the converter either locally or remotely through the audio preferences of the application (recommended).

AJA Balanced Audio breakout box and AJA OEM-2K card The Balanced Audio breakout box connects to the AJA OEM-2K card on your workstation. The card provides audio data at 24-bit and handles balanced AES/EBU audio signals from the breakout box. The card supports up to 8 tracks of embedded audio.

To connect the Discreet Native Audio hardware components to the AJA breakout box, refer to the following diagram.



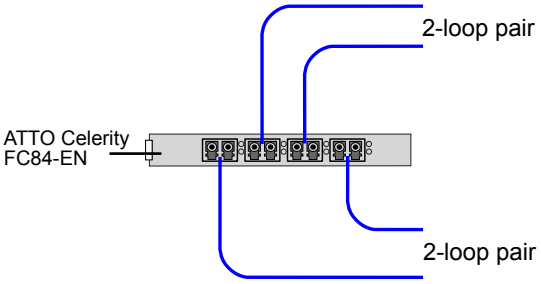
Connecting Media Storage

The workstation can be connected to two types of media storage.

- **Stone Direct disk arrays** are Autodesk's high-performance direct-attached storage (DAS) devices designed to address the different real-time playback requirements of various workflows. Direct attached storage devices provide storage to individual workstations, and can be made available to other workstations via the Autodesk Wire network.
- **A SAN** is a storage infrastructure that allows multiple workstations to share simultaneous access to a central storage enclosure.

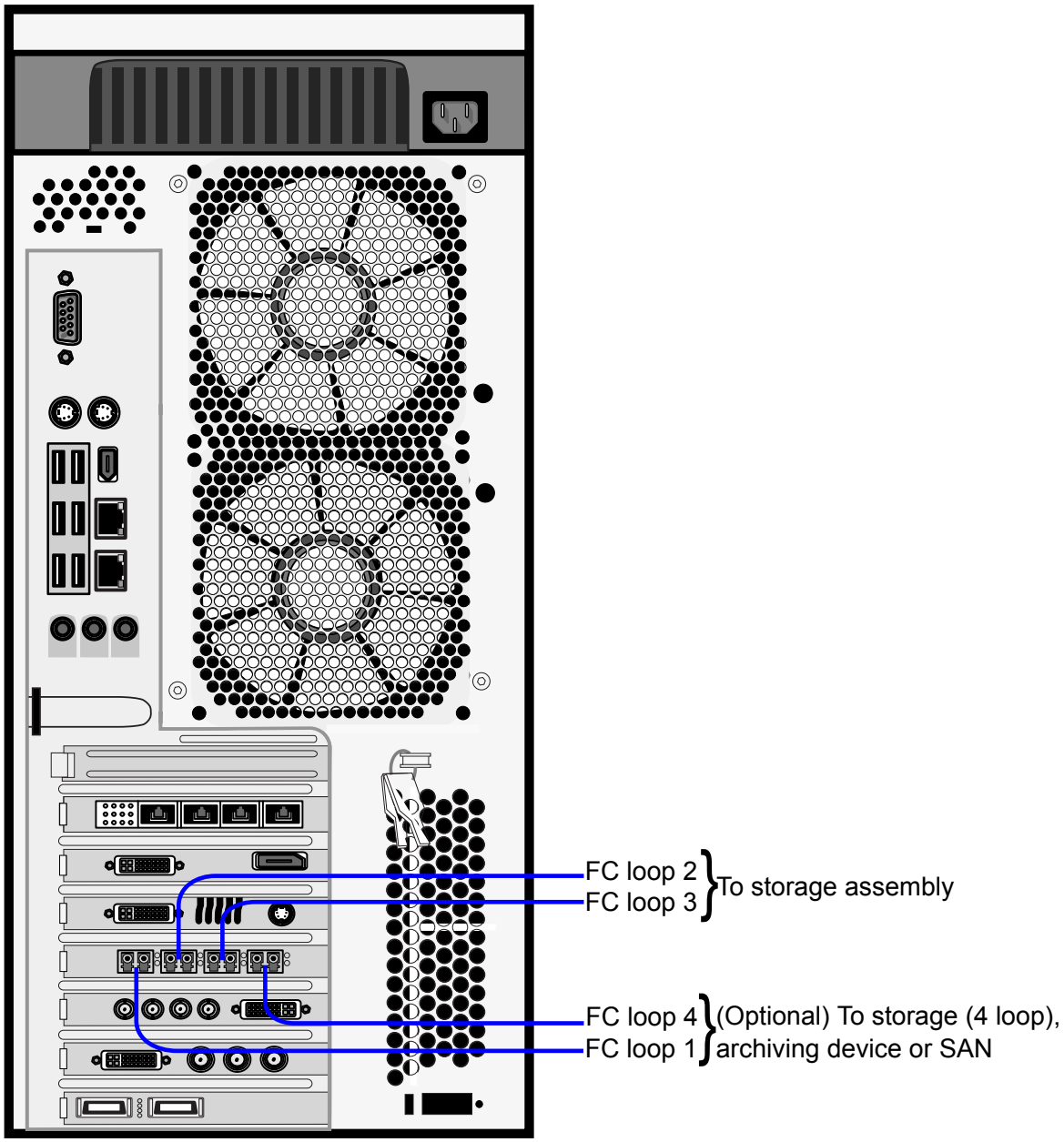
Connections to both types of media storage are made using the Atto Celerity FC84-EN fibre channel adapter, located in slot five (top to bottom).

The fibre channel adapter is equipped with four ports, called *loops*. You can connect your storage enclosure to the fibre channel cards using either 2 loops or 4 loops. A 2-loop device can be connected to either the inner pair of ports or the outer pair of ports. A 4-loop device requires both the inner pair and the outer pair. The following diagram illustrates this important point.



NOTE If you are not using all the ports of a fibre channel adapter, terminate the two unused ports with the FC loopback couplers that shipped with your system. Terminating these ports significantly decreases the time required to boot the system.

The following diagram illustrates the fibre channel storage connections to the workstation.


FC loop 2
FC loop 3
To storage assembly
FC loop 4
FC loop 1
(Optional) To storage (4 loop),
archiving device or SAN

Autodesk Stone Direct XR-series disk arrays provide two types of enclosures: a RAID enclosure (also called an XR enclosure), and an EBOD enclosure (also called an XE enclosure). Each disk array contains twelve 146 GB, 300 GB, or 450GB hard drives. Autodesk Stone Direct uses hardware RAID to provide high performance, reliability, and protection against data loss.

Hardware RAID storage configurations require either one RAID enclosure (for 2-loop) or up to two RAID enclosures (for 4-loop). These configurations may include additional XE expansion enclosures. You can increase storage capacity by adding disk arrays.

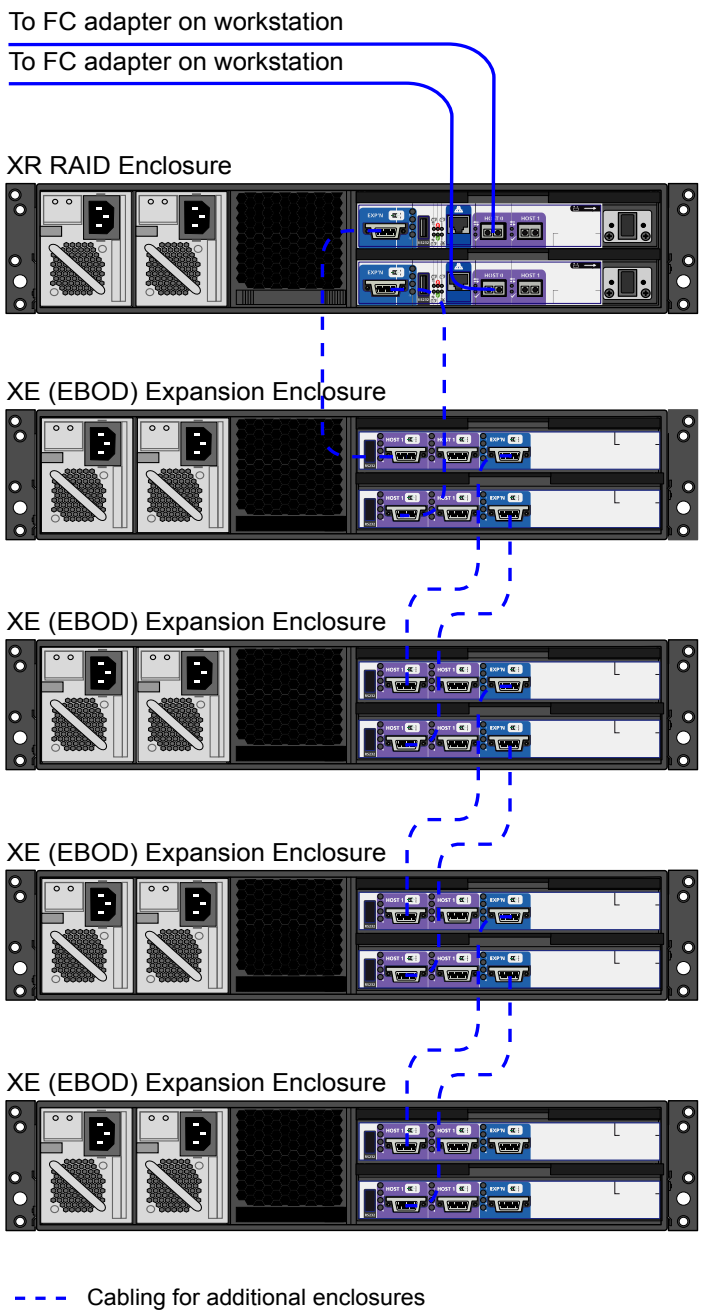
A number of Stone Direct configurations will ensure optimal playback of the most demanding formats:

Storage Configuration	Loops	Expected Peformance
Stone Direct XR	One 2-loop connection	■ One stream SD/HD 10-bit (32 channel/8-bits per channel audio), or ■ One stream 2K 12-bit unpacked (8 channel/8-bits per channel audio)
Stone Direct XR plus Stone Direct XE	Two 2-loop connections (if permitted by chassis) – or – One 2-loop connection	■ Two streams SD/HD 10-bit (32 channel/8-bits per channel audio), or ■ One stream 2K 12-bit unpacked (8 channel/8-bits per channel audio)
2 x Stone Direct XR	Two 2-loop connections (one per enclosure)	■ Two streams SD/HD 10-bit (32 channel/8-bits per channel audio), or ■ One stream 2K 12-bit unpacked (8 channel/8-bits per channel audio)

The following three diagrams illustrate how to cable XR-series hardware RAID storage enclosures. It is important to cable exactly as illustrated in the diagrams to ensure storage functions properly.

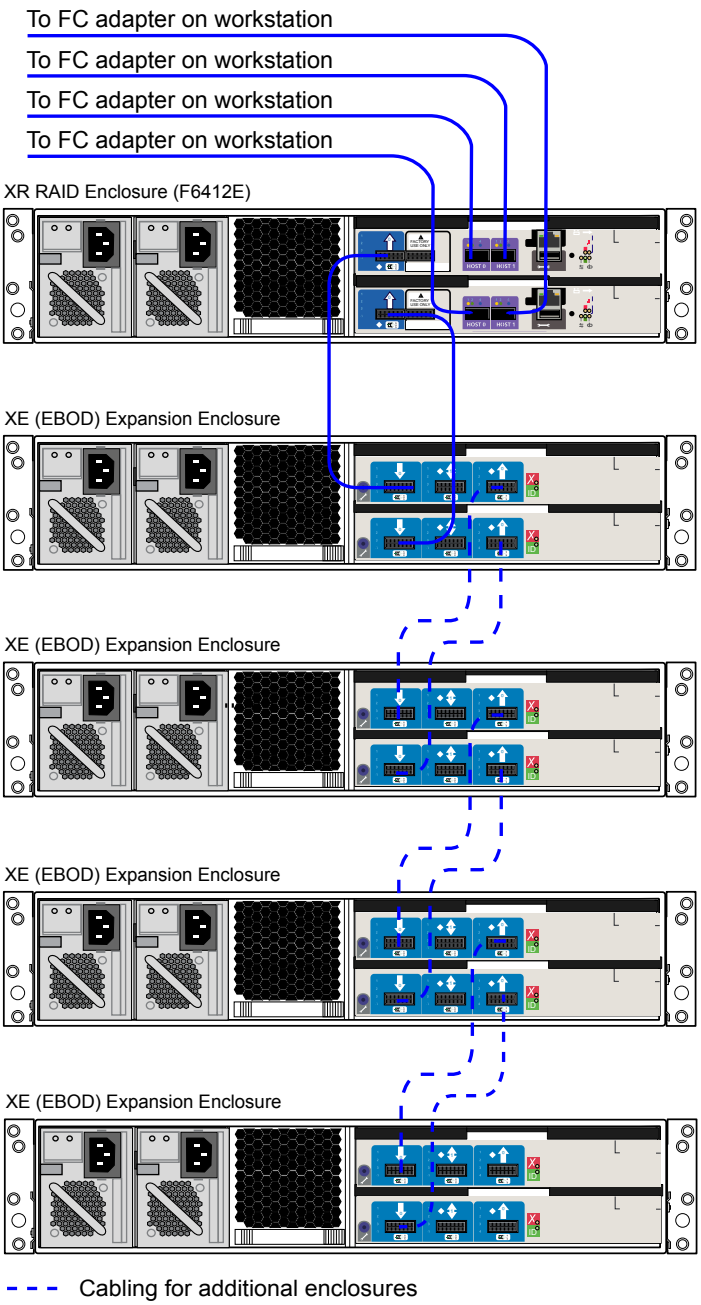
WARNING Do not power on your storage before installing Linux, otherwise the Red Hat installer might attempt to format the storage array and use it as the system disk.

The following diagram illustrates a 2-loop hardware RAID storage configuration. Dotted lines represent cabling for additional EBOD enclosures. The F6412E RAID controller supports a maximum of seven expansion enclosures.

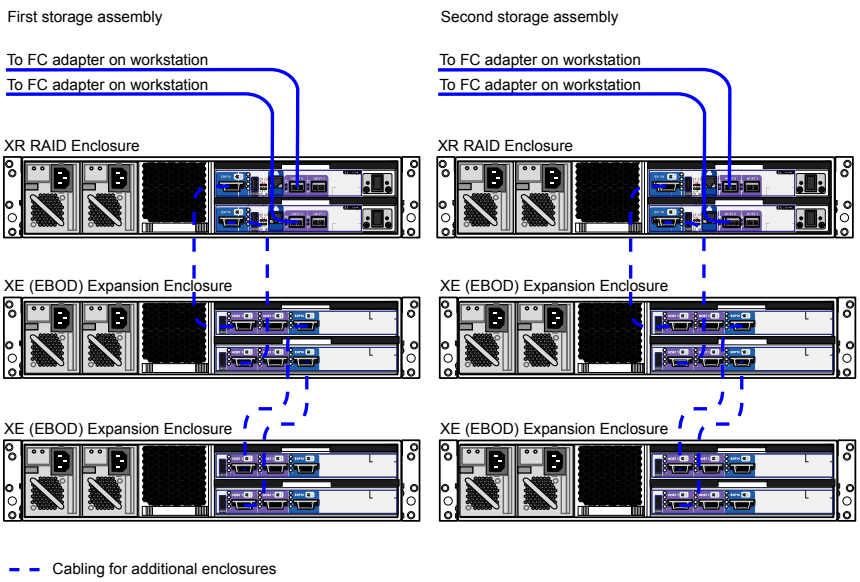


The following diagram illustrates a 4-loop hardware RAID storage configuration with a single XR RAID enclosure. Dotted lines represent cabling for additional enclosures. For 4-loop configurations, you need a minimum of one XE expansion enclosure attached to the XR RAID enclosure.

NOTE A 4-loop configuration supports a maximum of two expansion enclosures per RAID controller.



The following diagram illustrates a 4-loop hardware RAID storage configuration with two XR RAID enclosures. Dotted lines represent cabling for additional enclosures. When using two XR RAID enclosures, you are not required to have XE expansion enclosures.



Connecting Archiving Storage

Visual Effects and Finishing applications support archiving to USB 2.0, FireWire® (IEEE 1394) and fibre channel devices. This includes filesystems, VTRs and tape drives. This section discusses the requirements for filesystem and tape drive devices. For information on connecting a VTR, see Connecting Video Components on page 13.

NOTE This section does not apply to Lustre workstations.

Filesystem Devices

USB 2.0 and FireWire (IEEE 1394) attached devices must be formatted with one of the following filesystems: XFS, ext2, ext3, or HFS (Mac®). NTFS is not supported.

NOTE Care must be taken to ensure that the filesystems used to store archives are reliable, stable and properly backed up so as to protect the archive integrity. This functionality is not provided by the application.

SCSI Tape Drive Devices

SCSI tape drives can be connected to a fibre channel port of the workstation by way of a fibre-channel-to-SCSI bridge, such as the Atto FibreBridge 2390D. The tape drive device must meet two criteria. First, the device's driver must accept standard UNIX tape device calls. Second, the device must be certified for use with the currently supported version of the workstation operating system and kernel.

While Autodesk Media and Entertainment makes no certification statement about any tape drive device, you can use the "Tape Drive Test" plug-in in Autodesk SystemCentral to test SCSI tape drives for compatibility. For more information, see the *Autodesk System Central User Guide*.

Configuring your System BIOS

HP Z800 BIOS Settings

After wiring the workstation and **before** installing Linux, turn the workstation on and check the BIOS version and BIOS settings.

WARNING If BIOS settings are not set up correctly before installing Linux, you will need to reinstall the OS.

The certified BIOS version for your workstation is **1.06**.

Make sure the BIOS version number that appears on screen while booting the workstation matches the certified version. If the versions do not match, update the BIOS to the certified version, after configuring BIOS settings. BIOS update instructions are at the end of this chapter.

To adjust system BIOS settings, press **F10** while booting the workstation.

The following table lists the Autodesk certified BIOS settings. Items not listed are set to their default factory settings. See Restoring BIOS to Default Factory Settings on page 22 for instructions on restoring your BIOS settings to factory defaults.

BIOS Menu	Submenu	Item	Value
Storage	Storage Options	SATA Emulation	RAID+AHCI
	Boot Order	Hard Drive	<hard drive model>
			Integrated SATA
		Optical Drive	
		USB Device	
Power	OS Power Management	Runtime Power Management	Disable
		Idle Power Saving	Normal
		NWAIT Aware OS	Disable
		ACPI S3 Hard Disk Reset	Disable
	Hardware Power Management	SATA Power Management	Disable
		Intel Turbo Boost Technology	Disable
Advanced	Processors	Hyper-Threading	Enable
	Chipset/Memory	Memory Node Interleave	Enable
		NUMA Split Mode	Disable
	Device Options	S5 Wake on LAN	Disable
		Internal Speaker	Disable
		NIC PXE Option ROM Download	Disable

BIOS Menu	Submenu	Item	Value
	Slot 1 PCIe2 x8(4)	Option ROM Download	Disable
	Slot 3 PCIe2 x8(4)	Option ROM Download	Disable
	Slot 4 PCIe2 x16(8)	Option ROM Download	Disable
	Slot 6 PCI32	Option ROM Download	Disable

Restoring BIOS to Default Factory Settings

If necessary, perform the following procedure to restore the BIOS settings to factory defaults.

To restore default factory BIOS settings:

1. Press **F10** while booting the workstation to enter the system BIOS.
2. In the File menu, select Default setup, then Restore Factory Settings as Default.
3. Press **F10** to accept the changes.
4. In the File menu, select Apply Defaults and Exit, then press **F10** to confirm.
   The factory system defaults are restored.
5. When the workstation reboots, press **F10** again to re-enter the BIOS, and configure the recommended Autodesk settings.

Updating your System BIOS

The BIOS version installed on your system appears on the screen while booting the workstation. The following procedure describes how to update a workstation to the certified BIOS version required by your application.

NOTE Before attempting to update the system BIOS, make sure the SATA Emulation option is properly set, otherwise your optical drive is not detected.

To update the BIOS on your workstation:

1. Download the latest version of the DKU from Autodesk and extract the *tar* file into a temporary directory.
2. Go to the */Utils/BIOS* subdirectory of the DKU directory.
   In the *BIOS* directory there is a subdirectory for each platform supported by the current version of your Visual Effects, Finishing, and Colour Grading application.
3. Go to the directory that corresponds to your hardware platform.
   The directory contains an *.iso* disc image file for each supported BIOS version, as well as a *README* text file that describes each file, and provides information on updating the BIOS.
4. Burn the correct *.iso* file to a CD and place it in the DVD-ROM drive on the workstation.
5. Reboot your workstation and press **F10** to enter the system BIOS.
6. Optional: Press **F8** to select a language.
7. In the Storage menu, select Storage Options, and set SATA Emulation to IDE. This option allows the BIOS to be updated from a CD.
8. Press **F10** to confirm the change.

9 In the File menu, select Save Changes and Exit.
The workstation reboots.

10 Press **F10** to enter the BIOS again.

11 In the File menu, select Flash System ROM.
A dialog box prompts you to select between USB and CD-ROM.

NOTE If the CD-ROM option does not appear, SATA emulation was not set correctly. Reboot your machine and redo this procedure from step 4.

12 Select CD-ROM and press **F10** to confirm.

13 Select the *.bin* file.
A confirmation dialog box appears.

14 Press **F10** to confirm.

15 Press any key.
A message stating that the system ROM flash was successful appears.

16 In the Storage menu, select Storage Options and set SATA Emulation back to the value documented in the previous table. This setting is required for Linux to work properly.

17 Press **F10** to confirm the change.

18 Verify all the BIOS settings again to make sure they correspond to the recommended settings.

19 In the File menu, select Save Changes and Exit.
The workstation reboots.

Installing Red Hat Enterprise Linux

4

Topics in this chapter:

Do I Need to Reinstall Linux?

Sometimes, when upgrading to a new version or service pack of your software, you might need to also upgrade the operating system.

Use the following table to determine the correct version of Red Hat Enterprise Linux required for your hardware platform for the current version.

Hardware Platform	Linux Version
HP Z800	Red Hat Enterprise Linux Desktop 5.3 With Workstation Option
HP xw8400, HP xw9400, HP xw8600	Red Hat Enterprise Linux WS 4, Update 3

To determine the version of Red Hat Enterprise Linux your system is currently running, open a terminal and type:

```
cat /etc/redhat-release
```

The Red Hat Enterprise Linux version appears. For example:

```
Red Hat Enterprise Linux WS release 4 (Nahant Update 3)
```

If your system is not currently running the correct version of Red Hat Enterprise Linux, upgrade your operating system to the required version.

Linux Installation Workflow

Perform the following procedure to prepare your system and install the customized Autodesk distribution of Red Hat Enterprise Linux.

To install the Autodesk distribution of Linux:

1. Locate the installation media.

   The DVD containing the customized Autodesk distribution of Red Hat Enterprise Linux is included with your shipment. The customized Autodesk distribution installs certain Linux packages that are required by Autodesk applications but are not installed by the commercial distribution of Red Hat Enterprise Linux.

   WARNING Even though your shipment may also include the disc set for the commercial distribution of Red Hat Enterprise Linux, **DO NOT** install the commercial distribution. Autodesk Visual Effects, Finishing and Colour Grading software only works on the custom Autodesk distribution of Red Hat Entrerprise Linux.

2. Power off all storage enclosures connected to the system, to prevent the Red Hat installer from attempting to reformat them as part of the installation process.

   WARNING Do not skip this step. Failure to power off or disconnect your storage before installing Linux may result in data loss.

   NOTE Turn off the XR RAID controllers first, then the XE expansion enclosures.

3. Back up all user settings, project settings, and media from the system to another system or to a removable drive. The Linux installation erases and formats the system disk so this information is lost if it is not backed up. In addition, back up the following files:
   - **`/usr/discreet`** (for software setup and configuration files)
   - **`/etc`** (for Linux configuration files, networking, etc)
   - **`/usr/lib/DPS`** (for fonts)
   - **`/usr/local/flexlm/licenses`** (for the license file)

4. Make sure your system is in the following state:
   - Mouse, keyboard and graphics monitor are connected and the graphics monitor is powered on.
   - Other peripherals, such as the tablet and video breakout box are connected and powered on.
   - If you are using a KVM switch, it is switched to the system on which you want to install Linux.
   - The storage array is powered off.
   - If a DVI-Ramp is part of your configuration, the DVI-Ramp is connected and powered on.

5. Insert the DVD of the Autodesk distribution of Red Hat Enterprise Linux in the DVD-ROM drive, and power off the system.

   WARNING If your system is equipped with internal media storage, after turning the system off, open the side panel and disconnect the main connector for the internal storage drives. Make sure you do not disconnect the system drive!

6 Power on your system.

7 When the system starts to boot, press **F10** to enter the BIOS and make sure the BIOS settings reflect the recommended values in Setting Up Your Workstation Hardware on page 9. The BIOS must be correctly configured **before** installing Linux.

NOTE If the keyboard is connected to the system through a KVM switch, you may have to press **F10** repeatedly or hold it down to enter the BIOS.

8 Save the correct BIOS settings and reboot the system.

9 When the system reboots, press **F9** to enter the boot menu, and select Optical Drive to boot from the Red Hat Enterprise Linux installation DVD.

10 When the Red Hat Linux installation screen appears, press **F8** to display the Autodesk Red Hat Linux installation menu.

11 At the boot prompt in the Red Hat Linux installation menu, type **`ifffsbc`** and then press **Enter** to launch the Linux installation.

NOTE The system spends several minutes loading drivers.

12 If you replaced your system disk with an uninitialised disk, when prompted, confirm initialisation of the disk.

13 The remainder of the installation process is automated.

When the installation completes, you are prompted with “Congratulations, the installation is complete”.

NOTE If the installation drops into text mode or to a blank screen just before completing, press **CTRL+ALT+F6** to return to graphical mode. At this point, the installation should be finished, and you should see the “Congratulations...” message and the Reboot button.

14 Eject the DVD and click Reboot to reboot the system.

NOTE After the system reboots, you may be prompted by the Kudzu hardware setup utility to set up new hardware detected for your system. You can ignore these prompts and allow the utility's count-down to expire since the hardware for the system is unchanged.

Linux Post-Installation Tasks

After booting into your new Linux installation, perform the following post-installation tasks:

- Change the default root password to secure the system. The customized Autodesk installation sets the password for the root account on your workstation to *password*.
- Configure the time zone for your geographic location. The workstation is set to North American Eastern Standard Time (EST) by default. If necessary, consult the Red Hat online documentation to configure this setting.
- Configure the network settings for your workstation to match the ones used in your facility. The Linux installation sets a default IP address for your workstation.
  Edit the following files to change network settings.

Networking Configuration File	Description
/etc/hosts	Contains IP/host name pairs for host name resolution.

Networking Configuration File	Description
/etc/sysconfig/network	Contains global networking settings.
/etc/sysconfig/network-scripts/ifcfg-<xxx>, where <xxx> specifies your ethernet adapter	Contains interface-specific configuration.
/etc/resolv.conf	Contains DNS server information.

- Enable multicasting if you are planning to access the system from a remote workstation. To enable multicasting, open the */etc/sysconfig/network* file in a text editor, add a GATEWAY keyword, and specify the gateway IP address. Obtain the necessary information from your network administrator.

NOTE If you do not define a gateway in */etc/sysconfig/network*, you must define default routes associated with specific interfaces in */etc/sysconfig/network-scripts/ifcfg-*<xxx>, where <xxx> specifies your ethernet adapter. Note that a default route specified in the *network* file overrides any *ifcfg-*<xxx> routes. Contact your system administrator to determine the best way to enable multicasting for your network.

Installing the DKU and the AJA OEM-2K Firmware

5

Topics in this chapter:

Installing the DKU

Before installing your software, you must install the required version of the DKU . See the Release Notes for the required DKU version for this version.

For major releases, the DKU is available on optical media or as a download from Autodesk. For extensions and service packs, the DKU is only available for download. The download linkis provided in the release announcement you received from Autodesk.

To install the DKU:

1. Open a terminal and log in as root.
2. If you are upgrading an existing application, check the currently installed DKU version by typing:

   `head -n1 /etc/DKUversion`

   If the DKU version output by the command does not match the version required for the new application version, perform the remaining steps in this procedure.
3. Access your DKU installation package:
   - If you are installing from an application disc, insert and mount the disc using the command:
     `mount /dev/cdrom`

The disc mounts on the */mnt/cdrom* directory. The DKU installation directory is located at the top level directory of the disc.

- Otherwise, download the latest DKU *tar* file from the download link provided in the release announcement, then go to the directory where the *tar* file was downloaded, and unpack it by typing:
  tar -zxvf DKU_<version_number>**.tar.gz**

  The DKU *tar* file is unpacked into a new directory.

4 Go to the DKU installation directory and launch the DKU installation script:

./INSTALL_DKU

WARNING If you attempt to install the DKU on an unsupported platform, the installation script only installs a generic configuration. Such a configuration can render your operating system unusable. Never attempt to install the current version of the DKU on unsupported platforms, including older Visual Effects and Finishing or Colour Grading systems that are no longer supported in the current version.

When the DKU installation script completes, a warning to update the AJA card or DVI-Ramp firmware may appear and you are returned to the command prompt. See the following section for information on updating your AJA card firmware.

5 If you installed from a disc, return to the root directory, and eject the disc by typing:

eject

6 Before rebooting the system, do the following:

- Ensure the Wacom tablet is connected.
- If storage devices (external disk arrays or internal storage) were previously disconnected or turned off as part of an operating system installation, reconnect them and power them up.

  NOTE Power on the XE expansion enclosures first and the XR RAID controller units last. This ensures the RAID controllers detect the other units in the Stone Direct storage.

  Wait for all the disks in the storage devices to power up before rebooting the system. The green light for each disk stops flashing once it is fully powered up

7 Reboot the system. Type:

reboot

NOTE After the workstation reboots and until you install the application, the Wacom tablet might not behave correctly. Installing the application, then logging out of the KDE desktop and logging back in should eliminate this problem.

Upgrading the AJA OEM-2K Firmware

The firmware on your AJA OEM-2K card must correspond to the certified version required by your application version. Refer to the Release Notes for the required AJA OEM-2K firmware version.

The AJA firmware update utilities required to check your firmware version are included with the DKU version for your application.

The following procedure describes how to verify and update the firmware version of the AJA OEM-2K card.

To verify and upgrade the AJA OEM-2K firmware:

1 Open a terminal and type:

cat /proc/driver/aja

If the `PCI version` line in the output lists a different version than the required one, perform the following steps to upgrade the firmware.

NOTE Before upgrading the AJA firmware, make sure you have upgraded the DKU, and that you have restarted the system.

---

2. Go to the */usr/discreet/DKU/current/Utils/AJA_firmwareUpdate* directory.
3. Run the *AJAfw_update* utility to scan the AJA current firmware and, if required, update to the latest firmware version. Type:

   ./AJAfw_update

   If the utility detects that the firmware and drivers need to be updated, it prompts you to start the update.
4. Start the firmware update by typing **Y** and then pressing **Enter**.

   While the AJA firmware and drivers are being updated, your workstation appears to be frozen and your mouse and keyboard do not work. This is normal and indicates that the firmware is being updated. Once the firmware update is complete, you are returned to the terminal.
5. Shut down your workstation by typing:

   shutdown -g0

   If your workstation does not prompt you to power down, press the power button for 10 seconds to force a power down.
6. Disconnect the power cord.
7. Wait 10 seconds, reconnect the power cord, then restart your workstation.

NOTE For more details about the AJA firmware procedures, consult the *README* file located in the current directory.

Configuring Storage

6

Topics in this chapter:

Overview

This chapter describes how to connect a direct-attached storage to the workstation and configure it to provide access to all frames and proxies.

If you are also configuring a Storage Area Network (SAN), it is recommended that you configure the SAN prior to configuring a direct-attached storage.

NOTE Before you can configure the storage, the workstation must be up and running the custom Autodesk distribution of Red Hat Enterprise Linux, as well as the version of the DKU required for your application version.

Do I Need to Perform these Procedures?

If you are reinstalling your system from scratch, or adding new storage devices, refer to the procedures in this section for information on partitioning the storage and setting up the XFS filesystem.

If you are only upgrading an existing application installation without adding new storage, skip to the next chapter for instructions on installing the software.

Connecting to the RAID Controller for the First Time

Powering Up Your Storage

Powering your system and storage up or down should be done in a proper sequence. This will ensure that the system functions properly.

WARNING An incorrect power up sequence can mean your system does not recognize all drives.

To power up your system:

1. Make sure your workstation is shut down.
2. Power up the storage expansion enclosures.
3. Power up the storage RAID controller units.
4. Wait about 90 seconds for all the drives to spin up. Their lights are solid green when they are spun up.
5. Power up your workstation.

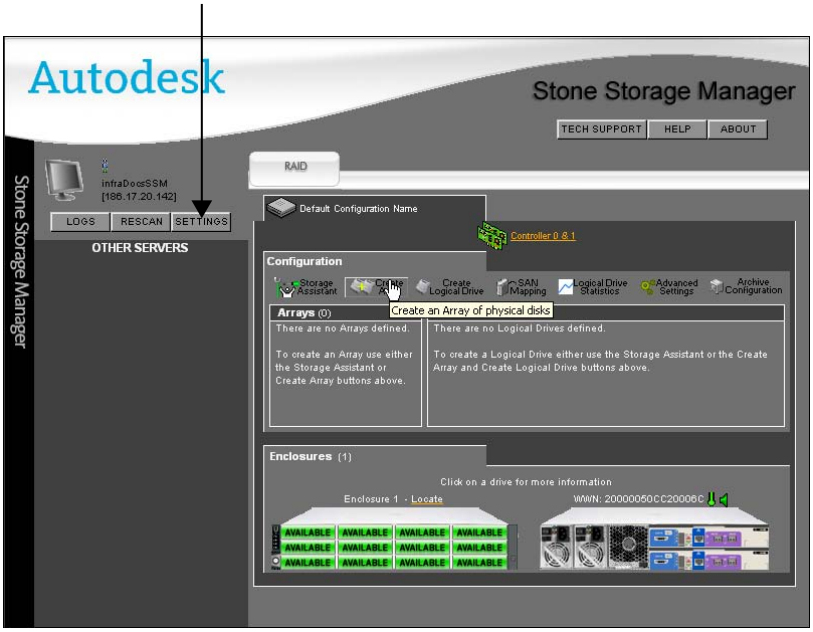
To power down your system, shut down your workstation first, then the RAID controller units, and finally the expansion enclosures.

Connecting to the RAID Controllers

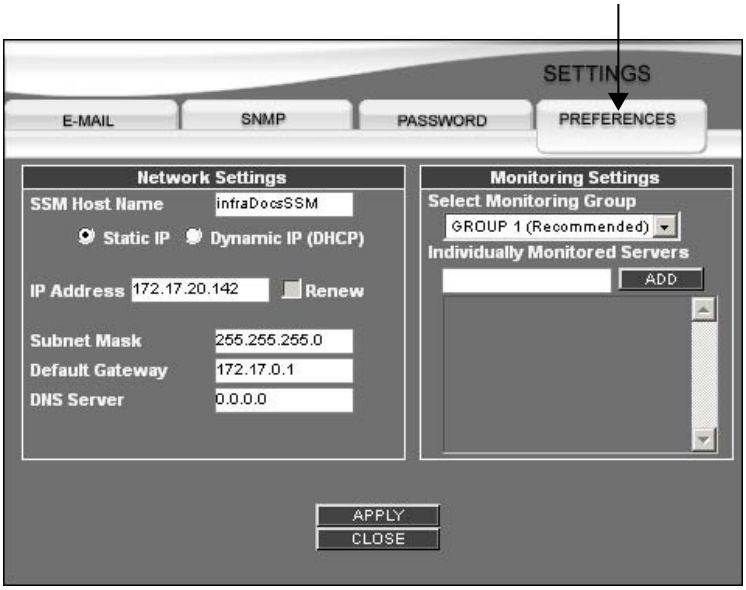
Each of the two RAID controllers in an XR RAID enclosure has its own IP address; you can configure LUNs by connecting to either of the two. The factory default IP address of RAID controller 0 (the bottom controller) is 10.1.1.5. For RAID controller 1 (the top controller) the factory default IP address is 10.1.1.6.

To connect to the controller and set its IP address:

1. Connect the second Ethernet port on your workstation to the Ethernet port of RAID controller 0.
2. Set the second Ethernet interface on your workstation to 10.1.1.100. As root, open a terminal and type:
   `ifconfig eth1 10.1.1.100 netmask 255.255.255.0`
3. Launch the Stone Storage Manager RAID management utility by pointing a Web browser from your workstation at the IP address of the RAID controller. For example, *http://10.1.1.5:9292*
4. When prompted to enter a user name and password, enter the user name *admin* and the password *password*.
5. Optional: perform the following steps to change the RAID controller IP address to one that is consistent with your local network.
   - In the Stone Storage Manager, click Settings.



■ Select the Preferences tab.



■ Enter hostname and IP information and click APPLY.

Creating Hardware LUNs

LUNs, also referred to as Logical Units or Logical Drives, are groups of disk drives that are striped together to provide optimal performance and RAID protection. Once configured, LUNs are seen by the Linux operating system as if they were single disk drives.

To create the LUNs on your XR-series storage, use the *XR Configurator* utility supplied by Autodesk. This utility is installed with the DKU and automates the LUN creation process.

NOTE For systems having 2XR or 2XR + 2XE, you have to configure one XR at a time with the XR Configuration Utility. Connect the first XR and use the utility to configure. When done, disconnect the first XR and connect the second XR. When the second XR is configured re-connect the two XRs.

To configure LUNs on XR-series storage:

1. Open a terminal and log in as root.
2. Go to the directory */usr/discreet/DKU/current/Utils/Storage/current/*, and run the XR configuration utility by typing:

   `./XR_config.pl`

   The script detects whether a LUN configuration exists on the storage attached to that workstation.
3. If a LUN configuration already exists on the storage, you are prompted for confirmation to overwrite that configuration.

   WARNING LUN configuration is destructive. Make sure you want to overwrite an existing configuration before you confirm.
4. After the script detects the number of enclosures and drives, it prompts you to indicate the filesystem your storage uses.

   Type **2**
5. When asked if you have a 2-loop or a 4-loop configuration, select the option that applies to your storage.

   The XR configuration utility configures your storage.

   NOTE You can monitor the LUN creation process by accessing the Stone Storage Manager utility on the RAID controllers through a Web browser. However, it is not necessary to launch SSM for LUN configuration.
6. Type **x** to exit the configuration utility.

The XR configuration utility exits without configuring your storage if any of the following issues are detected:

- An incorrect number of disks. The total number of disks must be a multiple of 12.
- One of more of the enclosures do not have the correct firmware.
- In a dual RAID enclosure environment, the number of expansion chassis on each RAID enclosure is not the same.

Rescanning New LUNs from the Host Operating System

Newly-created LUNs must be rescanned by the host operating system to associate the proper disk devices with each LUN.

To rescan LUNs:

1. Reboot the system.
2. To verify the new LUNs were detected, examine the content of the file */proc/scsi/scsi*.
3. You can also see the current configuration by going to the */usr/discreet/DKU/current/Utils/Storage/current/* directory, and typing:

   `XR_config.pl -status`

Partitioning Disks or LUN devices as LVM-type Primary Partitions

To achieve optimal performance, each disk or LUN in the DAS array should be partitioned as a single primary partition of type “Linux LVM”.

NOTE If your storage arrays use 450GB drives, skip this section and continue with Assembling the Disk or LUN Devices into a Logical Volume on page 38.

To re-partition disk or LUN devices as LVM-type primary partitions:

1. Open a terminal and log in as root.
2. Reload the drivers for the fibre channel card.
   - For HP Z800 systems using the ATTO Celerity FC-84EN card type:
     `rmmod celerity8fc`
     `modprobe celerity8fc`
   - For older HP systems using the ATTO Celerity FC-44ES card type:
     `rmmod celerityfc`
     `modprobe celerityfc`
3. View a list of disks or LUNs devices detected by the operating system, using the following command:
   `fdisk -l | grep dev`
   Identify the disk or LUN devices that are part of the DAS that will be configured with a standard filesystem. These devices will be re-partitioned.

   NOTE Make sure you do not re-partition the system drive or any other disks that you want to preserve as they are. Partitioning destroys all data on the disks.
4. Use the *fdisk* command to re-partition each disk device identified in the previous step.
   Start the *fdisk* utility for the LUN. Type:
   `fdisk` `<disk name>`
   where `<disk name>` is a disk device name without a partition number, such as */dev/sdf*.
   The *fdisk* utility starts, checks the disk device, and then displays its prompt.

   NOTE When *fdisk* starts, a warning about the number of disk cylinders may appear. You can disregard this warning.
5. Type **`n`** to display the New partition creation menu.
   fdisk displays the type of partitions you can create (primary or extended).
6. Create a primary partition on the disk device by typing **`p`** at the prompt.
7. When prompted to enter a partition number, type **`1`** to make the primary partition the first one on the LUN.

   NOTE You may have to delete pre-existing partition by entering **`d`** when prompted, and repeating step 3.
8. When prompted to set the starting cylinder number, press **Enter** twice to accept the default, that is, the first and last cylinder on the device.
   The *fdisk* prompt reappears.

9 Type **t** to set the partition type.

You are prompted to enter the hexadecimal code of the partition type to be created on the LUN.

10 Type **8e** to set the partition type to Linux LVM.

fdisk sets the partition as Linux LVM and the following output appears:

```
Changed system type of partition 1 to 8e (Linux LVM)
```

11 Type **w** to save the new partition table.

12 Repeat steps 2 through 9 for each disk or LUN device identified in step 1.

Assembling the Disk or LUN Devices into a Logical Volume

After you have formatted each disk or LUN device as a Linux LVM partition, you must assemble the LUNs into a single LVM logical volume on which you create the XFS filesystem.

This procedure does not cover creating fault-tolerance and assumes that the LUNs are RAID-protected, as is the case with Stone Direct XR-series arrays.

NOTE It is not recommended to create an LVM volume using the *md* RAID driver, as it has been found to provide poor performance with XFS.

To assemble an LVM logical volume:

1 Verify that the disk or LUN devices are detected by the operating system. Type:

```
fdisk -l | grep dev
```

All devices appear in a list similar to the following example (your values may vary):

- For arrays with 450GB drives:

```
Disk /dev/sdb: 2227.7 GB, 2227760529408 bytes
Disk /dev/sdc: 2227.7 GB, 2227760529408 bytes
Disk /dev/sdd: 2227.7 GB, 2227760529408 bytes
Disk /dev/sde: 2227.7 GB, 2227760529408 bytes
```

- For arrays with smaller capacity drives:

```
Disk /dev/sdf: 726.2 GB, 726247931904 bytes
/dev/sdg1 1 88294 709221523+8eLinux LVM
Disk /dev/sdg: 726.2 GB, 726247931904 bytes
/dev/sdh1 1 88294 709221523+8eLinux LVM
```

NOTE Other devices of different types may be listed before and after the LVM devices.

2 Create a physical volume on each of the devices using the following command:

pvcreate <list of devices>

where <list of devices> is a list of all LVM devices. For example, if you have four devices, ranging from */dev/sdb* to */dev/sde*, you would type:

- For arrays with 450GB drives:
  pvcreate /dev/sdb /dev/sdc /dev/sdd /dev/sde
- For smaller capacity drives:
  pvcreate /dev/sdb1 /dev/sdc1 /dev/sdd1 /dev/sde1

The physical volumes are created, and the command output should be similar to the following example:

```
Physical volume "/dev/sdb" successfully created
Physical volume "/dev/sdc" successfully created
Physical volume "/dev/sdd" successfully created
Physical volume "/dev/sde" successfully created
```

TIP You can use the command *pvremove* to delete any erroneously entered devices.

3 Verify that the physical volumes were initialized correctly. Type:

pvscan -v

A list of all of the physical volumes you created appears. Each volume should contain "lvm2". The following sample output is for the previous example of 4 LVM physical volumes created on devices */dev/sdb* through */dev/sde*:

```
Wiping cache of LVM-capable devices
Wiping internal VG cache
Walking through all physical volumes
PV /dev/sdb lvm2 [2.03 TB / 2.03 TB free]
PV /dev/sdc lvm2 [2.03 TB / 2.03 TB free]
PV /dev/sdd lvm2 [2.03 TB / 2.03 TB free]
PV /dev/sde lvm2 [2.03 TB / 2.03 TB free]
Total: 4 [8.10 TB] / in use: 0 [0 ] / in no VG: 4 [8.10 TB]
```

4 Create the volume group "vg00" from the physical volumes you created in the preceding step, using the following command:

vgcreate vg00 <list of volumes>

where <list of volumes> is the list of physical volumes you created in the preceding step. For example:

- For arrays with 450GB drives:
  vgcreate vg00 /dev/sdb /dev/sdc /dev/sdd /dev/sde
- For smaller capacity drives:
  vgcreate vg00 /dev/sdb1 /dev/sdc1 /dev/sdd1 /dev/sde1

TIP You can use the command *vgremove* to delete any erroneously entered volume.

5 Verify the volume was created and obtain the value of the "Free PE / Size" field. Type:

vgdisplay -v

In the output, find the line that contains the "Free PE / Size" field and write down the value of the "Free PE". For example, in the following example output the "Free PE" value is 2124556.

```
Free PE / Size 2124556 / 8.10 TB
```

6 Create a new logical volume on "vg00", using the following command:

lvcreate -l <Free_PE_value> **-i** <#_of_physical_volumes> **-I 32 -n lvol1 vg00**

where <Free_PE_value> is the "Free PE" value you noted in the preceding step and <#_of_physical_volumes> is the number of physical volumes. If we continue with the example used in the previous steps, you would type:

lvcreate -l 2124556 -i 4 -I 32 -n lvol1 vg00

The output confirms the creation of the logical volume:

```
Logical volume "lvol1" created
```

NOTE If the command outputs several lines about a file descriptor leaked on lvdisplay invocation, ignore them.

7 Check if the *adsk_lvm* startup script has been installed by the DKU to enable automatic LVM reassembly upon reboot:

chkconfig --list | grep adsk_lvm

if the script is properly configured, the command output is the following:

```
adsk_lvm 0:off 1:off 2:on 3:on 4:on 5:on 6:off
```

If the command output is different, enable the script by typing:

chkconfig --add adsk_lvm

chkconfig adsk_lvm on

Creating the XFS Filesystem on the LVM device

After having created the LVM logical volume, you are now ready to create and mount the XFS filesystem.

To create and mount an XFS filesystem:

1 Identify the optimal *agsize* value for your array by running the *mkfs.xfs* command. Type:

mkfs.xfs -d agcount=128 -f /dev/vg00/lvol1

This command displays diagnostics information similar to the following (your values may differ):

```
meta-data=/dev/vg00/lvol1  agcount=128, agsize=1066667 blks
         =                 sectsz=512 attr=0
data        =                 bsize=4096 blocks=134400000, imaxpct=25
         =                 sunit=16   swidth=64 blks, unwritten=1...
```

2 From the diagnostic information printed in the previous step, note the following values:

- *agsize* on the first line
- *sunit* and *swidth* on the fourth line

3 Depending on the values of *sunit* and *swidth*, calculate a new *agsize* value using one of the following three methods:

- If the values of *sunit* and *swidth* are both equal to 0, multiply the *agsize* value by 4096. For example (your values will differ):
  1066667 * 4096 = 4369068032

  Proceed to step 4 using the value calculated above as the new *agsize* value.
- If the command displays a warning message about the *agsize* being a multiple of the stripe width, multiply the *agsize* value by 4096, and subtract the *sunit* value multiplied by 4096. For example (your values will differ):
  1066667 * 4096 = 4369068032

  16 * 4096= 65536

  4369068032 - 65536 = 4369002496

  Proceed to step 4 using the value calculated above as the new *agsize* value.
- If the values of *sunit* and *swidth* are not equal to 0, and no warning message appears, proceed to step 4 using the *agsize* value displayed by the *mkfs.xfs* command in step 1.

4 Run the *mkfs.xfs* command again to create the XFS filesystem on the device */dev/vg00/lvol1* using the value calculated in one of the previous steps. Type:

mkfs.xfs -d agsize=<new agsize> **-f /dev/vg00/lvol1**

For example (your values will vary):

mkfs.xfs -d agsize=4369068032 -f /dev/vg00/lvol1

The filesystem is created on the storage array.

NOTE If the command fails, redo your calculations starting from step 1.

5 Verify that the storage can be mounted by typing one of the following commands:

- For HP Z800 systems: **mount /mnt/StorageMedia**
- For older systems: **mount /mnt/stoneMedia**

The storage should mount, as the DKU installation script should have created the mount point directory for your storage (*/mnt/StorageMedia* on HP Z800 workstations, or */mnt/stoneMedia* on older workstations), as well as the corresponding entry in the */etc/fstab* file.

If you receive an error message and the storage does not mount, follow the instructions in the next section to manually mount the storage.

Creating a Mount Point and Mounting the Storage

If the mount point directory for your storage was not created automatically by the DKU, or if the storage does not mount, perform the following procedure to create the mount point and mount the storage manually.

To create a mount point and mount the storage:

1 Create the directory that will serve as the mount point for the filesystem, if it does not exist. For example:

mkdir /mnt/StorageMedia

2 Mount the XFS filesystem from the logical volume */dev/vg00/lvol1* on the directory you created in the previous step. For example:

mount -av -t xfs -o rw,noatime,inode64 /dev/vg00/lvol1 /mnt/StorageMedia

The filesystem is mounted as */mnt/StorageMedia*.

3 Confirm that the storage is now mounted. Type:

df -h

The output should list */dev/mapper/vg00-lvol1* mounted on your mount point directory. For example:

```
/dev/mapper/vg00-lvol1
 814G 547G 267G 68% /mnt/StorageMedia
```

4 Using a text editor, add an entry in the */etc/fstab* file so that the filesystem gets mounted automatically at startup. For example:

```
/dev/vg00/lvol1 /mnt/StorageMedia xfs rw,noatime,inode64
```

5 Optional: confirm that the filesystem can mount automatically by rebooting the workstation and using the command *df -h* again.

Installing the Application 7

Topics in this chapter:

Installing the Application

Use the following procedure to install or upgrade your application.

NOTE To ensure optimal performance, it is recommended that only Autodesk Visual Effects, Finishing and Colour Grading applications and required Red Hat Enterprise Linux packages be installed on the workstations.

To install the application:

1. Log in to your workstation as root and open a terminal.
2. Archive existing media on the framestore (highly recommended). Refer to the "Archiving" topic in the application help.
3. If you are not installing from an application disc, download the application *tar* file from Autodesk.

   The download link is provided in the release announcement you received from Autodesk.

   TIP After downloading the *tar* file, verify its integrity using the Linux md5 checksum provided. In the directory where you saved the *tar* file and the checksum file, type **`md5sum`** `<filename.tar.gz>`, and make sure the checksum displayed matches the Linux md5sum listed in the checksum file.
4. If you need to change your system date or time, do it **before** installing the application.
5. Access your installation package:
   - If you are installing from an application disc, mount the disc, then go to the root directory of the mounted disc:

mount /mnt/cdrom

cd /mnt/cdrom

- If you are installing from a downloaded application *tar* file, unpack the *tar* file:
  tar -zxvf <filename.tar.gz>
  The file is uncompressed and an installation directory is created on your system.

6 Go to the installation directory, and start the installation script by typing:

./INSTALL_<application_name>

where <application_name> is in upper case. For example, if you are installing Smoke, type:

./INSTALL_SMOKE

NOTE If installing an educational version, start the initialization script by typing **./INSTALL_**<application_name> --edu, for example **./INSTALL_SMOKE --edu**

The installer verifies the packages and the installation process starts. This may take a few minutes.

7 The following prompts appear:

- **Backburner Manager configuration: Do you want to automatically run the Backburner Manager on this machine?**
  Backburner™ Manager is an optional component. Click yes if you want to install it (if no other system on your network is configured as a Backburner Manager). Otherwise continue to the next step.
- **Backburner Server configuration: Do you want to automatically run the Backburner Server on this machine?**
  Click Yes
- **Backburner Server configuration: Do you want to enter the manager for this server?**
  Click Yes

  The */usr/discreet/backburner/cfg/manager.host* file opens in a text editor. If you know the hostname or IP address of your Backburner Manager system, enter it here. Otherwise, close the file without saving it. You can edit this file later.

8 If you are upgrading from a previous version of the application, earlier versions are detected and the installer asks you to select one of those versions. Do one of the following:

- Click None if you would like a clean installation of the application.
- Click one of the previous versions if you want to copy its custom resource and setup directories to the new version.

9 The installation script asks you if you want to create an application user:

- Answer Yes if you want to create an application user, or No if you want to run the application with an existing user account.
- If you answered No, a list of all the existing users in the system is displayed. Select the users accounts you plan to use the application with.

  TIP You can use CTRL+click to select multiple entries.

  The application icon is placed on the KDE Desktop of the selected users.

10 When prompted to configure the software initialisation file (*init.cfg*), click OK.
The software initialisation file contains general settings the application reads on startup.

- If you are installing the application for the first time, the *init.cfg* file appears in a text editor.
- If you are upgrading the application, the old (previous) and new *init.cfg* files appear beside each other in an *xxdiff* window. The left panel displays the old *init.cfg* file. The right panel displays the new *init.cfg* that is installed with your application. The vertical bar on the right side indicates where differences exist between the two panels.

11 Scroll through the *init.cfg* file, verify the keywords, and modify their values as necessary. It is recommended to verify at least the following keywords to make sure they reflect your hardware configuration.

Keyword	Setting
Video	The video card used by your workstation. It can take the following values: AJA_OEMLH for the AJA OEMLH card used in SD configurations AJA_OEM2K for the AJA OEM2K card used in HD/2K configurations See Video on page 73 for details about the keyword.
DVIRamp	The DVIRamp keyword is applicable only if your workstation is equipped with a Miranda DVI-Ramp. See DviRamp on page 74 for details about the keyword.
VideoPreviewDevice	The VideoPreviewDevice keyword is applicable only if your workstation is equipped with a Miranda DVI-Ramp or an NVIDIA® SDI card. You can use the VideoPreviewDevice keyword to enable alternate SD or HD broadcast monitors. See VideoPreviewDevice on page 74 for details about the keyword.
TabletDriver	`wacom®` See TabletDriver on page 75 for details about the keyword.
VTR	Enable the VTR keywords that have settings corresponding to the VTRs you intend to use. See Vtr on page 76 for details about the keyword.
Audiodevice	`AJA` See Audiodevice on page 79 for details about the keyword.

12 To modify the *init.cfg* file, do one of the following:

- If the file opened in a text editor, edit the values as needed, then save and exit the *init.cfg* file.
- If you are in *xxdiff*, each difference between the old and the new *init.cfg* files is highlighted. Click the correct value for each keyword, regardless of whether it is in the left or right panel. Make sure you select a value for each highlighted difference. Then open the File menu and choose Save as Right. After the file is saved, close *xxdiff*.

13 If any changes are detected in the */etc/X11/xorg.conf* file, you are prompted to configure this file:

- To keep the old configuration settings, when the file appears in the *xxdiff* editor, in the Global menu, choose Select Left, and then, in the File menu, choose Save as Right. If prompted to overwrite, click OK.
- To use the new configuration file without adding the settings from the old configuration file, just close the program.

WARNING The */etc/X11/xorg.conf* file contains specific parameters for the graphics display, tablet, and other external devices for running the application. It is customized prior to shipping to reflect your configuration. It is strongly recommended that you never manually edit this file, as incorrect entries may result in peripherals that do not function properly, or an inability to launch the user interface. Use *xxdiff* to move entries from one version of the file to another.

14 If you modified the *xorg.conf* file, you receive a message to restart the X server. When the installation scripts completes, log out of the KDE desktop and then log in again as root to restart the X server.

The application, as well as additional components (WiretapCentral™, Wiretap Gateway, Backburner Server, Backburner Manager, Backburner Media I/O Adapter) are installed on your workstation.

15 Prior to starting the application for the first time perform the post-installation procedures necessary for your system. See Post Installation Tasks on page 47.

NOTE If you are upgrading an existing application, you do not need to perform all the post-installation procedures. It is however recommended to transfer you projects and clip libraries using the *copyProjects* script. See Upgrading Projects to the Current Version on page 53.

Post Installation Tasks

8

Topics in this chapter:

Do I Need to Perform These Tasks?

If you are just upgrading your Autodesk Visual Effects and Finishing application, you have already performed most of the procedures listed below during the original installation. You do not need to repeat these procedures.

The only task you might need to perform when upgrading from a previous version is to transfer your projects and clip libraries to the new version using the *copyProjects* script. See Upgrading Projects to the Current Version on page 53.

Configuring Your Storage Filesystem as Media Storage

This section provides an overview of the steps involved in defining a standard UNIX®-compatible filesystem to be used as media storage by your application.

You may set the application to use any standard UNIX/POSIX filesystem to store your media on any of the following hardware, *as long as it is not the system drive*:

- A direct-attached storage device (DAS), such as an Autodesk Stone Direct XR-series disk array
- A storage area network (SAN)

Autodesk recommends using a properly configured and maintained XFS filesystem installed on Stone Direct XR-series disk arrays.

Concepts and Terminology

If this is the first time you are configuring an Autodesk Visual Effects and Finishing filesystem, familiarize yourself with the following key concepts.

If you are already familiar with these concepts, continue with Configuring your Application to Use the Media Storage Filesystem on page 49.

Stone and Wire The software package that encompasses local management of media and the transferring of media between Visual Effects and Finishing workstations. This package is installed automatically with Visual Effects and Finishing applications.

Partition In Stone and Wire, a partition (also referred to as "volume") is defined as a volume of media storage. When creating a project, the Visual Effects and Finishing applications permanently associate it to one of the available partitions. This association means that the project inherits the rules and media preferences of the partition. You can define up to eight partitions.

Managed Media Media is said to be managed when the media assets, typically DPX files, are managed or "owned" by the Visual Effects and Finishing application. The application deletes managed media it no longer needs. All managed media is stored in a Managed Media Cache.

Unmanaged Media Unmanaged media refers to media assets that are used by, but not exclusively owned by the Visual Effects and Finishing application. Soft-imported clips are an example of unmanaged media. This is relevant in shared access workflows, where numerous applications are using the same media. Unmanaged media is used in projects and clip libraries in the same way as managed media. However, the application does not delete it when it is no longer needed.

Managed Media Cache A directory residing on a standard FS volume, to which all managed media is written. This includes intermediates, imported media, captured video, audio, and proxies. Although the Managed Media Cache can be accessed by standard operating system tools such as defragmentation and backup tools, it is not meant to be accessed by any other application or user than the Visual Effects and Finishing and Wiretap® applications.

Media Database The standard filesystem media database plays a central role in the management of media residing on standard filesystems. It is responsible for mapping frame IDs to the location of the media on disk. Database entries are created for all managed media and soft-imported media. There is one standard filesystem media database file per volume.

Clip Library A clip library is a catalog maintained locally by its Visual Effects and Finishing application. It is used, internally by the application, to store clip metadata, including frame IDs. The artist acts upon portions of it indirectly, via the application User Interface.

Importing Importing media files (also called "hard-importing") means that the media files become assets inside the Managed Media Cache. If the files being imported reside on the same volume as the Managed Media Cache, have the same size, and if the source media file format does not differ from the file format defined by the media preferences for the volume, only hard links to the original media files are created. This procedure is useful when the application manages DPX files captured to the SAN. Since hard links are used, the source media assets can be deleted without affecting the imported media. Imported media is managed.

Soft-importing Soft-importing, an alternative to hard-importing, creates a clip that references unmanaged media. That media typically resides on a SAN, where numerous applications can have equal access to it, avoiding data duplication. If soft-imported media is overwritten, the clip referencing it is updated accordingly. If soft-imported media is deleted, the clip referencing it displays a checkerboard pattern indicating that the media files cannot be found. Inversely, if, in the Visual Effects and Finishing application, all clips referencing media are deleted, the source media remains unaffected. Soft-imported media is unmanaged.

Publishing Publishing consists of exposing managed media to a location accessible by other applications. Once published, the media is still being referenced in a clip library, just like any other clip, but automatically

becomes soft-imported and unmanaged media. If the publish destination resides on the same volume as the Managed Media Cache, and the format of the published files is the same as the one defined by the media preferences for the volume, only hard links to the managed media are created. This media becomes accessible to other applications and unmanaged by the Visual Effects and Finishing application.

Configuring your Application to Use the Media Storage Filesystem

To set up a standard filesystem as media storage:

1. Make sure the disk array or SAN storage is connected to your workstation and powered up, and that a UNIX-compatible filesystem exists on the storage. See Creating the XFS Filesystem on the LVM device on page 40for details on formatting your storage array to the recommended XFS filesystem.
2. Stop Stone and Wire with the command:

   `/etc/init.d/stone+wire stop`

   Messages appear in the terminal indicating that Stone and Wire is stopped.
3. Perform the following steps to create the Managed Media Cache directory:
   - If a mount point for your storage does not exist, create a directory that will serve as the mount point. For example:

     `mkdir -p /mnt/StorageMedia`

     or

     `mkdir -p /mnt/SAN1`

     NOTE If you are configuring a direct-attached storage array, the DKU installer should have already created a mount point for it under */mnt/StorageMedia* (for HP Z800 workstations) or */mnt/stoneMedia* (for older workstations).

   - Mount the filesystem to the newly created directory. For example:
     `mount -av -t xfs -o rw,noatime,inode64 /dev/vg00/lvol1 /mnt/StorageMedia`

     Type **`man mount`** in a terminal for more information on mounting filesystems.

     NOTE To set the filesystem to automatically mount at boot, create an entry for it in the */etc/fstab* file. Type **`man fstab`** in a terminal for details.

   - On the mounted filesystem create a directory named after the workstation hostname. For example, if the filesystem mount point is */mnt/StorageMedia* and your workstation hostname is *smoke1* type:
     `mkdir -p /mnt/StorageMedia/smoke1`
   - Create a Managed Media Cache directory in the directory created in the previous step. The Managed Media Cache directory should be named after the partition name (by default partition 7, or *p7*). For example, if the filesystem mount point is */mnt/StorageMedia*, your workstation hostname is *smoke1*, and the partition name is *p7*, type:

     `mkdir -p /mnt/StorageMedia/smoke1/p7`
   - Set the ownership for the directory created in the previous step to the root user. For example:
     `chown -R root:users /mnt/StorageMedia/smoke1/p7`
   - Set permissions for the directory to be readable, writable, and searchable by the owner and its group, and readable and searchable by all. For example:
     `chmod -R 775 /mnt/StorageMedia/smoke1/p7`
4. Optional: If you want to use several media storage volumes (for example, additional direct-attached storage arrays, or SAN volumes), repeat step 3 to create separate mount points and Managed Media Cache directories for each additional volume. The DKU only creates the mount point and */etc/fstab* entry for the initial volume (*/dev/vg00/lvol1*).

5 To make your application aware of the standard filesystem volumes, define the Managed Media Cache of each volume as a partition in the Stone and Wire configuration file, and set its preferences:

- Open the file */usr/discreet/sw/cfg/stone+wire.cfg* in a text editor.
  The settings for each partition are defined in a `[Partition<partition_number>]` section of the file, for example `[Partition7]`.

  NOTE By default, the *stone+wire.cfg* file contains only one `[Partition]` section. If you are using multiple volumes, create copies of the *[Partition]* section for each volume, and configure them accordingly.

- Uncomment the `Name` keyword and enter a meaningful name for the volume. For example:
  `Name=XFS_partition`

  This name identifies your storage volume in the application.

- Uncomment the `Path` keyword, and specify the path to the Managed Media Cache directory on the mounted volume. For example:
  `Path=/mnt/StorageMedia/smoke1/p7`

- Optional: Flag the partition as shared by uncommenting the `Shared` keyword and setting it to `True`.

  NOTE Always set the `Shared` keyword to `True` for a SAN volume.

- Enter the media preferences for the platform by uncommenting the desired bit depth and setting the file format to one of the supported formats. These are set in the `[DefaultFileFormats]` section. The frames for each bit depth will be saved to the media storage using the file formats specified here (for example *DPX* or *JPG*).

  NOTE The settings in the `[DefaultFileFormats]` section apply to all volumes. If you want to customize file formats settings for certain volumes, copy the file format lines to the `[Partition]` section for the respective volumes. Settings defined in a `[Partition]` section overwrite the settings in the `[DefaultFileFormats]` section.

- Optional: If using the *JPG* file format, uncomment the `JpegCompressionFactor` keyword and set JPEG compression to a value between `0` and `100`.

- Optional: To prevent the use of symbolic links across filesystems, uncomment the `SymlinkAcrossFilesystems=False` keyword.

- Save and close the *stone+wire.cfg* file.

6 Optional: If this is the first filesystem you are configuring for this workstation, perform the following steps:

- Open the */usr/discreet/sw/cfg/sw_framestore_map* file in a text editor and locate the framestore ID in the `[FRAMESTORES]` section. It contains a line similar to the following:
  `FRAMESTORE=smoke1 HADDR=192.168.1.152 ID=152`

- Write down the value of the `ID` field.

- Open */usr/discreet/sw/cfg/sw_storage.cfg* in a text editor (create it if it does not exist) and enter the ID value you wrote down in the previous step. For example, if the ID value is 152, the *sw_storage.cfg* file should now look like this:
  `[Framestore]`
  `ID=152`

- Save and close *sw_storage.cfg*.

7 Optional: To prevent other Visual Effects and Finishing tools and applications (such as background Wire, Wiretap™, or remote Visual Effects and Finishing applications) from impacting the performance of your local application, configure bandwidth reservation for your partition in the */usr/discreet/sw/cfg/sw_bwmgr.cfg* file. For details and examples, see the comments inside the */usr/discreet/sw/cfg/sw_bwmgr.cfg.sample* file.

8 Restart Stone and Wire by typing:

`/etc/init.d/stone+wire restart`

A message appears indicating Stone and Wire has restarted.

9 Make sure the filesystem is mounted. Type

`/usr/discreet/sw/sw_df`

A report appears providing information about the total, free, and used disk space in the partition.

Any project created in your application after this point has the new standard filesystem partition as its primary partition. Any pre-existing projects are unaffected by this setting and remain associated to their respective partitions.

Setting up the Wire Network

This section provides the basic steps involved in setting up the Wire network and associated components, such as Wiretap.

Wire is a component that enables the high-speed transfer of uncompressed video, film, and audio between Autodesk workstations, over industry-standard TCP/IP and InfiniBand networks.

Wiretap is a networking protocol that allows products that do not run Stone and Wire to access the filesystem of a Visual Effects and Finishing product.

To set up Wire and Wiretap:

1 Open a terminal and log in as root.

2 Stop all Stone and Wire daemons. Type:

`/etc/init.d/stone+wire stop`

3 Optional: If your workstation is equipped with an InfiniBand card, perform the following steps to configure InfiniBand networking:

- Start the InfiniBand configuration utility by typing:
  `/sbin/iba_config`
- Type **2** to select Reconfigure IP over IB.
- Follow the on-screen instructions to configure the IP address and netmask of your InfiniBand interface.
  The settings of the interface are written to the */etc/sysconfig/network-scripts/ifcfg-ib1* file and you are returned to the main menu.
- Type **X** to exit the InfiniBand configuration utility.

NOTE The settings will take effect when you restart your workstation.

4 Open the */usr/discreet/sw/cfg/sw_framestore_map* file in a text editor, and configure the network interfaces that you will use for Wire networking in the `[INTERFACES]` section. This must be done on every host that is a part of the Wire network.

NOTE The interfaces are listed in the order of preference. Wire tries to connect to hosts using the first interface in the list first.

For example:

```
[INTERFACES]
FRAMESTORE=kamloops
PROT=IB_SDP IADDR=192.168.0.1 DEV=1
PROT=TCP IADDR=10.0.0.5 DEV=1
```

- The `FRAMESTORE` keyword sets the name that identifies the framestore when remote hosts attempt to connect to it.
- The `PROT` keyword defines the network protocol used to communicate to the framestore: `TCP` for TCP/IP or `IB_SDP` for InfiniBand.
- The `IADDR` keyword specifies the IP address of the network card.

NOTE When using InfiniBand cards, make sure the IADDR is different from the host address (HADDR) of the card, otherwise the workstation sends house network traffic through the InfiniBand network and impair Wire transfers.

5 Open the */usr/discreet/sw/cfg/sw_probed_cfg* file in a text editor and make sure that SelfDiscovery parameter is set to "yes" and that the value of the Port keyword matches the value used by the other workstations in your network.

If these values are set properly, Stone and Wire uses its self discovery mechanism to locate all other Wire hosts on your network and make their framestores accessible to your application.

6 Open the */etc/exports* file in a text editor and specify all directories you want remote hosts to be able to access.

You can export the entire */usr/discreet* directory to enable remote access to all clip libraries, projects, user preferences and setups. Or you can export only certain subdirectories, such as */usr/discreet/clip* or */usr/discreet/project*.

For example, to export the */usr/discreet/clip* directory, add the following line to the end of the *exports* file:

```
/usr/discreet/clip *(rw, sync, no_root_squash)
```

After saving the updated exports file, type the following command in the terminal to apply the changes:

```
exportfs -a
```

7 If you want to use Wiretap, open the file */usr/discreet/wiretap/cfg/wiretapd.cfg* in a text editor, and configure all the network interfaces you want to use for Wiretap in the `[Server]` section of the file.

8 Restart Stone and Wire. Type:

```
/etc/init.d/stone+wire restart
```

9 To test that Wire is working, type:

```
/usr/discreet/sw/tools/sw_framestore_dump
```

This command should show all Wire hosts discovered on your network.

Setting Up Background Wire and Background Proxy Generation

Background Wire transfers and proxy generation rely on Backburner. The Backburner Server that automatically installs with the Autodesk Visual Effects and Finishing application communicates with a Backburner Manager on the Wire network to accomplish background transfers or generate the proxies.

Use the following procedure to set up background Wire transfers and proxy generation.

To set up background Wire and proxy generation:

1. Make sure Backburner Server is set to run automatically on your workstation. Type:

   `chkconfig --list | grep -i backburner`

   The following line should be part of the command output:

   `backburner_server 0:off 1:off 2:on3:on4:on5:on6:off`

   If backburner_server is not set to "on" for run levels 2, 3, 4, and 5, type the following commands to enable and start it:

   `chkconfig backburner_server on`

   `/etc/init.d/backburner restart`

2. Make sure there is a Backburner Manager system on your network, and that the hostname or IP address of the Manager system is set in the */usr/discreet/backburner/cfg/manager.host* file on your workstation.

3. Make sure the following Backburner keywords in the */usr/discreet/*`<product_home>`*/cfg/init.cfg* file are configured properly.

Keyword	Setting
BackburnerManagerHostname `<hostname>`	Set `<hostname>` to the hostname or IP address of the workstation running Backburner Manager. This hostname or IP address must match the one in the */usr/discreet/backburner/cfg/manager.host* file. If it does not, background Wire transfers will fail. For a detailed description of this keyword, see BackburnerManagerHostname on page 87.
BackburnerManagerPriority `<priority>`	Set `<priority>` to a value from 0 to 100. The default is 50. For a detailed description of this keyword, see BackburnerManagerPriority on page 88.
BackburnerManagerGroup `<groupname>`	Set `<groupname>` to the name of a group of computers on a Burn® rendering network. For example, if the name of the group is "renderfarm1", you would set this keyword to BackburnerManagerGroup renderfarm1. For a detailed description of this keyword, see BackburnerManagerGroup on page 88.

Upgrading Projects to the Current Version

You can automatically upgrade your projects from a previous version of your Visual Effects and Finishing application to the newly installed version using the *copyProjects* command-line tool.

NOTE You do not need to perform this task if you are upgrading to a service pack of the same version or extension.

Using this tool instead of manually re-creating your projects is the recommended approach, as it reduces the time needed to migrate multiple projects, and prevents human error.

NOTE The *copyProjects* tool does not copy any media. It only re-creates projects and copies their settings and setups to the current version. You still have to transfer your media using the network library.

To copy projects using the *copyProjects* tool:

1. Open a terminal and log in as root.
2. Run the *copyProjects* script:

   /usr/discreet/<product_home>**/bin/copyProjects**

   NOTE The *copyProjects* tool requires no command-line arguments.

   The tool detects all projects from previous versions, and returns the following message:

   ```
   Projects will be copied to version <version_number>
   Do you wish to continue?
   ```

   If the version returned by the script is the newly installed version, answer Yes and continue this procedure. Otherwise perform the steps in To change the application version projects are copied to on page 54.
3. Confirm the projects you want to copy.

   The tool creates a copy of each project for the current version. The string *_copy* is appended to the end of the new project name.
4. Use the network library to transfer media into the copied projects.

To change the application version projects are copied to:

1. Stop Stone and Wire by typing:

   /etc/init.d/stone+wire stop
2. Unlink the Wiretap startup script by typing:

   unlink /usr/discreet/sw/sw_wiretapd
3. Link the Wiretap startup script to the latest version by typing:

   ln -s /usr/discreet/wiretap/<product_version>**/ifffsWiretapServer /usr/discreet/sw/sw_wiretapd**
4. Start Stone and Wire by typing:

   /etc/init.d/stone+wire start
5. Run the *copyProjects* script again.

See the Compatibility topic in your application help for instructions on transferring clip libraries from previous versions.

Installing Additional Utilities

This section lists some additional Autodesk utilities that you can install on your workstation, along with the relevant documentation for each of them.

NOTE You can obtain the latest version of the guides mentioned in this section by going to *www.autodesk.com/me-documentation*.

- If you do not wish to use the automatically-installed WiretapCentral or Wiretap Gateway on your local workstation, you can install these components on dedicated systems in your facility network. For system requirements and installation instructions, see the *Autodesk WiretapCentral Installation Guide*.

  NOTE If you relocate WiretapCentral, update the value of the WiretapCentralUrl keyword in the */usr/discreet/*`<product_home>`*/cfg/init.cfg* file to point to the new location of WiretapCentral. See WiretapCentralUrl on page 87.

- If you intend to use Cleaner® XL to encode video over the network, install and configure the necessary components. Refer to *Using Cleaner XL with Autodesk Visual Effects and Finishing Applications*.
- If you intend to use the generic 3D lookup tables (LUTs) or the monitor calibration utility provided by Lustre® Color Management, install the necessary components. Refer to the latest *Lustre Color Management User Guide*.
- To view system statistics and perform system tests from a user-friendly Web-based application, install the free Autodesk SystemCentral™ application on your workstation. See the *Autodesk SystemCentral Installation and User Guide* for installation instructions.

Licensing and Starting the Application

9

Topics in this chapter:

Licensing Workflow

If you have purchased subscription and are upgrading to a new release, your new license is sent to you by the Autodesk Media and Entertainment department. After receiving your license, perform the following tasks:

1. Install the new license. See Entering License Codes on page 60.
2. Start the application and accept the license agreement. See Starting the Application for the First Time on page 60.

If you are installing the application for the first time, use the following steps to obtain and install license codes.

To obtain and install license codes for the application:

1. Determine which license codes you require. See Determining the Licenses You Require on page 58.
2. Obtain the host ID of the workstation. See Obtaining the Host ID on page 58.

3 Request temporary license codes. See Requesting License Codes on page 58.

4 Install the temporary license codes. See Entering License Codes on page 60.

5 Start the application and accept the license agreement. See Starting the Application for the First Time on page 60.

6 When you receive permanent license codes, install those codes. See Entering License Codes on page 60.

Determining the Licenses You Require

You may need more than one license code. Refer to the following table to determine which license codes you require.

License Code	Required/Optional	Description
Application	Required	Runs the application.
Cleaner XL	Optional	Makes it possible to perform remote encoding of video or audio using Cleaner XL. For help licensing Cleaner XL, refer to the documentation included with Cleaner XL.
di	Optional (Smoke only)	Enables support for Batch FX.

Obtaining the Host ID

To request a license code, you must provide the unique host ID of your workstation. The host ID is used to authenticate your registration.

To obtain the host ID:

1 Open a terminal and run the *dlhostid* script by typing:

`dlhostid`

A message similar to the following one appears, containing the host ID:

```
dlhostid — Copyright © 2005 by Autodesk, Inc./Autodesk Canada Co. All rights reserved.
The lmhost ID of this machine is "00110910DA2E" (eth0)
The Discreet host ID of this machine is
"DLHOST01=25231AEF83AD9D5E9B2FA270DF4F20B1"
```

2 Send the Discreet host ID to the Autodesk Licensing Department to receive your application license code. When you record the Discreet host ID, make sure you include the `DLHOST01=` string as well as the code; for example, `DLHOST01=25231AEF83AD9D5E9B2FA270DF4F20B1`

NOTE Make sure you obtain a host ID for each workstation on which you install the application.

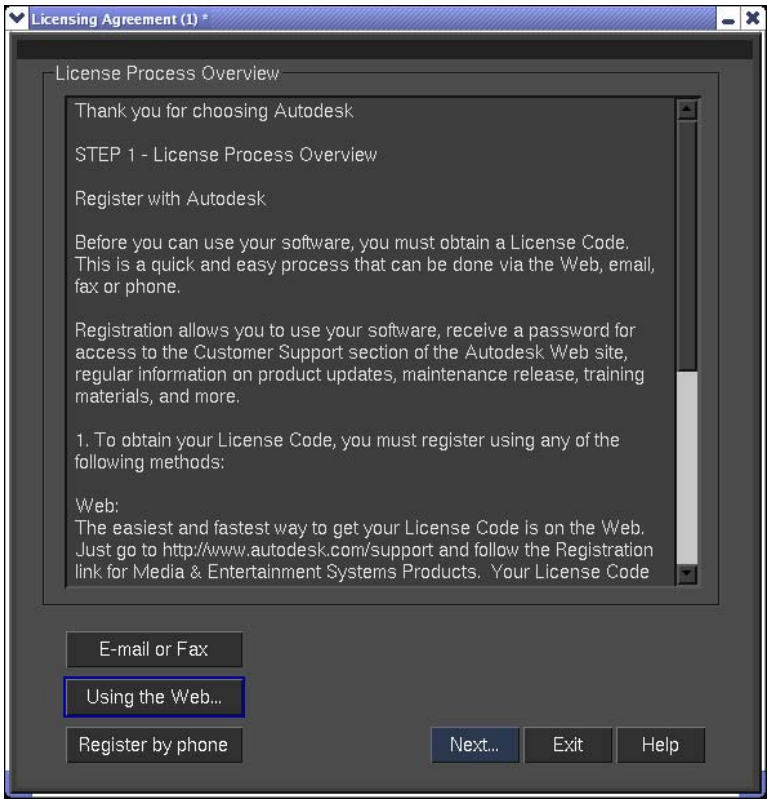
Requesting License Codes

You can obtain application license codes by registering the application with the Autodesk Media and Entertainment Licensing Department by e-mail or telephone.

NOTE For emergencies, you can acquire an immediate temporary license code by going to the Autodesk Registration Web page at *www.autodesk.com*, clicking the Services & Support link, selecting your product, then clicking Request a Short-term License, and following the step-by-step instructions. A 4-day license code is e-mailed to the address you provide.

To obtain license codes by e-mail:

1. On your workstation, log into the user account you want to use your application with.
2. Double-click the application icon to start the application.
   After a few moments, the License Wizard appears.



3. Read the License Process Overview and click E-Mail or Fax.
4. Fill in the required information, and click Save.
   The form is saved as a text file in the */usr/tmp/* directory.
5. Send the form by e-mail to *me.support@autodesk.com*.
   You will receive your temporary license code within eight business hours.

To obtain license codes by telephone:

➤ Speak to a licensing representative by calling the Autodesk Licensing Department toll-free in North America at 1-800-925-6442 between 8 AM and 8 PM eastern standard time (EST). Outside of North America, call 1-514-954-7199.

Entering License Codes

The easiest way to enter the license codes for your application is to use the License Wizard. This wizard automatically appears when you start an unlicensed application.

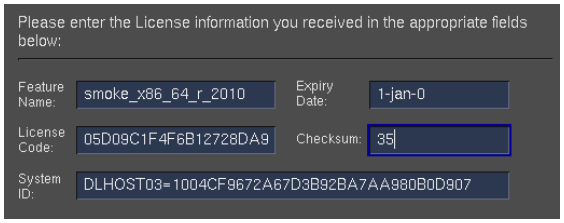
To launch an unlicensed application and enter license codes:

1. On your workstation, log into the user account you want to use your application with.
2. Double-click the application icon on the Linux Desktop to start the application.

   After a few moments, the License Wizard appears.
3. Click Next.
4. Enter values for the Feature Name, Expiry Date, License Code, and Checksum fields in the Wizard, and verify the automatically generated value in the System ID field. All of these values appear in the codes you received from the Licensing Department.

   The image below illustrates how to fill in the fields in the Wizard using the values in this license code sample:

   ```
   FEATURE smoke_x86_64_r_2010 discreet_l 2010.999 1-jan-0 0
   \0D506C1F4F6B12728DA9 \HOSTID=DLHOST03=1004CF9672A67D3B92BA7AA980B0D907
   ck=35
   ```

   NOTE An expiry date of 1-jan-0 means the license never expires.
5. Click Install.

   The License Wizard installs the license, and displays a message indicating the install was successful and asking you to restart the application.
6. Click Finish to exit the License Wizard.

   You are returned to the terminal.
7. Press **Enter** to close the terminal.

   You are now ready to start your application for the first time.

Manually Adding Licenses to the License File

To add additional license codes you receive from the Licensing Department (such as the DI license), open the file */usr/local/flexlm/licenses/DL_license.dat* in a text editor and paste the license text in that file.

WARNING Edit this file with care; an incorrect character or missing space may prevent the application from recognizing the license.

Starting the Application for the First Time

After you enter the license code for the application, you are ready to start the application for the first time.

To start the application the first time:

1 Log into your workstation.

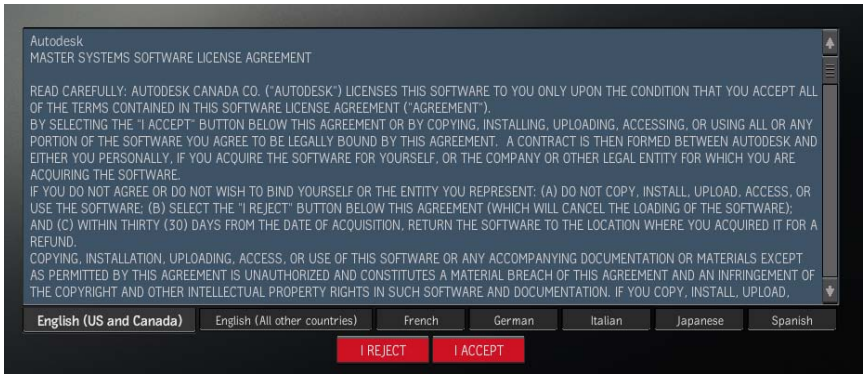
2 Do one of the following:

- If this is the first time you are starting the application on a new system, open a terminal and type **/usr/discreet/**<product_home>**/bin/startApplication -v** to initialize the framestore and start the application. For example:
  /usr/discreet/flame2010/bin/startApplication -v

  WARNING The **-v** option deletes all material on the framestore. Use this option only if you have no material that you want to preserve on the framestore.

- If you want to start the application without initializing the framestore, double-click the application icon on the Desktop.

The Autodesk Master Systems Software License Agreement appears.



3 (Optional) To view the License Agreement in another language, click a language tab at the bottom of the License Agreement window.

The localized version of the License Agreement appears in a new window.

4 Read the text carefully, and click I Accept if you agree to all the terms in the License Agreement.

The Project Management menu appears.

5 Use the Project Management menu to create a project and a user.

For information on creating projects and users, see the application Help.

6 Click Start or press **Enter**.

7 When prompted to confirm the framestore initialisation, answer “yes”.

After a few moments, the following message appears:

```
Startup complete.
```

You are ready to start working in the application. If you see a splash screen rather than the application interface, click anywhere on the screen.

NOTE If you receive the error message “VOLUMEMGT: Error initialising volume stonefs” during startup, there is a problem communicating with the framestore. This error message may appear if you launch the application immediately following a reboot, before the Volume Integrity Check on the framestore has had time to complete. In this case, wait a few minutes and start the application again. This error message may also be due to a mismatch between the framestore ID in the */usr/discreet/sw/cfg/sw_framestore_map* file and the one defined in the */usr/discreet/sw/sw_config* utility. This can occur when you install on a workstation with previously configured storage.

Uninstalling the Application

A

Topics in this chapter:

Using rmsoft to Uninstall your Application

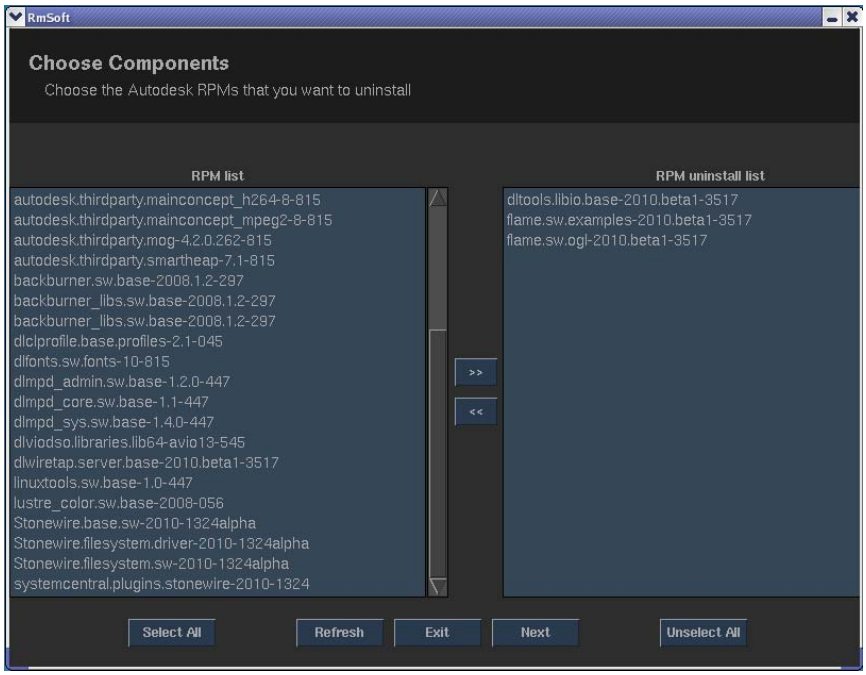
The *rmsoft* utility enables you to easily uninstall Autodesk Visual Effects and Finishing or Colour Grading applications from your workstation.

To uninstall your application using rmsoft:

1. If you are logged in as the application user in KDE, log out and log back into KDE as root.
2. As root, open a terminal, and type:

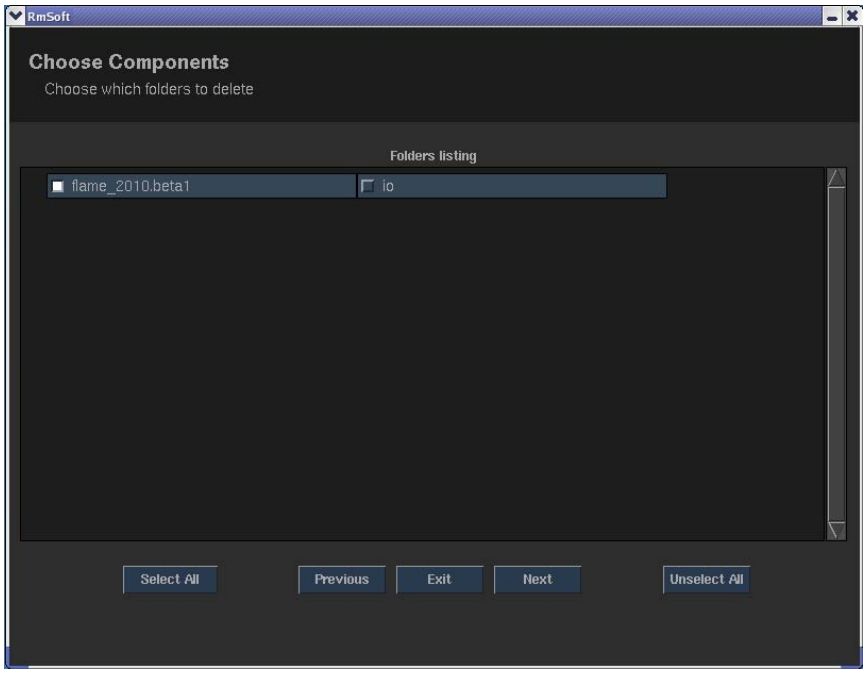
   `rmsoft`

   The rmsoft user interface appears.



3 Select the RPM packages you want to uninstall in the RPM list on the left (click Select All to select all the packages), then click >> to move them to the RPM uninstall list on the right.

4 Click Next.
The Choose folders window appears.



5 Select the application directories you want to remove from the */usr/discreet* directory, and click Next.
A confirmation dialog appears.

6 Click Uninstall & Remove to confirm the removal of the selected packages and directories.

The uninstallation starts and *rmsoft* displays details on the process.

7 When the operation completes, click Exit to close *rmsoft*.

8 Optional: You can also delete the log files associated with a given application version in the */usr/discreet/log* directory.

Configuration Files

B

Topics in this chapter:

Overview

Configuration files are ASCII text files that define the working environment for your application. Keywords in the configuration files define certain global and project-specific parameters such as I/O devices, workstation display settings, project environment directory paths, frame rate, timecode, and colour space. You can open a configuration file using any text editor, such as *kedit*.

There are two kinds of configuration files:

- **The software initialisation configuration file** is parsed when you launch the software
- **The project configuration file** is parsed when you select a project in the software

Although you should not have to regularly edit these files, it is important that you become familiar with them for the occasional instance where editing them is necessary.

About the Software Initialisation Configuration File

The software initialisation configuration file (by default, */usr/discreet/*`<product_home>`*/cfg/init.cfg*) is parsed when you launch the software. Keywords in the configuration file define parameters such as I/O devices,

peripherals, workstation display settings, and environment directory paths. These parameters are independent of the project you select from the Project Management menu when you begin a session.

NOTE For information on each keyword in the software initialisation configuration file, see Software Initialisation File Keywords on page 72.

When you first install the software, you are prompted to edit the default software initialisation configuration file.

As you continue to work with the software, you may have to edit this file under certain conditions, such as:

- After making changes to your hardware configuration
- When setting session-based keyword values, such as specifying an archiving device

You may choose to create different versions of the software initialisation configuration file to accommodate session-based needs that change through the course of a project.

To view the default software initialisation file, browse to */usr/discreet/*`<product_home>`*/cfg/* directory and open the *init.cfg* file in any text editor.

The file contains comments that provide brief descriptions of each keyword, keyword syntax, as well as usage examples.

In some cases keyword examples are not commented out and are used as the default settings. They are parsed during software initialisation and the corresponding parameter is set.

Sample Software Initialisation Configuration Files

The Visual Effects and Finishing application installation packages come with sample software initialisation configuration files for the usual needs of working with NTSC, PAL, HDTV, or film material.

These samples are located in the directory */usr/discreet/<product_home>/cfg/linux-x86_64/sample*. You should never edit the sample configuration files. Instead, either make a copy of the sample software initialization configuration file that you like or just edit the real *init.cfg* file.

These samples are starting points toward configuring the software to best suit your needs.

Using a text editor, you can open a software initialisation configuration file for viewing. For example, you may want to read the keywords in different software initialisation configuration samples to see the differences. This is a good way to learn more about configuration keywords.

Modifying a Software Initialisation Configuration File

Software initialisation configuration files have open read/write permissions, and anyone can modify them. In some cases, you may want to restrict access to the files using the *chmod* command.

Here are some basic guidelines for modifying software initialisation configuration files:

- Do not modify the sample software initialisation configuration files. Make copies of the samples and work on those instead.
- Create a backup of a file before making any changes to it.
- After modifying a software initialisation configuration file, restart the software for the changes to take effect.
- To launch the software with a custom software initialisation configuration file, use the **`-c`** start-up option. For example:
  `smoke -c /usr/discreet/smoke_2010/cfg/my_custom_init.cfg`

NOTE If you saved your custom software initialisation configuration file in a directory other than */usr/discreet/<product_home>/cfg*, be sure to use the full directory path. If the custom file is not found, the application automatically uses the default *init.cfg* file.

Updating the Software Initialisation Configuration File

The *xxdiff* utility is normally used during software installation to transfer facility-specific modifications in a customized software initialization configuration file from an earlier application version to the current one.

The following procedure describes how to manually run *xxdiff* to compare old and new configuration files. While you may never need to do this, this procedure can be useful for troubleshooting problems in your facility. For example, you can use *xxdiff* to troubleshoot problems in a workstation by comparing its *init.cfg* file against the *init.cfg* file of a workstation without problems.

NOTE If you are upgrading from an earlier version of the application, several changes may have been applied to the software initialisation configuration file. Because of this, you may want to select the entire contents of the new *init.cfg* configuration file and then customize it to avoid adding obsolete keywords.

To update the software initialisation configuration file:

1. In a terminal, start *xxdiff* and load the two files for comparison by typing the following:

   xxdiff <old_file> <new_file>

   For example, to launch *xxdiff* to compare the previous and current software configuration files, you would type:

   xxdiff /usr/discreet/<product_home1>**/cfg/init.cfg /usr/discreet/**<product_home2>**/cfg/init.cfg**

   where <product_home1> is the home directory for the previous version and <product_home2> is the home directory for the current version.

   The previous and new configuration files appear beside each other in an *xxdiff* window. The left panel displays the previous file settings and the right panel displays the current file settings. The path to both files is displayed in the title bar. The vertical bar on the right indicates where differences exist between the two panels.

2. Scan the old configuration file for custom directories or keywords that you want to copy to the new *init.cfg* file.

   On a line-by-line basis, the differences between the old and new configuration files are highlighted.

3. For each highlighted difference, click the line that you want to keep:
   - To keep the setting in the old configuration file, click the line in the left window.
   - To keep the setting in the new configuration file, click the line in the right window.

   Highlighted lines change colour when you click them. You must select a line in the left or right window for each difference detected by *xxdiff*.

4. When you have finished updating, choose File | Save As Right to save the selected line differences under the name *init.cfg*.

5. Click OK to confirm, and then exit *xxdiff*.

About Project Configuration Files

A project configuration file is a text file that is parsed when you select a project in the application. A project configuration file uses the same name as the project, but with a *.cfg* extension. For example, the project configuration file for a project called "my_project" uses a project configuration file called *my_project.cfg*.

Project configuration files are located in the */usr/discreet/project/<project_name>/cfg* directory. You can open a project configuration file in any text editor.

NOTE Although you can modify project configuration files, the Project Management menu provides editing tools to modify projects from session to session as needed. In general, you should not have to modify project configuration files manually.

For information on project configuration file keywords, see Project Configuration File Keywords on page 90.

Project Configuration File Templates

When you create a project, you select a template from which your project's configuration file is generated. These templates are based on a resolution and frame rate, and define the display environment. Project templates do not prevent you from working with clips of other resolutions and frame rates. However, some functions, such as display on a broadcast monitor, may not be supported.

These templates are located in the */usr/discreet/<product_home>/cfg/linux-x86_64/template* directory.

TIP This directory contains an extensive list of templates for all supported display environments, some of which may not be suitable for your workflow. To make template selection easier, use the **`mkdir`** command to create a directory called *unused* in the directory */usr/discreet/<product_home>/cfg/linux-x86_64/template*. Use the **`mv`** command to move templates you do not use to this folder. When you use the Create Project menu, only those templates that remain will be available.

Select the template from the following table that corresponds to the resolution of your project.

The configuration file template:	Sets parameters for projects to work with:
ntsc.cfg	NTSC 601 material. The external sync source is NTSC blackburst.
pal.cfg	PAL 601 material. The external sync source is PAL blackburst.
24p.cfg	24p material of any resolution.
24p_ntsc.cfg	Film-based material that has been transferred to NTSC 601 video. The external sync source is NTSC blackburst.
film.cfg	Film-based material.
film_ntsc.cfg	Film-based material that has been transferred to NTSC video. The external sync source is NTSC blackburst.
24p_1920x1080@5994i.cfg *24p_1280x720@5994p.cfg* *24p_1280x720@5994p_free.cfg* *24p_1280x720@6000p.cfg* *24p_1280x720@6000p_free.cfg* *24p_1920x1080@5994i.cfg*	Film-based material that has been transferred to HD video. The external sync source is NTSC blackburst.
1280x720@5994p_free.cfg *1280x720@6000p_free.cfg*	The corresponding HD standard on workstations to which no external sync source is connected.

The configuration file template:	Sets parameters for projects to work with:
1920x1080@23976psf_free.cfg *1920x1080@24000psf_free.cfg* *1920x1080@25000psf_free.cfg* *1920x1080@50i_free.cfg* *1920x1080@5994i_free.cfg* *1920x1080@6000i_free.cfg*	
1280x720@5994p.cfg *1280x720@6000p.cfg* *1920x1080@23976psf.cfg* *1920x1080@24000psf.cfg* *1920x1080@25000psf.cfg* *1920x1080@50i.cfg* *1920x1080@5994i.cfg* *1920x1080@6000i.cfg*	The corresponding HD standard on workstations. The external sync source corresponds with the HD format.

Supported HD Formats in Project Templates

The names of project templates for HD formats contain a string that identifies the format's resolution, frame rate, and scan mode.

Project configuration templates with the following string in their name:	Correspond to the following HD format:
1280x720@5994p	1280x720 progressive scan at 59.94 frames per second (720/59.94p, SMPTE-296M)
1280x720@5000p	1280x720 progressive scan at 50 frames per second (720/50p, SMPTE-296M)
1280x720@6000p	1280x720 progressive scan at 60 frames per second (720/60p, SMPTE-296M)
1920x1080@23976psf	1920x1080 progressive segmented frame at 23.976 frames per second (1080/23976psf, SMPTE-274M, RP-211)
1920x1080@24000psf	1920x1080 progressive segmented frames at 24 frames per second (1080/24psf, SMPTE-274M, RP-211)
1920x1080@25000psf	1920x1080 progressive segmented frames at 25 frames per second (1080/25psf, SMPTE-274M, RP-211)
1920x1080@50i	1920x1080 interlaced scan at 50 fields per second (1080/50i, SMPTE-274M)
1920x1080@5994i	1920x1080 interlaced scan at 59.94 fields per second (1080/59.94i, SMPTE-274M)
1920x1080@6000i	1920x1080 interlaced scan at 60 fields per second (1080/60i, SMPTE-274M)

Modifying Project Configuration Files

Project configuration files have open read/write permissions and anyone can modify them. In some cases, you may want to restrict access to them using the *chmod* command.

Here are some basic guidelines for modifying project configuration files:

- Do not modify the template project configuration files. These are used by the software to generate new project configuration files and should not be altered. Create a copy of the desired project *.cfg* file, and modify that in a text editor as needed.
- Create a backup of the project configuration file before making any changes to it.
- Modified project configuration files must end with *_custom.cfg*.
- You cannot use multiple project configuration files with a single project. A project configuration file must have the same name as its corresponding project and it must be located in the project's *~/cfg* directory.

Software Initialisation File Keywords

DiskHealthNotify

The DiskHealthNotify keyword defines an e-mail address to which a message is sent if any framestore disk health problems occur. Only one address can be listed. The mailer daemon for the workstation must also be properly configured for notification e-mails to be sent.

The DiskHealthNotify keyword uses the following syntax

```
DiskHealthNotify <e-mail_address>
```

where `<e-mail_address>` is the address to which you want the message sent.

Example of use

```
DiskHealthNotify sysadmin@here.com
```

MemoryApplication

The MemoryApplication keyword allocates memory for frame buffers. A frame buffer is a chunk of memory set aside to store image data in RAM for the fastest possible display of frames while working in the application.

In most cases, the MemoryApplication keyword should be commented out. When it is commented out, the default memory configuration is used, and is based on the physical memory installed on the system. This default configuration is sufficient for most projects, regardless of the different resolutions you may be working with.

Uncommenting the MemoryApplication keyword overrides the default memory configuration. You should only override the default memory configuration by uncommenting the MemoryApplication keyword under the following conditions:

- You are working with 4K 12-bit material.
- You are working in the application and receive “cannot allocate memory buffer” messages.
- Your system fails due to memory panic.

The MemoryApplication keyword uses the following syntax

```
MemoryApplication <megabytes>
```

where `<megabytes>` is the amount of memory dedicated to the corresponding token, in megabytes.

Example of use

```
MemoryApplication 400
```

Working with 4K 12-bit Film

Even with the recommended amount of RAM, working with 4K 12-bit film puts great demands on memory management. Set the RAM allocated for buffering frames to between 2000 and 4000.

The ability to mix different resolutions in a 4K 12-bit film project increases memory requirements even further. Even with an override of the default memory management configuration, working at this resolution may not support some advanced features that require a large amount of memory such as the Colour Warper™.

Cannot Allocate Memory Buffer Messages

"Cannot allocate memory buffer" messages indicate a shortage of memory allocated to frame buffering, so uncommenting the MemoryApplication keyword and defining an amount of memory for frame buffers can resolve this problem. The amount to set in this case depends on how much RAM your system has: start with 400 MB for Finishing applications or 700 MB for Visual Effects applications. Allocate more memory to frame buffers in increments of 50 MB as required.

Memory Panic

A memory panic indicates the system is running out of heap memory. Heap memory is memory allocated for use by applications and the operating system. Make sure no other applications are running. If memory panic still occurs, lower the amount of memory allocated to frame buffers.

Remember that overriding the default memory management configuration is only required under these specific conditions. If your system experiences problems related to memory management under normal conditions, contact Customer Support.

Video

The Video keyword initialises the video device and specifies the video input type.

Video device The video input devices supported are AJA_OEMLH, and AJA_OEM2K.

Default video input format The default video input format that corresponds to the input configuration of the video card. This setting is overridden by the video input formats specified by the lines you uncomment for each VTR under the Vtr keyword heading.

The Video keyword uses the following syntax

```
Video <video_device>, <default_video_format>
```

Where:	Is:
`<video_device>`	The video card used by your workstation. It can take the following values: AJA_OEMLH for the AJA OEMLH card used in SD configurations on HP® platforms, AJA_OEM2K for the AJA OEM2K card used in HD/2K configurations on HP platforms.
`<default_video_format>`	The video input type. For all AJA cards, the supported video input types are: `Serial1` and `SerialDual`.

Examples of use

```
Video AJA_OEMLH, Serial1
Video AJA_OEM2K, Serial1
```

DviRamp

The DviRamp keyword enables control of the Miranda DVI-Ramp external device. The DVI-Ramp outputs a standard definition serial digital video signal (SMPTE-259M-C) or a high-definition serial digital video signal (SMPTE-292M).

NOTE Enable this keyword only if you are using the Miranda DVI-Ramp external device. The DviRamp keyword is automatically commented out if the application installation script detects an NVIDIA® SDI card connected to the system.

The DviRamp keyword uses the following syntax

```
DviRamp <serial port>, <baud rate>, <parity>, <size>, <stopBits>
```

Where:	Is:
<serial_port>	The type of connection to the DVI-Ramp external device. The values are: ■ ttyS0 for a DVI-Ramp1 connected on a serial port. ■ usb/dviramp for a DVI-Ramp1 connected on a USB port using a USB-Serial adaptor. ■ usb/dviramp2 for DVI-Ramp2 connected on a USB port.
<baud rate>	The baud rate used to communicate with the DVI-Ramp.
<parity>	The parity setting to communicate with the DVI-Ramp. It can be set to EVEN, ODD, or NOPARITY.
<size>	The number of transmitted bits per packet.
<stopBits>	The size of the stop bit.

Example of use

```
DviRamp ttyS0, 38400, none, 8, 1
```

VideoPreviewDevice

The VideoPreviewDevice keyword specifies the device used for the graphics-to-video display. Specify entries for the resolutions of the projects on which you will be working as well as the resolutions supported by your hardware configuration.

The *init.cfg* file contains all supported tokens for the VideoPreviewDevice keyword. The project configuration file will determine which one of these should be enabled for a given project.

VideoPreviewDevice is also used in conjunction with the VideoPreviewWindow keyword in the project configuration template files; VideoPreviewWindow specifies the width and height of the window and the refresh rate. See VideoPreviewWindow on page 92.

When the application is started and a project is selected, the VideoPreviewWindow must match one of the VideoPreviewDevice entries. If no match is found, graphics-to-video output is unavailable.

The VideoPreviewDevice keyword applies to workstations configured with either a Miranda DVI-Ramp external device, a NVIDIA SDI card, or graphics readback (SD timings only) if the hardware is not available.

The VideoPreviewDevice uses the following syntax

```
VideoPreviewDevice <description>, <device>, <channel_number>, <xsize>,
<ysize>, <refresh>, <syncsource> [, <xoffset>, <yoffset>
```

Where:	Is:
<description>	A string describing the resolution and sync configuration of the video preview device: ntsc, pal, or an HD resolution and timing.
<device>	The graphics-to-video configuration for your system. Set to dviramp (if you are using a DVI ramp), nvidia (if you are using an NVIDIA SDI card), or readback.
<channel_number>	The channel on which the signal is output.
<xsize>, <ysize>	The width and height of the area of the image window output to the graphics-to-video display.
<refresh>	The refresh rate of the corresponding resolution.
<syncsource>	The reference sync. Set to 601sync when you are using NTSC or PAL timing and you are connected to an external sync generator. Set to DTVsync when you are using HD timing and you are connected to an external sync generator. Set to freesync when you are not connected to a sync generator.
<xoffset>, <yoffset>	The horizontal and vertical offset of the video sent to the broadcast monitor relative to the graphics display. These parameters are required for some resolutions to display accurate field dominance during playback. Use these optional parameters with NTSC.

Examples of use

```
VideoPreviewDevice ntsc, dviramp, 1, 720, 486, 30, 601sync, 0, 1
VideoPreviewDevice pal, nvidia, 1, 720, 576, 25, 601sync
VideoPreviewDevice 1920x1080@50i, nvidia, 1, 1920, 1080, 50i, DTVsync
```

When working with variable frame rate material, enable the video preview device token corresponding to the 720p timings, for example:

```
VideoPreviewDevice 1280x720@5994p, nvidia, 1, 1280, 720, 5994p, 601sync
```

Configuring Readback Mode

On systems without a DVIramp or a NVIDIA SDI card, you must enable the following lines to ensure video preview using the readback mode:

```
VideoPreviewDevice pal, readback, 2, 720, 576, 25, 601sync
VideoPreviewDevice ntsc, readback, 2, 720, 486, 30, 601sync
```

TabletDriver

The TabletDriver keyword identifies the tablet driver. Only Wacom® Intuos-series USB tablets are currently supported.

NOTE Connect the tablet to the USB extender which, itself, is connected to the workstation, before booting the workstation and before installing the application. See the Connecting Peripherals on page 12 for connection details.

The TabletDriver keyword uses the following syntax

```
TabletDriver wacom
```

MidiDevice

The MidiDevice keyword identifies MIDI devices that are used with Autodesk Visual Effects and Finishing systems. Only one device is recognized at a time.

The MidiDevice keyword uses the following syntax

```
MidiDevice <name>, <device_configuration_file>, <serial_port>, <protocol>,
<baud_rate>, <parity>[, <stopbit>]
```

Where:	Is:
<name>	The name by which you want to identify the MIDI device in the application.
<device_configuration_file>	The name and path of the device configuration file for the MIDI device. The path is optional.
<serial_port>	The serial port to which the MIDI device is connected.
<protocol>	The protocol used to communicate with the MIDI device. It can be either direct_RS422 or direct_RS232.
<baud_rate>	The baud rate used to communicate with the MIDI device.
<parity>	The parity setting to communicate with the MIDI device. It can be set to EVEN, ODD, or NOPARITY.
<stopbit>	The size of the stop bit (optional).

Example of use

```
MidiDevice myMidiDevice, midi_LUCID_ADA8824_A232, /dev/ttyS1, direct_RS232,
9600, NOPARITY
```

Vtr

The Vtr keyword identifies video tape recorders that can be used for clip I/O. You can uncomment VTRs of different video formats. Any enabled VTR can be selected for a project, regardless of the project's video I/O timings.

You can also use the Vtr keyword to identify supported High-Speed Dual-Link (HSDL) devices for clip I/O, such as telecines. HSDL devices are supported for clip I/O in Flame, Inferno, Smoke 2K, and Backdraft Conform. HSDL devices appear as separate entries in the list of supported decks for the Vtr keyword.

The Vtr keyword uses the following syntax

```
Vtr <protocol>, <name>, <input_format>, <timing>,<colorspace_mode>,
<output_format>, <output_sync>, <serial_port>, <timecode_type>,
<video_output_delay>, <video_input_delay>, <pre_roll>, <post_roll>,
```

<audio_input_delay>, <audio_output_delay>, <video_precision> [, <cueup_mode>, <TC_transition_delay>, <edit_on_delay>, <edit_off_delay>, <vtr_command_delay>]

Where:	Is:
<protocol>	The VTR control protocol (SONY, BTS, BVW50, TASCAM, or NONE).
<name>	The name by which you want to identify the VTR in the Input Clip and Output Clip menus (D1, DigBeta, D1 BTS, D5, and DVCpro, for example.).
<input_format>	The video input format. Set to Serial1 to input using a single-link (4:2:2) connection from a device. Set to SerialDual to input using a dual-link (4:4:4) connection from a device.
<timing>	The I/O timing associated with the video standard of the VTR (NTSC, PAL, or HD, if applicable).
<colorspace_mode>	The mode that indicates whether colourspace conversion and/or headroom is required for clip I/O. See Configuring Colourspace Conversion for Device I/O on page 78.
<output_format>	The video output type. Set to Serial1 to output using a single-link (4:2:2) connection to a device. Set to SerialDual to output using a dual-link (4:4:4) connection to a device.
<output_sync>	The sync source used for clip output. For AJA cards, the possible values are: STANDALONE, HOUSE, or DIGITAL1.
<serial_port>	The serial port to which the VTR is connected. Only Serial2 can be specified. It takes the value AJA:0:1 for workstations using an AJA OEM-2K or an AJA OEM-LH.
<timecode_type>	The timecode type to be returned by the VTR (Auto, LTC, or VITC).
<video_output_delay>	Video output delay in frames.
<video_input_delay>	Video input delay in frames.
<pre_roll>	Pre-roll in frames or seconds: Use integers to specify pre-roll in frames. Use decimals to specify pre-roll in seconds.
<post_roll>	Post-roll in frames or seconds: Use integers to specify post-roll in frames. Use decimals to specify post-roll in seconds.
<audio_input_delay>	The offset value to have sync audio with video on input. Integer units represent frames; this delay should be 0 by default.
<audio_output_delay>	The offset value to have sync audio with video on output. Integer units represent frames; this delay should be 0 by default.
<video_precision>	The precision of the video interface (8 or 10 bits).
<cueup_mode>	The method by which the VTR is cued. This parameter is optional. Use vtrcueing to make the application use the VTR Cue command directly to cue the VTR. Use vtrff if using vtrcueing causes the VTR to react slowly when cued, such as with a Betacam SP™.

Where:	Is:
<TC_transition_delay>	The delay in milliseconds after a vertical sync, before requesting the VTR timecode. This value should only be set or changed with the help of technical support. **NOTE** The value '99' is a special case to be used strictly with HDCAM-SR/720P and AJA. It is not to be used in other circumstances unless specified by technical support.
<edit_on_delay>	The delay in frames before the edit sync point to send the ON command. This parameter is optional and it applies only to BVW50.
<edit_off_delay>	The delay in frames before the edit sync point to send the OFF command. This parameter is optional and it applies only to BVW50.
<vtr_command_delay>	The delay in milliseconds before the application sends certain commands to the VTR. This parameter is optional, but useful for older VTRs such as the BTS.

NOTE The *init.cfg* file contains a comprehensive list of VTR keyword examples for supported VTRs and HSDL devices. In most cases you just have to uncomment the lines for the device that you want to use. In some cases minor changes to parameters are required.

Configuring Colourspace Conversion for Device I/O

When you set the input or output format for a VTR or HSDL device in the Vtr keyword, you should also specify its colourspace conversion method using the <colorspace mode> parameter. The supported conversion methods depend on whether a single-link or dual-link connection is used for I/O with the device. The following table shows the colourspace conversion methods that are available for single-link and for dual-link I/O connections.

Colourspace Conversion Method	Supported for Single-Link Serial (4:2:2) I/O	Supported for Dual-Link Serial (4:4:4) I/O
YCbCR -> RGB	Yes	No
YCbCR -> RGB + Headroom	Yes	No
No Conversion	No	Yes
No Conversion + Headroom	No	Yes

Emulator

Use the Emulator keyword to enable the VTR Emulation feature and configure your workstation to emulate a Sony™ VTR that is controllable via the RS-422 serial port. For help configuring the hardware for VTR emulation, see the *Autodesk Visual Effects and Finishing Hardware Setup Guide* for your workstation.

The VTR Emulation feature supports SD and HD video timings. This feature is available in Backdraft Conform and Smoke 2K.

You can specify more than one emulator. Any enabled emulator can be selected for a project, regardless of the project's video I/O timings.

The Emulator keyword uses the following syntax

```
Emulator sony, <name>, <input_format>, <timing>, <colorspace_mode>,
<output_format>, <output_sync>, <serial_port>, <emulator_output_delay>,
```

```
<emulator_input_delay>, <audio_input_delay>, <audio_output_delay>,
<video_precision (8 to 10 bits)>
```

Where:	Is:
<name>	The name for the emulator.
<input_format>	The video input format. For a list of the video formats supported by your workstation, see Video on page 73.
<timing>	The video resolution and timing of the VTR to be emulated.
<colorspace_mode>	The colourspace mode for video transfers.
<output_format>	The video output format. For a list of the video formats supported by your workstation, see Video on page 73.
<output_sync>	The source used to synchronize the video output. By default, this value is set to *Autodetect*.
<serial_port>	The serial port to which the VTR control cable is connected.
<emulator_output_delay>	The video output delay used by the emulator in frames.
<emulator_input_delay>	The video input delay used by the emulator in frames.
<audio_input_delay>	The audio input delay used by the emulator in frames.
<audio_output_delay>	The audio output delay used by the emulator in frames.
<video_precision>	The interface precision used for video transfers.

Examples of use

```
Emulator sony, NTSC, SERIAL1, NTSC, YCBCR_RGB_CONVERSION, SERIAL1, HOUSE,
AJA:0:1,-5, 1, 0.00, 0.00, 8
```

```
Emulator sony, HSDL 1499 sf, SERIALDUAL, 2048x1556_1499SF, NO_CONVERSION,
SERIALDUAL, STANDALONE, AJA:0:1, -6, 1, 0.00, 0.00, 10
```

Audiodevice

The Audiodevice keyword initialises the specified audio device.

The Audiodevice keyword uses the following syntax

```
AudioDevice <type>
```

where <type> is currently AJA.

AJA specifies that the audio subsystem is part of the AJA audio/video I/O device, respectively. Note that for the audio to work, the Video keyword must be configured with the corresponding video device.

Example of use

```
Audiodevice AJA
```

ClipMgtDevice

The ClipMgtDevice keyword defines the devices used for archiving. The following archiving devices are supported:

- VTR
- HDCAM
- Tape (SAIT and DTF2 fibre archiving devices only)
- File

Using the guidelines for setting ClipMgtDevice keywords in this section, you can set multiple archiving devices for use with the application. The first device that is defined will be the default device.

ClipMgtDevice VTR

You can specify only one VTR for a VTR clip management device. The ClipMgtDevice VTR keyword contains an optional start timecode parameter:

- If you specify a default start timecode for VTR archiving, the specified timecode is always used. You cannot override the default start timecode using the Archive menu.
- If you want to determine through the application the start timecode for archives created with a VTR, do not add the start timecode parameter.

The ClipMgtDevice VTR keyword uses the following syntax

```
ClipMgtDevice Vtr[, <timecode>]
```

where <timecode> is an optional start timecode for the archive.

Example of use

```
ClipMgtDevice Vtr, 01:00:00:00
```

ClipMgtDevice HDCAM

To archive to a Sony HDCAM VTR, you must use the ClipMgtDevice HDCAM keyword and not the ClipMgtDevice VTR keyword. The ClipMgtDevice HDCAM keyword adjusts the metadata encoding mechanism to account for the compression method used by the HDCAM VTR.

The ClipMgtDevice HDCAM keyword contains an optional start timecode parameter:

- If you specify a default start timecode for HDCAM VTR archiving, the specified timecode is always used. You cannot override the default start timecode using the Archive menu.
- If you want to determine through the application the start timecode for archives created with an HDCAM VTR, do not add the start timecode parameter.

The ClipMgtDevice HDCAM keyword uses the following syntax

```
ClipMgtDevice HDCAM[, <timecode>]
```

where <timecode> is an optional start timecode for the archive.

Example of use

```
ClipMgtDevice HDCAM, 01:00:00:00
```

ClipMgtDevice Tape

You can specify several tape devices for clip management. SCSI tape archiving devices are not supported. Use only fibre channel archiving devices, specifically, SAIT and DTF2 devices.

To use a tape device for archiving, you must define the filename, the block size, and the name for the device you are using.

The ClipMgtDevice Tape keyword uses the following syntax

```
ClipMgtDevice Tape, <file_name>, [<block_size>, [<device_name>
```

Where:	Is:
<file_name>	The filename of the fixed block size device.
<block_size>	The amount of data per block written to tape.
<device_name>	The name of the tape device as it will appear in the Archive menu.

Examples of use

Tape Device	Keyword Example
DTF2	`ClipMgtDevice Tape, /dev/st0, 65536, DTF2`
SAIT	`ClipMgtDevice Tape, /dev/st0, 65536, SAIT`

ClipMgtDevice File

You can define a portion of your system disk or another volume as the destination for archives created using the application.

The ClipMgtDevice File keyword uses the following syntax

```
ClipMgtDevice File, <file_name>, <size>
```

Where:	Is:
<file_name>	The path for archives created using the application.
<size>	The maximum size for a file archive in MB.

You can also modify the parameters of this keyword through the application.

- You can use a path other than the default filename by entering one in the Archive menu.
- You can change the default maximum size of a file archive in the Archive menu in the application.

Example of use

```
ClipMgtDevice File, /usr/tmp/archive, 1024
```

MaxLibrarySize

The MaxLibrarySize keyword indicates the maximum size for any single clip library, in megabytes. The higher the value, the more memory the application uses. Using a larger value reduces memory fragmentation, which optimizes memory use. However, the value should not be so high as to compromise system performance.

The software also uses this keyword to determine whether there is enough free hard drive space available at start-up. To start the software, you must have at least 10 megabytes of free hard drive space in addition to the value set by this keyword.

The size of your libraries can be determined using the following command in a terminal:

```
ls -lh /usr/discreet/clip/*/*/*.000.clib
```

The MaxLibrarySize keyword uses the following syntax

```
MaxLibrarySize <size>
```

where <size> is the maximum library size in megabytes.

Example of use

```
MaxLibrarySize 75
```

ArchiveLibrary

The ArchiveLibrary keyword identifies the directory to which online HTML and ASCII tables of contents are saved when archiving. Its default value is *usr/discreet/archive*. You can make the target directory relative to the home directory of the application by prefixing the path with a tilde (e.g. *~/archive*).

NOTE The ArchiveLibrary keyword of the project configuration file, if set, has precedence over the one in the software initialisation configuration file.

The ArchiveLibrary keyword uses the following syntax

```
ArchiveLibrary <directory_path>
```

where <directory_path> is the path to which online HTML and ASCII tables of contents are saved.

Example of use

```
ArchiveLibrary /usr/discreet/archive
```

SetupArchiveTape

The SetupArchiveTape keyword identifies the device to which setup information for an archived project is saved. A project's setups are saved as a *.tar* format archive, creating a single file that can be extracted, preserving the original directory structure.

The SetupArchiveTape keyword uses the following syntax

```
SetupArchiveTape <device_type>
```

where <device_type> is the path to the device where you want to save the setup archive. You can set the path to point to a tape device or use a file destination as a virtual device. If you set a file destination, you must add a filename ending with the *.tar* extension that you want to use for the setup archive.

Example of use

```
SetupArchiveTape /usr/tmp/setups.tar
```

Menu

The Menu keyword specifies where application menu files are stored. The Menu keyword is one of the environment directory keywords which specify the paths to directories for resources shared by all projects. These directory paths should not be modified.

Example of use

```
Menu ~/menu, menu
```

where the ~ in the directory path stands for */usr/discreet/<product_home>*.

Model

The Model keyword specifies where 3D models used by Action are stored. The Model keyword is one of the environment directory keywords which specify the paths to directories for resources shared by all projects. These directory paths should not be modified.

Example of use

```
Model ~/dve
```

where the ~ in the directory path stands for */usr/discreet/<product_home>*.

HtmlTemplates

The HtmlTemplates keyword specifies where HTML templates used for archive online tables of contents are stored. The HtmlTemplates keyword is one of the environment directory keywords which specify the paths to directories for resources shared by all projects. These directory paths should not be modified.

Example of use

```
HtmlTemplates ~/templates
```

where the ~ in the directory path stands for */usr/discreet/<product_home>*.

HtmlLog

The HtmlLog keyword allows you to specify a directory in which to write the Batch module HTML status and log. This keyword is used by Inferno, Flame, and Flint.

The HtmlLog keyword uses the following syntax

```
HtmlLog <directory_path>
```

where `<directory_path>` is the destination directory.

Example of use

```
HtmlLog /usr/discreet/html
```

TextDefaultFont

The TextDefaultFont keyword sets the default font for the Text, Paint, and Action modules.

The TextDefaultFont keyword uses the following syntax

```
TextDefaultFont <font>
```

where `<font>` is the name of the font you want to set as the default.

Example of use

```
TextDefaultFont Discreet
```

FontDPSBase

The FontDPSBase keyword identifies the directory in which PostScript® fonts are stored. At initialisation, the application creates links in the */usr/discreet/font* directory that point to fonts in the directory identified by this keyword.

The FontDPSBase keyword uses the following syntax

```
FontDPSBase <directory_path>
```

where <directory_path> identifies the directory in which fonts are stored.

Example of use

```
FontDPSBase /usr/lib/X11/fonts/Type1
```

If you do not specify the directory pathname, the application uses */usr/lib/DPS/outline/base*. In most cases this directory—created when you installed the Display PostScript software as part of the installation—should be the one identified by the FontDPSBase keyword. Using this directory provides access to PostScript fonts.

NOTE To use TrueType fonts with the application, copy these fonts into the */usr/discreet/font* directory. For the application to recognize TrueType fonts in this directory, they must have the *.ttf* extension.

FontDPSAFM

The FontDPSAFM keyword identifies the directory in which font metrics are stored. Font metrics provide information about each font that improves kerning. At initialisation, the application creates links in the directory */usr/discreet/font* that point to font metric files in the directory identified by this keyword.

The FontDPSAFM keyword uses the following syntax

```
FontDPSAFM <directory_path>
```

where <directory_path> identifies the directory in which font metrics are stored.

Example of use

```
FontDPSAFM /usr/lib/X11/fonts/Type1
```

If you do not specify a directory pathname, the application uses */usr/lib/DPS/AFM*. In most cases this directory—created when you installed the Display PostScript software as part of the installation—should be the one identified by the FontDPSAFM keyword.

FontProxyLowString

The FontProxyLowString keyword, along with the FontProxyHighString keword, specifies which characters to draw in font proxies. By default, the proxy string is “Aa”. You can override the default string for non-extended character sets by uncommenting and editing the FontProxyLowString keyword option.

Both FontProxyLowString and FontProxyHighString keyword options can be uncommented at the same time. Extended character sets try the FontProxyHighString keyword first. If the values in the FontProxyHighString keyword option do not apply to the font, the FontProxyLowString keyword option is used instead.

The FontProxyLowString keyword uses the following syntax

```
FontProxyLowString <code>[, ...]
```

Where:	Is:
code	The Unicode value associated with the character that you want to display.

Where:	Is:
`...`	Up to four (for a total of five) more Unicode values for the font proxy string.

Example of use

```
FontProxyLowString 0x41, 0x61
```

This example displays the default proxy string, “Aa”.

FontProxyHighString

The FontProxyHighString keyword, along with the FontProxyLowString keword, specifies which characters to draw in font proxies. By default, the proxy string is “Aa”. If a font includes glyph definitions for extended character sets (such as Asian character sets), you can set a proxy string by uncommenting and editing the FontProxyHighString keyword.

Both FontProxyHighString and FontProxyLowString keyword options can be uncommented at the same time. Extended character sets try the FontProxyHighString keyword first. If the values in the FontProxyHighString keyword option do not apply to the font, the FontProxyLowString keyword option is used instead.

The FontProxyHighString keyword uses the following syntax

```
FontProxyHighString <code>[, ...]
```

Where:	Is:
`code`	The Unicode value associated with the character that you want to display.
`...`	Up to four (for a total of five) more Unicode values for the font proxy string.

Example of use

```
FontProxyHighString 0x3042, 0x30a2
```

This example displays the Japanese “Hiragana A” and “Katakana A” characters.

TextFileEncoding

The TextFileEncoding keyword is the list of file encodings that will be supported for importing text files. The encoding must be supported for “iconv”. To get the list of supported encodings, type **`iconv -l`** in a terminal.

NOTE The current local encoding and UCS-2 unicode encoding are always included by default.

The TextFileEncoding keyword uses the following syntax

```
TextFileEncoding <character_set>
```

Examples of use

```
TextFileEncoding ISO8859-1
```

```
TextFileEncoding EUCJP
```

Image File Extensions

This list defines the supported image and movie file formats that the application can input or output. These extensions are used to filter files of the corresponding format when you use the file browser. This list may be edited to suit your particular needs.

Image Format	Extension
Alias®	als
Cineon®	cin
Digital Picture Exchange	dpx
Jpeg	jpg
Pict	pict
Pixar	picio
Sgi®	sgi
Softimage®	pic
Targa®	tga
Maya®	iff
Tiff	tif
Wavefront®	rla
Photoshop®	psd
OpenEXR	exr
Quicktime®	mov
MXF	mxf

Audio File Extensions

This list defines the supported audio file formats that the application can input or output. The extensions are used to filter files of the corresponding format when you use the file browser. This list may be edited to suit your particular needs.

Audio Format	Extension
AIFF (standard)	aiff
AIFFC (extended)	aifc
Sun	au
Microsoft®	wav
Berkeley (BSD)	bsf
AVR (Audio Visual Research)	avr

Audio Format	Extension
MPEG-1 Layer3	mp3

WiretapCentralUrl

The WiretapCentralUrl keyword sets the URL that opens in the default Web browser when you click the WiretapCentral button in the Import Image menu of the application.

The WiretapCentralUrl keyword points to the WiretapCentral server on the local machine by default. You only need to modify this keyword if you relocated the WiretapCentral server to another system in your network.

The WiretapCentralUrl keyword uses the following syntax

```
WiretapCentralUrl <url>
```

where `<url>` represents the URL of the WiretapCentral Web application.

Example of use

```
WiretapCentralUrl http://localhost/wiretapcentral/
```

DefaultWebBrowser

The DefaultWebBrowser keyword identifies the Web browser used by the application to browse online help and to view HTML tables of contents for archives.

The DefaultWebBrowser keyword uses the following syntax

```
DefaultWebBrowser <browser>
```

where `<browser>` identifies the Web browser you want to use.

Example of use

```
DefaultWebBrowser firefox
```

DefaultPdfViewer

The DefaultPDFViewer keyword allows you to specify the software your application uses to open PDF documents.

By default, this keyword is commented out, and the Visual Effects and Finishing application attempts to open PDF documents using a hard-coded list of PDF viewers.

Uncomment this keyword if you want the application to open PDFs in a specific PDF viewer installed on your workstation.

The DefaultPDFViewer keyword uses the following syntax

```
DefaultPDFViewer <PDF_viewer>
```

where `<PDF_viewer>` is the application you want to use to view PDFs, such as Xpdf or Adobe® Reader™.

Example of use

```
DefaultPDFViewer xpdf
```

BackburnerManagerHostname

The BackburnerManagerHostname keyword serves two functions:

- It locates the Backburner Manager on your rendering network. Enable this keyword if you are running an Autodesk Backburner Distributed Queueing System in your facility or will be using Cleaner® XL to encode jobs exported from the application. All four BackburnerManager keywords must be set correctly for jobs to be sent to the rendering network.
- It enables the Background Wire® and Background Proxies buttons in the application; they are otherwise greyed out. Uncomment both the BackburnerManagerHostName and BackburnerManagerPort keywords to enable the buttons.

The BackburnerManagerHostname keyword uses the following syntax

```
BackburnerManagerHostname <host_name>
```

where <host_name> is the hostname of the Windows® workstation that is running Backburner Manager.

Example of use

```
BackburnerManagerHostname titan.saturn.com
```

BackburnerManagerPriority

The BackburnerManagerPriority keyword sets the priority for jobs created on your application for Backburner Manager on your rendering network. Enable this keyword if you are running an Autodesk Backburner Distributed Queueing System in your facility or will be using Cleaner XL to encode jobs exported from the application. All four BackburnerManager keywords must be set correctly for jobs to be sent to the rendering network.

The BackburnerManagerPriority keyword uses the following syntax

```
BackburnerManagerPriority <priority>
```

where <priority> is a value from 0 to 100, where 0 is highest priority and 100 is lowest. The default is 50.

Example of use

```
BackburnerManagerPriority 25
```

BackburnerManagerGroup

The BackburnerManagerGroup keyword defines the group of machines to which jobs created in your software application will be submitted. Enable this keyword if you are running an Autodesk Backburner Distributed Queueing System in your facility or will be using Cleaner XL to encode jobs exported from the application. All four BackburnerManager keywords must be set correctly for jobs to be sent to the rendering network.

The BackburnerManagerGroup keyword uses the following syntax

```
BackburnerManagerGroup <group_name>
```

where <group_name> is the name of a group of computers on an Autodesk® Burn® rendering network.

Example of use

```
BackburnerManagerGroup renderfarm1
```

BackburnerManagerGroupCapability

The BackburnerManagerGroupCapability keyword specifies wether the nodes in your rendering network are equipped with GPU-accelerated graphics cards or not. Based on the value of this keyword, the Visual Effects and Finishing application enables or disables the submission of jobs that require a GPU (such as floating point jobs) to the rendering network.

The BackburnerManagerGroupCapability keyword uses the following syntax

```
BackburnerManagerGroupCapability <group_capability>
```

where `<group_capability>` can be `software`, `gpu`, or `hybrid` depending on the hardware of the nodes in the rendering network.

- If none of the nodes in your rendering network are equipped with GPUs, set the value of the keyword to `software`. The application does not send jobs that require a GPU to the rendering network, but only jobs that can be rendered in software mode (using OSMesa) by the render nodes.
- If ALL the nodes in your rendering network are equipped with GPUs, set the value of the keyword to `gpu`. The application sends all jobs to the GPU-equipped nodes, even if some jobs do not specifically require a GPU render node. The GPU-equipped render nodes will render jobs that require a GPU, as well as OSMesa jobs.

  NOTE If your rendering network also contains render nodes without a GPU, but the BackburnerManagerGroupCapability keyword is incorrectly set to *gpu*, all jobs are sent only to GPU-equipped render nodes, and the nodes without a GPU are never used.

- If your rendering network contains a mix of nodes with GPUs and without GPUs, set the keyword to *hybrid*. The application sends all jobs to the rendering network, and Backburner Manager distributes each job to the appropriate type of render node. Jobs that require a GPU are sent only to GPU-equipped render nodes, while jobs that do not require a GPU are sent to any available render node (GPU or non-GPU) to be rendered in software mode.

  NOTE Set the BackburnerManagerGroupCapability keyword to *gpu* or *hybrid* only if you are sure that at least one node in your rendering network is equipped with a GPU. Attempting to submit a job that requires a GPU to a rendering network with no GPU-equipped render node results in the job being stuck in the rendering queue indefinitely.

Example of use

```
BackburnerManagerGroupCapability software
```

CleanerDestinationPath

The CleanerDestinationPath keyword sets the default path on a Windows workstation where clips are saved after encoding by Cleaner XL.

The default path you enter appears in the Cleaner Destination Path field when you select Cleaner in the Format Box of the Image Export menu. You can edit the path there. If there is an ftp path in the output profile, the ftp path is used as an additional destination for encoded jobs. See your application help.

The CleanerDestinationPath keyword uses the following syntax

```
CleanerDestinationPath <path>
```

By default, `<path>` is set to *C:\Tmp*, which is the default file path where Cleaner XL saves exported clips after encoding.

NOTE Make sure the folder to which the path points exists and is accessible from the Windows workstation where Cleaner XL jobs will be encoded. Also make sure that this folder has write privileges and has enough space to accommodate encoded jobs.

Example of use

```
CleanerDestinationPath C:\Cleaner\exported
```

LogDailyReports

The LogDailyReports keyword specifies the number of application log files that are kept. When the number of application log files on the workstation exceeds this value, the oldest log is deleted to preserve space.

The LogDailyReports keyword uses the following syntax

```
LogDailyReports <number>
```

where <number> is the number of log files to be kept on the workstation. Set this value to 0 to keep all application log files.

Example of use

```
LogDailyReports 10
```

NetworkPanelDisplay

The NetworkPanelDisplay keyword filters the list of framestores in the Network panel to show framestores that are either available on the network and mounted, or available on the network but with undetermined mount status.

The NetworkPanelDisplay keyword uses the following syntax

```
NetworkPanelDisplay <filter_setting>
```

where <filter_setting> is set to either ShowMounted or ShowAll.

Use:	To:
ShowMounted	Show only framestores verified as both mounted and available on the Wire network.
ShowAll	Show all framestores available on the network without first checking whether they are mounted. Using this option slightly reduces the time needed for your application to start because no further checks are performed on remote framestores.

Example of use

```
NetworkPanelDisplay ShowMounted
```

Project Configuration File Keywords

Framerate

The Framerate keyword sets the default frame rate for the project work session.

The Framerate keyword uses the following syntax

```
Framerate <frame_rate>
```

where <frame_rate> is 23.976, 24, 25, 29.97, 30, 50, 59.94 or 60 frames per second.

Example of use

```
Framerate 29.97
```

Timecode

The Timecode keyword sets the default timecode format used by the project.

The Timecode keyword uses the following syntax

```
Timecode <format>[, DF]
```

Where:	Is:
<format>	One of the following timecode formats: 23.976, 24, 25, 29.97, 30, 50, 59.94, or 60.
DF	An optional parameter indicating drop-frame timecode for 29.97 or 59.94 fps timecode formats.

Examples of use

Timecode Format	Keyword Example
30 fps	`Timecode 30`
29.97 fps (drop frame)	`Timecode 29.97, DF`

ColourSpace

The ColourSpace keyword defines how RGB/YUV conversions are handled. By default, for NTSC or PAL projects, the ITU-R BT.601-5 colour space is used. For DTV projects, the ITU-R BT.709-3 colour space is used.

The ColourSpace keyword uses the following syntax

```
ColourSpace <space_type>
```

where <space_type> is the colour space type used by the project.

Examples of use

Project	Keyword Example
NTSC and PAL standard projects (ITU-R BT.601-5)	`ColourSpace 601`
DTV standard projects (ITU-R BT.709-3)	`ColourSpace 709`
1920x1035 projects (SMPTE-240M)	`ColourSpace 240`

Hires

The Hires keyword sets the refresh rate of the graphics monitor. Note the following when setting the refresh rate:

- The rate is measured in Hertz (Hz).
- When using the video card in conjunction with an external sync source, the refresh rate should match the frame rate.

- If you are using a non-integer frame rate (for example, 29.97), set the refresh rate to the nearest integer (in the previous example, 30).

The Hires keyword uses the following syntax

```
Hires [Custom,]<refresh_rate>
```

Where:	Is:
`Custom`	An optional parameter that overrides the application's refresh rate. For example, you may choose to override the 60-Hz refresh rate for an NTSC project by using the Custom option with a value of 30Hz.
`<refresh_rate>`	The refresh rate of the graphics monitor. Append Hz for free-running configurations, Hzf for configurations that are fixed to an external sync source.

Examples of use

Project Resolution	Keyword Example
NTSC	`Hires 60Hz`
PAL	`Hires 50Hz`
NTSC (external sync source)	`Hires 30Hzf`
PAL (external sync source)	`Hires 25Hzf`
Film	`Hires 48Hz`
24p Multi-Master Editing™	`Hires 60Hz`
Custom	`Hires Custom, 30Hz`

VideoPreviewWindow

The VideoPreviewWindow keyword is used when using a Miranda device. It locates a preview device that has a matching size and refresh rate in the VideoPreviewDevice list specified in the *init.cfg* configuration file. When you start the application or switch to another project from the application, the graphics-to-video display is mapped to the appropriate device according to the width, height, and refresh rate specified with this keyword.

The VideoPreviewWindow keyword uses the following syntax

```
VideoPreviewWindow <xsize>, <ysize>, <refresh_rate>
```

Where:	Is:
`<xsize>, <ysize>`	The horizontal and vertical size of the area of the image window output to the graphics-to-video display.
`<refresh_rate>`	The refresh rate of the output.

Example of use

```
VideoPreviewWindow 720, 486, 30
```

ArchiveLibrary

Online HTML and ASCII tables of contents will be saved to the filesystem. You can specify the destination directory by setting this keyword. Its default value is */usr/discreet/archive*. You can make the target directory relative to the project directory by prefixing the path with a tilde (e.g. *~/archive*).

NOTE This keyword, if set, will take precedence over the ArchiveLibrary keyword in the *init.cfg* file.

The ArchiveLibrary keyword uses the following syntax

```
ArchiveLibrary <directory_path>
```

where `<directory_path>` is the path to which online HTML and ASCII tables of contents are saved.

Example of use

```
ArchiveLibrary /usr/discreet/archive
```

Environment Directory

Environment directory keywords specify the paths to directories containing resources for all projects. For example, the LUTs that Autodesk provides are located in the directory */usr/discreet/<product_name>/lut*. You can place resource files in these directories that you want to be able to share between projects more easily.

Not all directories are relevant to the application. However, the inclusion of directories pertaining to other Visual Effects and Finishing products allows for cross-product project compatibility.

The ~ in the following table stands for */usr/discreet/<product_name>*.

Resource	Path	Resource File Extension
Action	*~/action*	`.action`
Audio	*~/audio*	`.audio`
AudioDesk	*~/audio*	`.audiodesk`
Audio ImpExp	*~/audio*	`.aiff`
AutoMatte	*~/automatte*	`.automatte`
AutoPaint	*~/paint/autopaint*	`.auto`
Average	*~/average*	`.average`
Axis	*~/axis*	`.dve`
Batch	*~/batch*	`.batch`
BatchClip	*~/batchclip*	`.clip`
Blur	*~/blur*	`.blur`
Burnin	*~/burnin*	`.burnin`
ColourCurves	*~/ccurves*	`.ccurves`
ColourFrame	*~/colourframe*	`.col`
Colour Warper	*~/colourwarper*	`.cw`

Resource	Path	Resource File Extension
Composite	*~/composite*	`.composite`
Compound	*~/compound*	`.compound`
Correct	*~/correct*	`.correct`
Cutout	*~/paint/cutout*	`.sgi`
Deal	*~/deal*	`.deal`
DeGrain	*~/degrain*	`.degrain`
DeInterlace	*~/deinterlace*	`.deinterlace`
Desktop	*~/desktop*	`.desk`
Difference	*~/difference*	`.diff`
Dissolve	*~/dissolve*	`.dissolve`
Distort	*~/distort*	`.distort`
Documentation	*~/documentation*	`.pdf`
DVE	*~/dve*	`.dve`
Edge	*~/edge*	`.edge`
EDL	*~/edl*	`.edl`
Export	*~/export*	`.export`
ExprUserFun	*~/expressions/userfun*	`.expressions`
FieldMerge	*~/fieldmerge*	`.fieldmerge`
Filter	*~/filter*	`.filter`
FilmCompress	*~/filmcompress*	`.compress`
FilmExpand	*~/filmexpand*	`.expand`
Flip	*~/flip*	`.flip`
Geometry (Paint)	*~/paint/geometry*	`.geom`
GMask	*~/gmask*	`.GMask`
Guides	*~/guides*	`.guide`
Histo2d	*~/histo2d*	`.histo2d`
HotKey	*~/hotkey*	`.hotkey`
Image	*~/images*	See Image File Extensions on page 86.
Import	*~/import*	`.import`

Resource	Path	Resource File Extension
Interlace	*~/interlace*	`.interlace`
Key	*~/key*	`.key`
Keyer3d	*~/keyer3d*	`.key3d`
LensDistort	*~/lensDistort*	`.lensDistort`
Letterbox	*~/letterbox*	`.letterbox`
LogicOp	*~/logicop*	`.logicop`
Lumkey	*~/lumkey*	`.lumkey`
Lut	*~/lut*	`.lut`
Mask (Paint)	*~/paint/mask*	`.sgi`
MasterKeyer	*~/masterkeyer*	`.mkeyer`
Mix	*~/mix*	`.mix`
Moncal	*~/monitor*	`.monitor`
ModularKeyer	*~/modularKeyer*	`.modularKeyer`
Mono	*~/mono*	`.mono`
Morf	*~/morf*	`.morf`
MotionAnalyse	*~/motionAnalyse*	`.motionAnalyse`
MotionBlur	*~/motionBlur*	`.motionBlur`
NormalMap	*~/normalmap*	`.normalmap`
Note	*~/note*	`.note`
Omf®	*~/images*	`.omf`
Optics	*~/optics*	`.optics`
Output	*~/output*	`.output`
Paint	*~/paint*	`.paintnode.xml`
Picture	*~/paint/picture*	`.sgi`
Play	*~/play*	N/A
Posterize	*~/posterize*	`.posterize`
Pulldown	*~/pulldown*	`.pulldown`
QComp	*~/quickcomp*	`.qcomp`
ReGrain	*~/regrain*	`.regrain`

Resource	Path	Resource File Extension
Repeat	*~/repeat*	`.repeat`
Resize	*~/resize*	`.resize`
Restore	*~/filmrestore*	`.restore`
Spark	*~/sparks*	`.spark`
Stabilizer	*~/stabilizer*	`.stabilizer`
Text	*~/text*	`.ttg`
Timewarp	*~/timewarp*	`.timewarp`
VectorViewer	*~/vectorViewer*	`.vectorViewer`
Wipe	*~/wipe*	`.wipe`

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