Contents

1 Introduction 1

Summary ......................................................... 1
About This Document ........................................... 1
  Intended Audience ............................................. 2
About Stone Switched .......................................... 2
Software and Hardware Components ......................... 2
Supported Stone Switched Configurations and Switch Rules .......... 4
  Patch Panel Support ............................................ 4
  Switch Rules ................................................... 5
Sample Stone Switched Configuration .......................... 5
Compatibility .................................................... 7
Fixed and Known Bugs .......................................... 8
Related Documentation ......................................... 8
Contacting Customer Support ................................. 10

2 Installing Stone Switched 11

Summary .......................................................... 11
Stone Switched Installation Workflow ........................... 11
Preparing for Installation ....................................... 13
  Obtaining a Stone Switched License ......................... 14
  Migrating from a 32- to 64-Port Patch Panel ................ 16
Connecting the Patch Panel to the Network .................... 17
Connecting Workstations and Storage to the Patch Panel ........ 17
Setting Up the Autodesk NAS .................................. 19
  Setting Up the XFS Filesystem ............................... 19
Configuring the Stone Switched Daemon ....................... 25
3 Configuring Stone Switched

Summary ......................................................... 35
Defining the Stone Switched Configuration .................. 35
  Connecting the Filesystems with Hosts .................. 42
    Applying Your Configuration and Exiting .............. 44
Adding a Dangling Framestore ................................ 44
Switching Storage ............................................ 45
Stone Switched Volume Integrity Check ...................... 47
Naming Filesystems .......................................... 47
Association of Batch Setups .................................. 48
Command Line Utilities (DL Tools) .......................... 48
Switch Panel Configuration Tab. .............................. 48
  Buttons ...................................................... 48
  Dialogs ...................................................... 49
  Icons ......................................................... 53

4 Troubleshooting

Summary ......................................................... 55
Troubleshooting ................................................ 55

A Setting Up the x346 NAS from Scratch

Summary ......................................................... 57
Workflow for Setting Up the x346 NAS from Scratch .......... 57
Configuring the Hardware RAID ............................... 58
Introduction

Summary

About This Document ................................................................. 1
About Stone Switched ................................................................. 2
Software and Hardware Components ........................................... 2
Supported Stone Switched Configurations and Switch Rules ............ 4
Sample Stone Switched Configuration ........................................... 5
Compatibility ................................................................................ 7
Fixed and Known Bugs ............................................................... 8
Related Documentation ............................................................... 8
Contacting Customer Support ...................................................... 10

About This Document

This document includes information about Autodesk® Stone® Switched 2007. It describes how to configure your hardware and software to switch framestores between host workstations.

Chapter 1: Introduction — Provides an overview of the contents of this document and the components involved in Stone Switched.


Chapter 3: Configuring Stone Switched — Provides instructions for using the Stone Switched panel to switch framestores between hosts.

Chapter 4: Troubleshooting — Provides some tips for diagnosing and resolving problems in your Stone Switched configuration.

Appendix A: Setting Up the NAS from Scratch — Describes how to set up a NAS from scratch. Autodesk ships the NAS for Stone Switched already configured so under normal
circumstances you should not need to use this appendix. It is provided as information that may be useful in troubleshooting situations.

**Intended Audience**

System administration knowledge of UNIX or Linux® and computer hardware in a professional video/film production environment is assumed throughout this document. Do not attempt to carry out the procedures outlined in this document if you are not familiar with UNIX and computer hardware issues.

**About Stone Switched**

Use Stone Switched to switch storage devices between hosts. By switching storage devices, you avoid unnecessary data replication and reduce your storage requirements. You can also optimize data storage and management by performing video I/O tasks on less costly workstations with little impact on artistic and editorial work.

Stone Switched 2007 supports IR-series and XR-series Autodesk Stone Direct disk arrays. For information about these types of disk arrays, refer to the *Autodesk Stone Direct 2007 Configuration Guide*.

In the Stone Switched configuration, you can assign any Stone Direct disk array to any system. Stone Direct disk arrays can be switched instantly between SGI® and Linux-based systems connected to your Stone Switched configuration.

**Software and Hardware Components**

A Stone Switched installation consists of the following hardware and software components.

**Patch panel** — A 32- or 64-port patch panel. The patch panel physically switches connections between hosts and storage.

**Network Attached Storage (NAS)** — Contains the metadata (/usr/discreet/clip and /usr/discreet/project) for all Stone Direct arrays in the Stone Switched configuration. The NAS is either an x345 or an x346. The system requirements for the Autodesk x346 are:

- Intel® Xeon® 3.6 GHz Single Core Processor
- 4 GB RAM
- 4 x 73 GB SCSI Ultra 320 drives
- Red Hat® Enterprise Linux WS 4, Update 2
- Hardware RAID 5.
The x346 NAS ships pre-configured with Red Hat Enterprise Linux WS 4, Update 2 already installed. If you have an x345 NAS from a previous release of Stone Switched, you will need to upgrade it as described in “Workflow for Setting Up the x346 NAS from Scratch” on page 57.

**Cables** — SFP to SFP cables from storage to the patch panel and from the patch panel to storage. You must use the cables that correspond to the throughput speed of your storage. For example, if your storage has fibre channel adapters supporting 4 Gb per second throughput, you use 4 Gb SFP to SFP cables. These SFP to SFP cables are in addition to the cables you use to connect the enclosures of the storage assembly. For help with the cables and hardware required to connect the enclosures of your storage assembly, refer to the *Autodesk Stone Direct 2007 Configuration Guide*.

**Workstations** — Workstations on the same Wire® network, running an Effects or Editing 2007 application under IRIX® 6.5.28f or Red Hat Enterprise Linux WS 4, Update 2.

**Stone Direct storage** — The IR- or XR-series Stone Direct storage attached to the workstations.

**Stone Switched application and daemon** — The Stone Switched application is the graphical user interface you use to switch storage from one host to another. You can run this application on any of the Effects or Editing workstations in the Stone Switched configuration. The Stone Switched daemon maintains the Stone Switched configuration. It monitors the status of hosts and framestores on the network, reconfigures the patch panel, and reconfigures the hosts. Only one workstation in the Stone Switched configuration should run the Stone Switched daemon. The daemon and the application may run on the same workstation, or on separate workstations in the installation.

You install both the Stone Switched application and the Stone Switched daemon through the Effects or Editing application installation process. On IRIX systems, you must confirm the installation of Stone Switched during the Effects or Editing application installation. On Linux systems, Stone Switched is automatically installed with the Effects or Editing application. For help installing your Effects or Editing application, refer to the *Autodesk Effects and Editing 2007 Software Installation Guide* for your operating system.

**Java2 v1.4.1_06 runtime environment** — Required to run the Stone Switched application and daemon. This is automatically installed with the operating system required for Autodesk Effects and Editing 2007 products (IRIX 6.5.28f and Linux Red Hat Enterprise Linux WS 4, Update 2).

**Autodesk Stone and Autodesk Wire 2007** — This is installed automatically with any Effects and Editing 2007 application, and with the Stone Switched application.
Supported Stone Switched Configurations and Switch Rules

A Stone Switched installation can include both IRIX and Linux workstations, HD and SD workstations, IR- and XR-series storage, and any supported storage configuration. The installation can also include:

- **Dangling** framestores (framestores that are not currently connected to one of the workstations on the patch panel). Dangling framestores can be useful when you want to switch between framestores for video input and output, or input a large quantity of media for later processing. Note that you cannot access a dangling framestore through the patch panel until you connect it to a host.

- Film projects on a mix of LCD and CRT monitors. In this case you must indicate the monitor type in the software initialisation file (`init.cfg`) for the application, by adding either 'Analog' or 'LCD' as a third argument to the `HiresChannel` keyword. For example:
  
  ```
  HiresChannel vpro, 0, Analog
  HiresChannel vpro, 0, LCD
  ```

  This keyword works in concert with the `Hires` keyword in the project configuration file. If you specify 'Analog' in the `HiresChannel` keyword, when the application opens the project, it sets the `Hires` keyword to 72Hz (to reflect the refresh rate implied by 'Analog'). If you specify 'LCD', it adjusts the `Hires` keyword to 48Hz (to reflect the refresh rate implied by 'LCD'). If you do not specify the monitor type in the `HiresChannel` keyword, the refresh rate used is the one specified in the `Hires` keyword.

Patch Panel Support

The 64-port patch panel supports a maximum of 16 workstations and the 32-port patch panel supports a maximum of 8 workstations. This maximum is imposed by the physical number of ports on the patch panel (64 or 32) and the minimum of 4 ports required to connect a workstation and its associated storage to the patch panel (two to connect the workstation to the patch panel and two to connect the storage to the patch panel). To calculate the number of patch panel ports required for a given storage configuration, double the number of loops in that configuration. For example, a 2-loop configuration requires four ports on the patch panel: two that connect the host to the panel, and two that connect the storage to the panel.

You can have a single or dual patch panel configuration. You can create a dual patch panel configuration with two 32-port patch panels or two 64-port patch panels. The cabling for a dual patch panel configuration differs slightly from the single patch panel configuration. Each host or storage device must have one connection to each of the patch panels. For example, if host A is connected to port 17 on a 32-port patch panel, then host A must also be connected to port 17 on a second 32-port patch panel.
WARNING: All (both used and unused) ports on the patch panel must be reserved for use with Stone Switched. Failure to respect this restriction will result in the loss of the Stone Switched configuration when you perform a switch.

Switch Rules
The following rules apply when switching the framestore associated with a workstation.

You can switch between IRIX and Linux workstations only if the filesystems on the IRIX workstations are compatible with those on the Linux workstations. Not all filesystems supported on IRIX are supported on Linux.

You cannot switch storage between HD and SD systems.

All storage configurations you intend to connect to a given workstation must:

• Use the same type of storage (IR- or XR-series).

• Have the same number of loops and throughput speed. For example, you cannot switch a workstation from a 4-loop storage configuration to a 2-loop storage configuration, or from 2 Gb storage to 4 Gb storage.

• Have a filesystem size that does not exceed the maximum supported by the operating system.

• Have the same number of LUNs.

• Have filesystems composed of the same number of physical disks. Note that the size of the disks may vary. For example, the filesystem on one storage system may be composed of 15 73 GB disks, and the filesystem on the other system may be composed of 15 146 GB disks.

Sample Stone Switched Configuration
The first diagram in this section illustrates the following connections through the 64-port patch panel: an IBM® 6217 DC workstation connected to a 4-loop XR-series storage, an IBM 6217 DC workstation connected to a 2-loop XR-series storage, and an SGI Tezro™ workstation connected to a 2-loop XR-series storage.

The second diagram illustrates a configuration with a dangling framestore.
Sample Stone Switched Configuration
The following applications are concurrent versions and are compatible with one another:

- Autodesk Fire® 2007
- Autodesk Smoke® 2007
• Autodesk Inferno® 2007
• Autodesk Flame® 2007
• Autodesk Flint® 2007
• Autodesk Backdraft® Conform 2007
• Autodesk Stone® and Autodesk Wire® 2007
• Autodesk Burn™ 2007

This release is also compatible with the preceding release of Effects and Editing products (Fire 7.0, Smoke 7.0, Inferno 6.5, Flame 9.5, Flint 9.5, Backdraft Conform 7.0, and Burn 2.0) provided that you are running those products on an IRIX workstation and that you upgrade to version 2007 of Stone and Wire on that workstation. This release is not compatible with previous releases of Editing and Effects products running on Linux workstations.

If some hosts on the network are running earlier versions of Editing and Effects products, they may not have access to media belonging to projects created in later versions. The following table summarizes the read- and write-capabilities.

<table>
<thead>
<tr>
<th>Host</th>
<th>Framestore</th>
<th>Read- and Write- Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current version</td>
<td>Current version</td>
<td>Full read- and write-capabilities</td>
</tr>
<tr>
<td>Newer</td>
<td>Older</td>
<td>Read-only capabilities</td>
</tr>
<tr>
<td>Older</td>
<td>Newer</td>
<td>No read- or write- capabilities. Contents not visible</td>
</tr>
</tbody>
</table>

**Fixed and Known Bugs**

For a list of fixed and known bugs for Stone Switched 2007, refer to the release notes for your Autodesk Effects and Editing 2007 application. These release notes are available in PDF format on the Autodesk Web site at www.autodesk.com/discreet-documentation.

**Related Documentation**

The following tables list the documentation associated with the current release. For details on each of these documents, as well as for help obtaining them, refer to your application's release notes.

<table>
<thead>
<tr>
<th>User Guides</th>
<th>Provides</th>
</tr>
</thead>
<tbody>
<tr>
<td>User’s Guide</td>
<td>Detailed instructions on using the software.</td>
</tr>
<tr>
<td>What's New</td>
<td>A complete list of the new features for this release.</td>
</tr>
<tr>
<td>Online Help</td>
<td>All of the information in the User’s Guide along with powerful search functionality</td>
</tr>
</tbody>
</table>
### User Guides

<table>
<thead>
<tr>
<th>User Guides</th>
<th>Provides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot Keys Reference Guide</td>
<td>A complete list of hot keys for commonly used functions</td>
</tr>
<tr>
<td>Hot Keys Card</td>
<td>A list of the most frequently used hot keys</td>
</tr>
<tr>
<td>Release Notes</td>
<td>A complete list of documentation and information on late-breaking features</td>
</tr>
<tr>
<td>Fixed and Known Bug List</td>
<td>A complete list of fixed and known bugs for this release</td>
</tr>
</tbody>
</table>

### Installation and Configuration Guides

<table>
<thead>
<tr>
<th>Installation and Configuration Guides</th>
<th>Provides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Setup Guide (for your workstation)</td>
<td>Information on how to set up your workstation’s video I/O components and other peripherals</td>
</tr>
<tr>
<td>Installation and Configuration Guide (for your operating system)</td>
<td>Information on how to install and configure the Linux or IRIX operating system on your workstation should you require to do so</td>
</tr>
<tr>
<td>Stone and Wire Filesystem and Networking Guide (for this release)</td>
<td>Procedures for configuring your Stone filesystem, Wire networking, and Wiretap services.</td>
</tr>
<tr>
<td>Stone Direct Configuration Guide (for this release)</td>
<td>Detailed connectivity diagrams and configuration procedures for your Stone storage arrays</td>
</tr>
<tr>
<td>Software Installation Guide (for Linux® or IRIX® workstations)</td>
<td>Information about installing and licensing your Autodesk Editing or Effects software and installing and configuring Autodesk Cleaner® XL</td>
</tr>
<tr>
<td>Configuration File Reference Guide (for Linux or IRIX workstations)</td>
<td>Information on how to modify the initialization and project configuration files associated with your Autodesk application</td>
</tr>
</tbody>
</table>

### Other Product Reference Guides

<table>
<thead>
<tr>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autodesk Cleaner XL User’s Guide</td>
<td>Information on how to use Cleaner XL.</td>
</tr>
<tr>
<td>Autodesk Cleaner XL Troubleshooting Guide</td>
<td>Troubleshooting information for Cleaner XL.</td>
</tr>
<tr>
<td>Using QuickTime with Linux Workstations</td>
<td>Information on how to use Cleaner XL to convert QuickTime® files for use on Linux workstations</td>
</tr>
<tr>
<td>Autodesk Burn Installation and User’s Guide</td>
<td>Information on how to install, set up, and use Autodesk Burn™</td>
</tr>
<tr>
<td>Autodesk Backburner Installation and User’s Guide</td>
<td>Information on how to install, set up, and use Autodesk Backburner™</td>
</tr>
<tr>
<td>Autodesk Wiretap Web Installation and User’s Guide</td>
<td>Information on how to install, set up, and use Autodesk Wiretap™ Web</td>
</tr>
</tbody>
</table>

Consult the Autodesk Web site at [www.autodesk.com/discreet-documentation](http://www.autodesk.com/discreet-documentation) for the latest version of all documents.
## Contacting Customer Support

You can contact Autodesk Media and Entertainment Customer Support at [www.autodesk.com/support](http://www.autodesk.com/support) or in one of the following ways.

<table>
<thead>
<tr>
<th>Location:</th>
<th>Contact Information:</th>
</tr>
</thead>
</table>
| Within the Americas: | Hotline (North America): 1-800-925-6442  
Direct dial: 415-507-5256 (Country code = 1)  
8 AM to 8 PM EST Monday to Friday, excluding holidays  
me.support@autodesk.com |
| Within Europe, Middle-East and Africa: | Hotline (from London, UK): +44-207-851-8080  
9 AM to 5:30 PM (local time)  
Monday to Friday, excluding holidays  
me.emea.support@autodesk.com |
| Within Asia Pacific:  
(Excluding India, China, Australia, New Zealand and Japan) | Hotline (from Singapore): +65-6555-0399  
9 AM to 6 PM (local time)  
Monday to Friday, excluding holidays  
me.support.singapore@autodesk.com |
| Within India: | Hotline (from Mumbai): +91-22-6695-2244  
9:30 AM to 6:30 PM (local time)  
Monday to Friday, excluding holidays  
me.support.india@autodesk.com |
| Within Japan: | Hotline (from Tokyo): 0120-107-290  
Direct dial: +81-3-6221-1810  
10 AM to 6 PM (local time)  
Monday to Friday, excluding holidays  
me-sys-support@autodesk.jp |
| Within China: | Direct dial: +86-10-6505-6848  
9 AM to 6 PM (local time)  
Monday to Friday, excluding holidays  
me.support.china@autodesk.com |
| Within Australia and New Zealand: | Hotline (from Melbourne): +1-300-36-8355  
Direct dial: +61-3-9876-8355  
8 AM to 6 PM AEST  
Monday to Friday, excluding holidays  
me.support.anz@autodesk.com |

Customer support is also available through your Autodesk reseller. To find a reseller near you, consult the reseller look-up database on the Autodesk web site at [www.autodesk.com/resellers](http://www.autodesk.com/resellers).
Stone Switched Installation Workflow

Use the following workflow to install and configure Stone Switched. The workflow assumes an experienced system administrator is performing the installation and configuration.

To install and configure Stone Switched:


2. Connect the patch panel to the network. See “Connecting the Patch Panel to the Network” on page 17.

3. Physically connect the workstations and storage in the Stone Switched configuration to the patch panel. See “Connecting Workstations and Storage to the Patch Panel” on page 17.

4. Set up the NAS. See “Setting Up the Autodesk NAS” on page 19.
5. Ensure that the Stone Switched application is installed on all machines on which you want to run it, and that the Stone Switched daemon is installed on only one machine in the Stone Switched configuration.

The installation of both the Stone Switched application and the Stone Switched daemon is part of the Effects and Editing application installation process. On IRIX workstations, you are prompted to confirm the installation of Stone Switched. On Linux workstations, Stone Switched is automatically installed with the Effects or Editing application. For help installing your Effects or Editing application, refer to the Autodesk Effects and Editing 2007 Software Installation Guide for your operating system.

6. Install the license code for each instance of the Stone Switched application you installed. See “Installing a Stone Switched License Code” on page 16.

7. If necessary, install compatible Autodesk applications on the remaining workstations in the Stone Switched configuration. See “Compatibility” on page 7 for compatibility information.

8. Configure the Stone Switched daemon (swsd) on the workstation on which you intend to run it. See “Configuring the Stone Switched Daemon” on page 25.

9. If you installed the Stone Switched application on more than one workstation, you must make the Stone Switched configuration file available to all instances of that application. See “Sharing the Stone Switched Configuration File” on page 26.

10. Configure the storage to use the NAS server. See “Creating the Central Framestore Directories on the NAS” on page 27.

11. (Optional) If you want to carry forward existing projects and clip libraries to the Stone Switched setup, copy existing projects and clip libraries from the workstations to the NAS directory. Make sure no projects or clip libraries are being accessed from any workstation while performing this step. See “Copying Projects and Clip Libraries to the NAS Directory” on page 28.

12. Set the user IDs for each Autodesk application on each workstation in the configuration. See “Assigning Compatible User IDs” on page 29.

13. Define the central path on every system in the network. The central path is where the projects and clip libraries will be stored. See “Defining the Central Path” on page 30.

14. Configure all the host workstations in the Stone Switched configuration, whether connected directly or over the network. See “Configuring the Hosts” on page 31.

**NOTE:** A workstation that you connect to the patch panel is directly connected, whereas a workstation that is connected via the Wire network to the workstations on the patch panel is connected over the network.
Preparing for Installation

This section describes the steps to perform prior to installing and configuring Stone Switched.

To prepare for Stone Switched installation:

1. Ensure that the Stone Switched configuration you want to create is amongst those supported. See “Supported Stone Switched Configurations and Switch Rules” on page 4.

2. Choose the machine on which you intend to run the Stone Switched daemon. This can be any Linux or IRIX workstation in the Stone Switched configuration that meets the requirements for the installation of an Autodesk Editing or Effects 2007 application. If necessary, consult the Software Installation Guide for your operating system for a list of those requirements.

   **NOTE:** The Stone Switched application and the Stone Switched daemon can run on the same workstation, or on separate workstations in the configuration.

3. Determine how many instances of the Stone Switched application you want to install, and which workstations would be the most appropriate choices. Considerations are how often you expect to switch storage, the time of day you expect to do this, how heavily used the workstation is at that time, and the benefits to your workflow of having more than one installation of the Stone Switched application.

   **NOTE:** Each installation of the Stone Switched application requires a separate license.

15. When switching storage to work on video projects, the graphics-to-video configuration corresponding to the project must be supported on all workstations if you require broadcast monitoring. Edit the VideoPreviewDevice section of the `init.cfg` file on each host workstation accordingly. Refer to the latest install information for your Autodesk application at www.autodesk.com/discreet-documentation.

16. Perform the following tasks on the system running the Stone Switched server:

   • Use the Switch panel to configure the Switch panel, hosts, and filesystems. You can also use this panel to check your configuration.

   • Use the Filesystem Configuration panel to connect hosts to filesystems.

   • Exit from all systems that you defined in your Stone Switched configuration except for the system running the Stone Switched server.

   • Apply and save the changes. See “Applying Your Configuration and Exiting” on page 44.

   • Use the Filesystem Configuration panel to switch filesystems of two different hosts in the Stone Switched configuration. See “Switching Storage” on page 45.
4. Obtain a Stone Switched license for each workstation on which you intend to install the Stone Switched application. See “Obtaining a Stone Switched License” on page 14.

5. Ensure that all workstations and storage configurations that you want to include in the Stone Switched installation are available. You will need to power down and power up workstations and storage during the installation.

6. If you are upgrading from a 32- to a 64-port patch panel, perform the upgrade and ensure the 64-port panel is working correctly. See “Migrating from a 32- to 64-Port Patch Panel” on page 16.

7. Archive any material you want to preserve from all framestores you intend to include in the Stone Switched configuration. For information on archiving, refer to the “Archiving” chapter in your application's User's Guide.

**Obtaining a Stone Switched License**

Each installation of the Stone Switched application requires a license. For example, if you install the Stone Switched application on four workstations, you need four licenses.

You request a software license code by registering Stone Switched with the Licensing Department. All registration procedures provide a temporary license that you use until your permanent license is confirmed and delivered.

**NOTE:** If you want workstations in your Stone Switched configuration to communicate via Wire and you do not already have a Wire license, refer to “Setting Up the Wire Network” in the *Autodesk Stone and Autodesk Wire 2007 Filesystem and Networking Guide* for information on licensing Wire.

**To obtain and install Stone Switched licenses:**

1. Obtain the host ID of each workstation on which you intend to install the Stone Switched application. See “Obtaining the Host ID” on page 15.

2. Request a temporary license for each of those workstations. See “Requesting a Temporary License” on page 16.

3. Install the temporary license on each workstation. See “Installing a Stone Switched License Code” on page 16.

**NOTE:** You must restart the Stone Switched daemon (swsd) after you install licenses. For more information on restarting swsd, see the man page (type `man swsd` at the prompt).
4. When you receive permanent license codes, install those codes. See “Installing a Stone Switched License Code” on page 16.

**NOTE:** You must restart the Stone Switched daemon (swsd) after you install licenses. For more information on restarting swsd, see the man page (type `man swsd` at the prompt).

### Obtaining the Host ID

To request a license code for the workstation on which you intend to run the Stone Switched application, you must have the host ID of that workstation. The host ID is the unique number of your workstation used to authenticate your registration.

**To get your host ID number:**

1. On the system running the Stone Switched server, log in as root.

2. Do one of the following:
   - On an SGI workstation, type `lmhostid`
     
     A message indicating your host ID appears:

     ```
     lmhostid — Copyright © 1989-1998 Globetrotter Software, Inc. The FLEXlm host ID of this machine is "<host ID>"
     ```

     The host ID differs from platform to platform.

   - On a Linux workstation, type `dlhostid`

     The host ID for Linux workstations varies from one workstation to another. The following is an example of a host ID for a Linux workstation:

     ```
     DLHOST01=886C2B75E8E57E4B03D784C3A2100AC0
     ```

     This host ID number is required for your Stone Switched license code.

<table>
<thead>
<tr>
<th>The host ID for an:</th>
<th>Begins with:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Octane2™</td>
<td>69</td>
</tr>
<tr>
<td>Onyx2®</td>
<td>b00</td>
</tr>
<tr>
<td>Onyx® 3200</td>
<td>c10 or c20</td>
</tr>
<tr>
<td>Tezro</td>
<td>1000</td>
</tr>
<tr>
<td>Onyx 350</td>
<td>d200</td>
</tr>
</tbody>
</table>
Requesting a Temporary License
To obtain a temporary license code for Stone Switched, provide your host ID to a licensing representative using one of the following methods.

<table>
<thead>
<tr>
<th>To obtain the license by:</th>
<th>Use:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone</td>
<td>1-800-925-6442</td>
</tr>
<tr>
<td>E-mail</td>
<td><a href="mailto:me.licensing@autodesk.com">me.licensing@autodesk.com</a></td>
</tr>
<tr>
<td>Fax</td>
<td>1-514-954-7491</td>
</tr>
</tbody>
</table>

You will receive a 30-day license code within 8 business hours.

Installing a Stone Switched License Code
Once you have the required license code for Stone Switched, you can enter this code in the DL_license.dat file.

To enter the license code in the DL_license.dat file:
1. On the workstation from which you run the Stone Switched application, log in as root.
2. Navigate to the directory containing the license file by typing:
   ```bash
   cd /usr/local/flexlm/licenses
   ```
3. Open the DL_license.dat file in the nedit editor by typing:
   ```bash
   nedit DL_license.dat
   ```
4. Add the license code provided by Autodesk.
5. Save and exit the DL_license.dat file.
   You can begin your session.

Migrating from a 32- to 64-Port Patch Panel
You can change your configuration from 32 to 64 ports.

NOTE: Do not attempt to downgrade a 64-port Stone Switched setup to a 32-port setup.

To migrate from 32 to 64 ports:
1. Power down and unplug the workstations and then power down and unplug the Stone Direct disk arrays.
   For hardware RAID configurations, power down your configurations in the following order:
   - SGI or Linux workstation
   - RAID (2 power supplies per RAID)
• JBODs or EBODs (2 power supplies per JBOD/EBOD)

2. Power down the 32-port patch panel.

3. Move all the cables on the 32-port patch panel to the same port configuration on the 64-port patch panel. Note that the ports on the 32-port patch panel are numbered 1-32, whereas the ports on the 64-port patch panel are numbered A1-16, B1-16, C1-16, and D1-16.

   NOTE: Be sure to connect matching host and Stone Direct disk array connectors one-to-one on the patch panel. Connect them in the same way that they were connected physically when you set up your configuration for the first time.

4. Power up all disk arrays, wait about 90 seconds for the drives to spin up, and then power up the workstations.

5. In the Stone Switched application, on the Switch Properties dialog, change the IP address of the 64-port patch panel and apply the configuration. See “Defining the Stone Switched Configuration” on page 35.

---

Connecting the Patch Panel to the Network

Use the following procedure to configure the IP address of the patch panel.

**To connect the patch panel to the network:**

1. Connect a workstation to the patch panel.


   The web interface to the patch panel appears.

3. Locate the IP Address field and click the [Edit] link that appears to its right.

4. In the Configure Network Interface window, enter the IP address, subnet mask, and gateway (if you have one) and click Change.

5. Physically connect the patch panel to your local area network.

Connecting Workstations and Storage to the Patch Panel

All workstations and storage that you want to include in the Stone Switched configuration must be powered off before you can install the patch panel.
**WARNING:** It is critical that you follow the correct power up or power down sequence to ensure proper operation of the storage. An incorrect sequence can mean your system does not recognize all drives in your storage configuration.

To install the patch panel hardware:

1. Power down and unplug each of the workstations you want to include in the Stone Switched configuration. On each workstation, in a Terminal (Linux) or shell (IRIX), as root, type:
   ```
   shutdown -g 0
   ```
   Wait for your workstation to shut down and power off. If the system does not power off automatically, power it off manually.

2. Power down and unplug all disk arrays you want to include in the Stone Switched configuration.

   **WARNING:** If your storage uses hardware RAID and includes EBOD (XR-series) or JBOD (IR-series) units, be sure to power off the RAID units first. This ensures the RAID controllers can always detect the other units in the Stone Direct storage.

3. Connect each host and its storage to the patch panel as follows:
   - Locate the fibre channel cables that connect the host to its storage.
   - Disconnect those cables from the storage and connect them to the top row of ports on a 32-port patch panel, or to the top or middle row of ports on a 64-port patch panel.
   - Use the additional cables included in the Stone Switched shipment to connect the storage to the patch panel. Connect storage to the ports immediately below those to which you connected the host.

   Note the following with respect to the cables for the host and storage connections to the patch panel:
   - For all 1 Gb fibre channel configurations (except for HD on the Octane2, Tezro, Onyx 3200, and Onyx 350), use the DB9 to SFP cables to make the host connections. The SFP end of the cable is always connected to the patch panel.
   - For HD on the Octane2, Tezro, Onyx 3200, and Onyx 350, there are four host connections. Two of the host connections are made with DB9 to SFP cables (for connections to the SGI XIO fibre channel board or with the Linux PCI adapter) and two are made with HSSDC to SFP cables (for connections to the PCI Fibre Channel ports).
   - All the connections made to the Stone Direct disk arrays are made with the appropriate 1-, 2-, or 4 Gb SFP to SFP cables for your storage configuration. Note that 4 Gb SFP to SFP cables can be used with either 2 Gb and 4 Gb storage configurations.
4. Plug in and power up all disk arrays.

**WARNING:** If your storage uses hardware RAID and includes EBOD (XR-series) or JBOD (IR-series) units, be sure to power on the RAID units last. This ensures that the RAID controllers detect the other units in the Stone Direct storage.

5. Wait about 90 seconds for the drives to spin up.

6. Plug in and power up the workstation.

7. Confirm that your disk arrays are available by checking if the filesystems on those disk arrays are mounted. Type:

```bash
cd /usr/discreet/sw
sw_df
```

This command outputs the total and free space on your filesystems if the filesystems are mounted. Refer to the *Autodesk Stone and Autodesk Wire 2007 Networking and Filesystem Guide* for more information on the `sw_df` utility.

### Setting Up the Autodesk NAS

Autodesk ships the x346 NAS with Red Hat Enterprise Linux WS 4, Update 2 already installed. You set up the Autodesk x346 NAS by setting up the XFS filesystem and assigning an IP address to the NAS that integrates it into your network. This procedure should be performed by the system administrator.

**NOTE:** In the procedure for configuring the IP address of the NAS, you change values using Visual Editor (VI) commands. For all VI commands that you need to complete this procedure, see “Using Visual Editor Commands” on page 24.

### Setting Up the XFS Filesystem

After you install Red Hat Enterprise Linux WS, you must set up the XFS filesystem on the data disk (the disk that will hold the metadata for all framestores in the Stone Switched configuration).
To set up the XFS filesystem:

1. Determine the device name of the data disk. If necessary, you can use the following sequence of commands.

<table>
<thead>
<tr>
<th>Type:</th>
<th>To:</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>df /</code></td>
<td>Determine the device name of the system disk. You want to be sure you do not inadvertently create the XFS filesystem on the system disk.</td>
</tr>
<tr>
<td><code>fdisk -l</code></td>
<td>See the device names of all disks. The disk that is not the system disk is the one you want to use as the data disk.</td>
</tr>
</tbody>
</table>

2. Launch the `fdisk` utility to create an XFS filesystem on the data disk:

   `fdisk /dev/<device_name>`

   For example, if the device name of your data disk is `/dev/sdb`, type:

   `fdisk /dev/sdb`

   The `fdisk` command prompt appears:

   **Command (m for help):**

3. Type the following sequence of commands. Terminate each command with a carriage return.

<table>
<thead>
<tr>
<th>Type:</th>
<th>To:</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>p</code></td>
<td>Display a list of all partitions on the data disk. If the system has never been set up, there are no partitions. If there are any partitions, take note of the partition numbers; you will need to delete all partitions. For example, the partition number for partition <code>/dev/sdb1</code> is 1.</td>
</tr>
<tr>
<td><code>d&lt;partition_number&gt;</code></td>
<td>Delete each of the existing partitions on the disk, if any exist. Repeat for each partition on the data disk.</td>
</tr>
<tr>
<td><code>p</code></td>
<td>Verify you have deleted all partitions on the disk.</td>
</tr>
<tr>
<td><code>x</code></td>
<td>Enter expert command mode. In expert command mode, type <code>g</code> followed by <code>ENTER</code> to create an IRIX partition table. Then type <code>r</code> followed by <code>ENTER</code> to exit expert command mode.</td>
</tr>
<tr>
<td><code>p</code></td>
<td>Display the IRIX partition table you just created.</td>
</tr>
<tr>
<td><code>n</code></td>
<td>Create a new partition. When prompted for the partition number, type <code>7</code> and press <code>ENTER</code> until you return to the <code>fdisk</code> utility command prompt.</td>
</tr>
<tr>
<td><code>t</code></td>
<td>Tag the disk as an XFS filesystem. When prompted for the partition number, type <code>7</code> and press <code>ENTER</code>. When prompted for the Hex Code, type <code>a</code>. (the code for an XFS filesystem) and press <code>ENTER</code>.</td>
</tr>
</tbody>
</table>
4. Verify the data disk now has a single XFS partition:

   `fdisk -l`

   For example, if the device name of your data disk is `/dev/sdb`, the partition `/dev/sdb1` appears as the XFS filesystem in the output of the `fdisk` command:

   Disk /dev/sdb (SGI Disk label): 128 heads, 32 sectors, 95008 cylinders
   Units=cyliners of 4096 * 512 bytes
   ------partitions-------
   Pt# Device Info Start End Sectors ID System
   7 /dev/sdb1 5 95007 389132288 a SGI xfs
   9 /dev/sdb2 0 4 20480 0 SGI volhdr
   11 /dev/sdb3 0 95007 389152768 6 SGI volume

5. Make a filesystem on the new partition:

   `mkfs.xfs /dev/<device_name>`

   For example:

   `mkfs.xfs /dev/sdb`

6. Create a mount point for the filesystem.

   `mkdir <mountpoint>`

   For example:

   `mkdir /mnt/NAS_DISK`

7. Add a line to the filesystem table (`/etc/fstab`) for the new filesystem:

   `/dev/<partition> <central_path> <partition_type> defaults 1 3`

   For example:

   `/dev/sdb1 /mnt/NAS_DISK xfs defaults 1 3`

8. Mount the new filesystem:

   `mount -va`
9. Verify the filesystem is mounted:
   \texttt{df -Th}

10. Add a line for the filesystem to the \texttt{/etc/exports} file.
    \begin{verbatim}
    <mount_point> *(rw,sync,no_root_squash)
    \end{verbatim}
    For example:
    \begin{verbatim}
    /mnt/NAS_DISK *(rw,sync,no_root_squash)
    \end{verbatim}

11. Export the filesystem.
    \texttt{exportfs -vfa}

To configure the IP address of the Autodesk x346 NAS:
1. Physically connect the NAS to your network and power it on.

2. At the Red Hat login screen, log in as root.
   \textbf{NOTE:} The default root password on a fresh installation of Red Enterprise Linux WS 4, Update 2 is \texttt{password}. For security purposes you should change this password.

3. Change the IP address and hostname of the NAS by typing:
   \begin{verbatim}
   cd /etc
   vi hosts
   \end{verbatim}
   The following information appears:
   \begin{verbatim}
   # Please do not remove the localhost entry
   127.0.0.1 localhost.localdomain localhost
   192.168.1.10 tunisia.yourcompany.com tunisia
   \end{verbatim}
   where 192.168.1.10 is the IP Address and tunisia.yourcompany.com tunisia is the host address.
   Change the values to match your configuration.

4. Change the hostname and gateway value in the \texttt{/etc/sysconfig} file by typing:
   \begin{verbatim}
   cd /etc/sysconfig/
   vi network
   \end{verbatim}
   The following information appears:
   \begin{verbatim}
   NETWORKING=yes
   HOSTNAME=tunisia.yourcompany.com
   \end{verbatim}
GATEWAY=192.168.1.1

where tunisia.yourcompany.com is the host name (and also the fully qualified
domain name) and 192.168.1.1 is the gateway number.

Change the values to match your configuration.

5. Reboot the NAS or restart the network.

6. Change the IP address and netmask value in the /etc/basp/team-gec file by typing:
   
   cd /etc/basp/
   
   vi team-gec
   
   7. Use the Down Arrow key to scroll to the following information:
      
      # 1st virtual interface in the team
      TEAM_VA0_NAME=sw0
      TEAM_VA0_VLAN=0
      TEAM_VA0_IP=192.168.1.10 --- Modify the IP address
      TEAM_VA0_NETMASK=255.255.255.0 ---- Modify the netmask value if
      necessary
      
      where 192.168.1.10 is the IP Address and 255.255.255.0 is the gateway number.
      
      Change the values to match your configuration.
      
    8. If your network can support jumbo frames, ensure that the ONBOOT= parameter is set to
       YES and add the MTU line to both the ifcfg-eth0 and ifcfg-eth1 files by typing:
       
       cd /etc/sysconfig/network-scripts/
       
       vi ifcfg-eth[#]
       
       The following information appears:
       
       ONBOOT=YES
       
       Add the following line:
       
       MTU=9000
       
       Change the values to match your configuration.
9. Add a name server in the /etc/resolv.conf file by typing:

   cd /etc
   vi resolv.conf

   Add the following line:

   nameserver 192.168.1.2

10. If you use NIS (Network Information Service) to centralize user login information, configure access to the NIS server by typing:

    setup

    NOTE: You need to know the domain and NIS server name to complete steps 12 and 14.

11. Choose Authentication Configuration and press ENTER.

12. Navigate the Authentication Configuration as follows.

    Press Tab until you reach the: | Then:
    ____________________________ | ___________________________
    Use NIS tab                   | Press the SPACEBAR to select it.
    Domain field                 | Enter the domain name in the Domain field and press ENTER.
    Server field                 | Enter the NIS server name in the Server field and press ENTER.
    Next field                   | press ENTER.
    OK field                     | press ENTER to return to the shell.

13. If the NIS server is not used, add a user ID, group ID, and user name for each user that will be writing data on the NAS (Network Attached Storage) by typing:

    useradd -u [user ID number] -g [group ID number] [user name]

    For example, if Flame 2007 is used to write data on the NAS, you can create a local user called flame9_5OCT2 with a user ID 106 and a group ID 20 by typing:

    useradd -u 106 -g 20 flame9_5OCT2

    NOTE: Obtain further information from the man page about the useradd command by typing: man useradd

14. Reboot the NAS by typing:

    reboot

Using Visual Editor Commands
To configure the IP address of the x345 NAS (NAS), use Visual Editor (VI) commands to change values in files.
As a precaution, make a copy of the file you want to edit by typing:

```
cp [file name] [file copy name]
```

For example, copy a file called `network` by typing:

```
cp network network_copy
```

To edit files using VI commands:

1. Use the DOWN ARROW and RIGHT ARROW to scroll to the end of the value that you want to change.
2. To insert the cursor, press `I` (lowercase L).
3. To delete the values that you want to replace, press BACKSPACE.
4. Type the new value.
5. To save changes to the values, press Esc, press : (colon), and then press W (lowercase W).
6. To return to the prompt, press : (colon), press Q (lowercase Q), and then press !.

### Configuring the Stone Switched Daemon

The Stone Switched daemon must communicate with the other workstations in the Stone Switched configuration. This procedure describes how to set up this communication.

**To configure the Stone Switched daemon:**

1. On the workstation on which you want to run the Stone Switched daemon, log in as root.
2. Exit all Autodesk applications currently running on the workstation.
3. Type:

```
cd /usr/discreet/sw/cfg/
```
4. Open the `sws.cfg` file in a text editor, scroll to the [GENERAL] section, and verify that the ProbePort and swsdPort keywords are set correctly.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ProbePort</td>
<td>TCP port number used to communicate with the <code>sw_probed</code> servers. The default value is 7001. This port number is defined in the [GENERAL] section of the <code>sw_probed.cfg</code> file and you should ensure that the value here matches that one.</td>
</tr>
<tr>
<td>swsdPort</td>
<td>TCP port number used to communicate with the Stone Switched daemon (<code>swsd</code>). The default value is 7458. This keyword is defined in this file and should match the value in the [SWS] section of the <code>sw_probed.cfg</code> file.</td>
</tr>
</tbody>
</table>
5. Save and close the `sws.cfg` file.

6. Do one of the following to activate the Stone Switched daemon (which is off by default):
   - On a Linux workstation, open the file `/etc/sysconfig/stone+wire` and add the line
     `dl_sws=on`
     Save and exit the file.
   - On an IRIX workstation, type:
     `chkconfig -f dl_sws on`
     and then verify that it is on by typing:
     `chkconfig`
     The `dl_sws` entry should be listed as `on`.

7. Restart Stone and Wire by typing:
   `/etc/init.d/stone+wire restart`
   The system is now running the Stone Switched daemon (`swsd`).
   **NOTE:** For more information on the `swsd` daemon and the `sws.cfg` configuration file, see the man pages by typing `man swsd` or `man sws.cfg`.

8. Verify that the contents of the `sw_framestore_map` file are correct on each host by logging in as root and typing:
   `cd /usr/discreet/sw/cfg`
   `nedit sw_framestore_map`
   Only the local framestore should be listed. Delete all other framestores from the list. This is necessary for the SelfDiscovery option to work correctly.

**Sharing the Stone Switched Configuration File**

All instances of the Stone Switched application must have access to the Stone Switched configuration file (`sws.cfg`). If you are running the Stone Switched application on more than one workstation, all of the instances of that application should share a common Stone Switched application configuration file (`swsui.cfg`). This ensures a consistent presentation of the interface elements across all instances of the Stone Switched application.
To share the Stone Switched configuration file:
1. On one of the workstations on which you installed the Stone Switched application, log in as root.

2. Copy the configuration files to the NAS by typing:
   
   ```
   cp /usr/discreet/sw/cfg/sws.cfg /hosts/<nas>/<shared directory>/sws.cfg
   cp /usr/discreet/sw/cfg/swsui.cfg /hosts/<nas>/<shared directory>/swsui.cfg
   ```

3. Create links on the workstation to the configuration files you just transferred to the NAS by typing:
   
   ```
   rm /usr/discreet/sw/cfg/sws.cfg
   ln -s /hosts/<nas>/<shared directory>/sws.cfg /usr/discreet/sw/cfg
   rm /usr/discreet/sw/cfg/swsui.cfg
   ln -s /hosts/<nas>/<shared directory>/swsui.cfg /usr/discreet/sw/cfg
   ```

4. Repeat this procedure for each workstation on which you installed the Stone Switched application.

Creating the Central Framestore Directories on the NAS

The NAS is the central repository for application metadata (clips and projects). It shares data between all hosts on the Stone Switched network. You create a directory on the NAS for each framestore on the Stone Switched network. These directories will be named after the framestore ID of their associated framestore.

Enabling User Access to the NAS

In order for each workstation to have read-write access to the NAS directories, you must enable NIS (Network Information Service) if it is available at your facility, or create users equivalent to the existing user base. Your system administrator should perform this operation.

Obtaining the Framestore Names and ID Numbers

Use the `sw_framestore_dump` utility to obtain the ID and framestore number after the installation of Stone and Wire. Perform the following procedure on each workstation on the Stone Switched network.
To obtain the framestore names and ID numbers:
1. In a UNIX shell, switch to the tools directory by typing:
   ```
cd /usr/discreet/sw/tools
   ```
2. View the framestore names and corresponding ID numbers by typing:
   ```
sw_framestore_dump
   ```
   Framestores and their IDs are listed.
   **NOTE:** If you want to display the framestore name and ID of only the local framestore, type:
   ```
sw_framestore_dump --local
   ```
   For a complete description of the `sw_framestore_dump` utility, type:
   ```
man sw_framestore_dump.
   ```
3. On the workstation, create the framestore directories on the NAS by typing:
   ```
mkdir /hosts/<nas hostname>/data/<framestore id>
   ```

**Copying Projects and Clip Libraries to the NAS Directory**

After configuring the NAS, you can copy existing projects and clip libraries from the workstations to the NAS directory you created. This procedure is only necessary if you want to keep your existing material on a framestore in the Stone Switched configuration. Repeat this procedure on each workstation whose media you want to preserve in the Stone Switched configuration.

To copy projects and clip libraries to the NAS directory:
1. Copy all projects and clip libraries to the NAS directory. First type:
   ```
cd /usr/discreet
   ```
   Then type:
   ```
cp -rp clip project /hosts/<nas hostname>/data/<new framestore id>
   ```
   **NOTE:** This process may take an extended period of time if your projects or clips are large.
2. Remove or rename the original directories in /usr/discreet/ by logging in as root and typing

```
cd /usr/discreet
```

Then rename the directory by typing:

```
mv <directory> <directory moved>
```

where <directory> is the original directory and <directory moved> is the destination directory. For example:

```
mv /usr/discreet/clip /usr/discreet/clip.original
```

and

```
mv /usr/discreet/project /usr/discreet/project.original
```

**NOTE:** It is recommended that you rename, rather than remove, the directories so that they are available as backups.

3. If you are transferring material from projects created in versions earlier than Inferno 5.3, Flame 8.3, Flint 8.3, Smoke 5.3, or Fire 5.3, edit the projects.rdb file in /usr/discreet/project/<name of project>/ by changing all “Setup Dir” values to the NAS path:

```
/hosts/<nas hostname>/data/<new framestore id>
```

4. Repeat steps 1-3 for each framestore ID number.

---

### Assigning Compatible User IDs

Assign the same user ID to all like software on all workstations in your Stone Switched configuration. For example, on each workstation in your configuration where Flame 2007 is installed, Flame 2007 should have the same user ID. This user ID numbering system will help you track users in the Stone Switched network because you can easily identify who is reading or writing material with the user ID.

You can alter user IDs using the following procedure or using `vi` (Virtual Interface) commands described in “Using Visual Editor Commands” on page 24.

**To assign user IDs to software:**

1. Log in as root on a system in your Stone Switched configuration.

2. Change to the `etc` directory by typing:

```
cd /etc
```

3. In case you incorrectly modify the `passwd` file, create a backup by typing:

```
cp passwd passwd_backup
```
4. Open the passwd file for editing by typing:

```bash
nedit passwd
```

Lines similar to the following identify the user IDs of the Autodesk applications installed on the system:

```plaintext
smoke2007::101:20:smoke 2007:/usr/discreet/smoke_2007:/bin/tcsh
flame2007::102:20:flame 2007:/usr/discreet/flame_2007:/bin/tcsh
```

where 101, and 102 are the user IDs for Smoke 2007, and Flame 2007, respectively.

5. Change the user IDs on each workstation. In the previous example, you could change the IDs as follows:

```plaintext
smoke2007::53101:20:smoke 2007:/usr/discreet/smoke_2007:/bin/tcsh
flame2007::53102:20:flame 2007:/usr/discreet/flame_2007:/bin/tcsh
```

Although the user IDs that you assign may vary from the ones shown, it is beneficial to create a numbering scheme that identifies the software version in the user ID.

6. Follow the same procedure on each workstation in the Stone Switched configuration. Following the example in step 5, you assign the user ID of 53102 to Flame 2007 on each workstation in the Stone Switched configuration.

## Defining the Central Path

The central path tells each host where the projects and clip libraries are located. The central path is defined with the `centralPath.cfg` configuration file. You must define it on every system connected to your network, regardless of whether or not the host is running Stone Switched functionality.

Libraries for the LOCAL configuration can either be stored on the NAS for hosts that are using Stone Switched (see “Configuring the Hosts” on page 31 for further information on SWS) or locally in `/usr/discreet/`. 
To define the central path:

1. Log in as root.

2. Type:
   ```
cd /usr/discreet/cfg/
   ```
   
   **NOTE:** Create this directory if it does not exist by typing:
   ```
mkdir /usr/discreet/cfg
   ```

3. In a text editor, open `centralPath.cfg`. On line 1, enter the required keyword.

<table>
<thead>
<tr>
<th>Type</th>
<th>To:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CENTRAL</td>
<td>Specify that projects and clip libraries are located on the NAS, using the path specified. You must use CENTRAL if the host workstation is connected directly to the Stone Switched configuration.</td>
</tr>
<tr>
<td>LOCAL</td>
<td>Specify that projects and clip libraries are located on the host, in /usr/discreet/.</td>
</tr>
</tbody>
</table>

   You can use either `CENTRAL` or `LOCAL` if the host workstation is connected by the network to the Stone Switched configuration.

4. On line 2, enter the path to the clip libraries on the NAS by typing:
   ```
   /hosts/<nas hostname>/data
   ```

   The path is necessary if you want to access the centralized clip libraries.

### Configuring the Hosts

Stone and Wire 2007 uses three components to manage your system: `sw_probed`, `swsd`, and the Autodesk application. The `sw_probed` daemon is installed with Stone and Wire on each host. It receives queries from the Stone Switched daemon and executes the reconfiguration commands. You use the Stone Switched application to configure and activate storage switches.

You configure the `sw_probed` daemon in the `sw_probed.cfg` configuration file. To use Stone Switched, you must define the [SWS] keyword section in this file on each host. Use the [SWS] keyword to indicate the workstation and port on which the Stone Switched daemon is running. The `sw_probed.cfg` file already exists if you are configuring Stone Switched on an existing Stone and Wire installation. In that case, you should verify the keywords are set as described in the following procedure.

Changes to the SelfDiscovery option are particularly pertinent to Stone Switched. Also note that `sw_framestore_map` contains only local hosts.
NOTE: You must configure all workstations on the Wire network, regardless of whether they are part of the Stone Switched configuration.

To configure the host workstations and the server:
1. Exit all Autodesk applications.
2. Log in as root.
3. Set up the `centralPath.cfg` configuration file. See “Defining the Central Path” on page 30.
4. Type:
   ```
   cd /usr/discreet/sw/cfg/
   ```
5. Open the `sw_probed.cfg` file in a text editor.
7. Ensure that the correct information appears in the [SWS] keyword section of the `sw_probed.cfg` file. If the [SWS] keyword does not appear by default, go to step 8. If the [SWS] keyword section appears by default, do the following:
   - Under the [SWS] heading, uncomment `Server=` and specify the IP address of the Stone Switched server:
     ```
     Server=<host IP address or name>
     ```
   - Under the [SWS] heading, uncomment `Port=<port number>`. If necessary, modify the default value of the Port keyword to correspond to the TCP port number used to communicate with the Stone Switched server. Usually this value is 7458. It must be the same as that defined in the [GENERAL] keyword section of the `sws.cfg` configuration file. See “Configuring the Stone Switched Daemon” on page 25.
8. If the [SWS] keyword section does not appear by default in your `sw_probed.cfg` file, do the following:
   - Add an [SWS] keyword section to the bottom of the file by typing:
     ```
     [SWS]
     ```
   - Add the following line under [SWS] to specify the IP address of the Stone Switched server:
     ```
     Server=<Stone Switched server IP address or name>
     ```
   - Add the following line to specify the TCP port number used to communicate with the Stone Switched server:
     ```
     Port=<port number>
     ```
It must be the same as that defined in the [GENERAL] keyword section of the $sws.cfg$
configuration file. See “Configuring the Stone Switched Daemon” on page 25.

9. Restart Stone and Wire by typing:

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

10. Verify the contents of the $sw_framestore_map$ file by logging in as root and then typing:

    `cd /usr/discreet/sw/cfg`

    `nedit sw_framestore_map`

    Only the local framestore should be listed. Delete all other framestores from the list. This is
    necessary for the SelfDiscovery option to work correctly.

11. Repeat steps 1-10 for each host on the Stone Switched network.
Installing Stone Switched
Summary

- **Defining the Stone Switched Configuration** .................................................. 35
- **Adding a Dangling Framestore** ................................................................. 44
- **Switching Storage** .................................................................................. 45
- **Stone Switched Volume Integrity Check** .................................................. 47
- **Naming Filesystems** ................................................................................ 47
- **Association of Batch Setups** ................................................................. 48
- **Command Line Utilities (DL Tools)** ....................................................... 48
- **Switch Panel Configuration Tab** ............................................................ 48

**Defining the Stone Switched Configuration**

Create a default Stone Switched configuration using the Stone Switched application that reflects the way in which hosts and framestores are connected to the patch panel. Many of these steps are automated. After you define the default configuration, you can use the Stone Switched application to quickly switch hosts and framestores in the Stone Switched configuration.

Some user interface elements in the Stone Switched application are not used during the automated process. For a description of these elements, see “Switch Panel Configuration Tab” on page 48.

⚠️ **WARNING:** The software configuration must exactly represent the way in which the filesystems and hosts are physically connected to the patch panel or you will not be able to successfully switch framestores.

**NOTE:** To move host and framestore icons during the configuration process, use the middle mouse button to click and drag the icon.
To define the Stone Switched configuration:

1. Exit from all Autodesk Effects or Editing applications running on all hosts that will be affected.

2. On a workstation on which the Stone Switched application is installed, log in to the Editing or Effects application account.

3. Do one of the following to display the Stone Switched login dialog:
   - If you are on an IRIX workstation, in the Toolchest on the IRIX desktop, click Stone Switched.
   - If you are on a Linux workstation, double-click the Stone Switched icon on the desktop.

   The Stone Switched login dialog appears.

4. In the login dialog, enter the root password for the workstation in the Password field. The Stone Switched panel appears.

5. Configure the switch panel. See “To configure the switch panel:” on page 37.

6. Configure the hosts and framestores. See “To configure the hosts and framestores:” on page 39.

7. Connect the framestores. See “To connect the filesystems:” on page 43.

8. Apply the configuration. See “Applying Your Configuration and Exiting” on page 44.

   The software is now configured to match the physical hardware configuration.
To configure the switch panel:

1. Click the Switch Panel Configuration tab.

2. Click the Switch icon to define the switch panel.

The New Switch Properties dialog appears. The General tab displays the type of switch panel connected and the number of ports available.
3. If your patch panel already has an IP address, enter the IP address in the Network Address field and go to step 5. If your patch panel does not have an IP address, go to step 4.

4. Click Configure Address to configure the IP address, subnet, and gateway address of the patch panel. Enter the value in the corresponding numeric field.

You will require either the current IP address or the MAC® address of the patch panel. The MAC address may be located on the back of the patch panel. For new configurations, there is a sticker on the back of your Stone Switched patch panel that states “Ethernet Address”, followed by either a hyphen (-) or a colon (:). This should be entered as the MAC address. If you do not know the IP or MAC address values, contact your system administrator. Further information about these fields is also available in the information box at the top of the General tab.

**NOTE:** When configuring the MAC or Current IP address, enable the corresponding Radio button.
5. In the Patch Panel Network Configuration dialog, click OK.

6. In the New Switch dialog, click OK.

A graphic representing the patch panel appears.

**NOTE:** To save your configuration settings without applying them, click Save. If you click Exit Switch Config without saving, configurations that you defined are lost.

**To configure the hosts and framestores:**

1. On the Switch Panel Configuration panel, click the New Host icon to define the first host workstation on the network.

   ![New Host dialog]

   The New Host dialog appears.

2. On the General tab, enter the name of the host in the Hostname field. The name of the host must be resolvable. Check in a UNIX shell if the host is resolvable by typing:

   `ping -c 1 <hostname>`
3. On the FibreChannel tab, click Detect.

You are prompted to add the framestore.

4. Click Yes to add the framestore to the Stone Switched configuration.

All the fibre channel ports are detected and listed on the FibreChannel tab.

5. In a UNIX shell, verify that the fibre channel adapters listed in the FibreChannel tab are indeed fibre channel adapters in the Stone Switched configuration by typing:

   `su`

   and entering the root password. Then type:

   `/usr/discreet/sw/disk_summary`

Only fibre channel adapters that correspond to storage devices should be listed in the FibreChannel tab. If an adapter is not a fibre channel adapter corresponding to a storage device, it is not listed as either DISCREET or STON+WIR in the disk summary. You must
delete any such fibre channel adapter from the list in the New Host Properties dialog. Select the corresponding number and click Remove.

6. Repeat steps 1-5 for each host in your Stone Switched configuration.

7. Click one of the host graphics and drag to the appropriate port number on the switch panel to connect the first fibre channel controller to the switch panel.

8. Repeat step 7 for each fibre channel controller on each host connected to the patch panel. The number of loops appears below the name of the host.

**NOTE:** To remove a line connecting two elements, click a line and select Remove. You must click directly on the line or the appropriate menu will not appear.

The host is now connected to the switch panel.

9. Click the first Filesystem icon and drag it to the appropriate port number on the switch panel to connect it to the switch panel.

The filesystem is now connected to the switch panel.
10. Repeat step 9 for each Filesystem icon.

**NOTE:** To save your configuration settings without applying them, click Save. If you click Exit Switch Config without saving, configurations that you defined are lost.

**Connecting the Filesystems with Hosts**
Once you define how the switch, hosts, and filesystems are physically connected, you can define which hosts are virtually connected to which filesystems.
To connect the filesystems:

1. In the Stone Switched Configuration dialog, click the Filesystem Configuration tab. The hosts and filesystems that you defined in the Switch Panel Configuration panel appear.

2. Click a Host icon and drag to the filesystem to which you want to connect it. This can be any filesystem on the network; it does not need to be the same filesystem that it is connected to on the patch panel.

The host is now connected to this filesystem.
3. Repeat step 2 for each host and filesystem.

**Applying Your Configuration and Exiting**

When you create a Stone Switched setup, you can save, or save and apply the configuration.

<table>
<thead>
<tr>
<th>Select:</th>
<th>To:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Save</td>
<td>Save your configuration without applying it. Your configuration will be saved automatically and loaded the next time you enter the Stone Switched application.</td>
</tr>
<tr>
<td>Apply and Save</td>
<td>Stop Stone and Wire on each host. The Stone Switched server reconfigures the Stone Switched panel to correspond with the configuration you created. The fibre channel adapters on each host are rescanned and Stone and Wire is automatically restarted. The progress bar indicates the status of the operation. After about 1 minute, the following message appears in the message bar: Interface Configuration Successfully Saved.</td>
</tr>
<tr>
<td>Exit Switch Config</td>
<td>Exit Stone Switched. If you click Exit and then click Yes without saving, any configurations that you have defined are lost.</td>
</tr>
</tbody>
</table>

**Adding a Dangling Framestore**

The method you use to add a dangling framestore depends on whether that framestore contains media. The path `/hosts/<NAS>/<Shared folder>/` is commonly known as the central path.

**To add a dangling framestore that contains media:**

1. Log in as root on the host currently connected to the framestore.

2. Create a directory for the framestore metadata:
   ```bash
   mkdir -pr /hosts/<NAS>/<Shared_folder>/<Framestore_id>
   ```

3. Copy the framestore metadata to the NAS:
   ```bash
   cp -r /usr/discreet/clip /hosts/<NAS>/<Shared_folder>/<Framestore_id>/
   cp -r /usr/discreet/project /hosts/<NAS>/<Shared_folder>/<Framestore_id>/
   ```
4. On any workstation on which the Stone Switched application is installed, launch the Stone Switched application and add the dangling framestore.

To add a dangling framestore that does not contain media:
1. Log in to the NAS as root.
2. Create the framestore directory:
   ```bash
   mkdir -p /hosts/<NAS>/<Shared_folder>/<Framestore_id>/
   ```
3. On any workstation on which the Stone Switched application is installed, launch the Stone Switched application.
4. Add the dangling framestore.
5. Switch a host to this filesystem.
   The framestore currently connected to that host becomes the dangling framestore.
   
   **NOTE:** The switch may fail if there is no partition created on this framestore or if the partition has a different framestore id.
6. Configure the storage using `sw_config`.
7. Restart stone+wire:
   ```bash
   /etc/init.d/stone+wire reload
   ```
8. Switch the original storage.

**Switching Storage**

Switch Stone Direct disk arrays, as required, using Stone Switched. There is no need to physically rewire hosts and Stone Direct disk arrays.

**To switch storage:**
1. Close all Autodesk applications running on all hosts that will be affected.
2. On a workstation on which the Stone Switched application is installed, log in to the Editing or Effects application account.
3. Do one of the following to display the Stone Switched login dialog:
   - If you are on an IRIX workstation, in the Toolchest on the IRIX desktop, click Stone Switched.
If you are on a Linux workstation, click the Stone Switched icon on the desktop. The Stone Switched panel appears.

4. In the login dialog, enter the root password in the Password field. The Stone Switched panel appears.

5. Click the Filesystem Configuration tab. The current configuration of your filesystem appears.

6. Click the icon of the first host whose configuration you want to change and drag to the new framestore. This can be any framestore on the network; it does not need to be the same framestore that it is connected to on the patch panel. The host is now connected to the new framestore, and the framestore is disconnected from the host to which it was previously linked.

7. Repeat step 5 for each host.

8. Verify the configuration is correct.

**WARNING:** Attempting to cancel or pause the switch operation after you initiate it may cause problems with the configuration. It is important to verify the configuration prior to applying it.
9. Click Apply and Save.
Stone and Wire is automatically stopped on each host and the Stone Switched server reconfigures the Stone Switched patch panel to switch storage paths to correspond with the new settings. The fibre channel adapters on each host are then rescanned and Stone and Wire is automatically restarted.

The following message indicates that changes were successfully applied:

Interface Configuration Successfully Saved

10. Restart Autodesk applications on the affected hosts, as required.

Stone Switched Volume Integrity Check
When you perform a switch, a volume integrity check is performed on each volume involved in the switch. This volume integrity check is a scaled down version of the volume integrity check performed on start-up in Autodesk applications.

The purpose of the volume integrity check in the context of Stone Switched is to verify that all volumes that are being switched are available (not being accessed) for the switch.

NOTE: The volume integrity check runs even if it is set to 'off'.

Naming Filesystems
When naming filesystems, keep filesystem names distinct from host names. When you switch filesystems between hosts, you will be less likely to confuse the contents of filesystems if you maintain distinct names that reflect the contents of the filesystem. For example, you may have a
host called tunisia with a filesystem called filmfs and another host called eritrea with a filesystem called editingfs.

**NOTE:** Filesystem names must be unique and have no spaces.

### Association of Batch Setups

Batch setups stay with the framestore. Therefore, if you save Batch setups on framestore1 associated with the host Tunisia and then you switch framestore2 from the host Eritrea, the setups that you saved will be switched with framestore1 to Eritrea. If you want to access these setups, you will have to use the host Eritrea.

### Command Line Utilities (DL Tools)

If you used command line utilities (DL tools) after you performed a switch, the utilities will affect the files and clips on the current framestore of the host. In other words, DL tools stay associated with the host.

### Switch Panel Configuration Tab

The user interface elements in the Switch Panel Configuration tab are described as follows.

#### Buttons

There are three buttons in the upper-left corner of the Stone Switched application.

- **Host button** — Click to create and configure a new Host icon.

- **Stone fs button** — Represents all filesystems on a given workstation. Click to create and configure a new Stone filesystem.
**Switch Panel button** — Click to create and configure a new switch panel.

**Dialogs**
When you click the Host or Stone fs button, the associated dialog appears.

**New Host Properties Dialog**
Use the New Host Properties dialog to configure hosts. This dialog includes the following tabs.

**General tab** — Use to enter the name of the host in the Hostname field.

**FibreChannel tab** — Use to add fibre channel adapters. Do one of the following on the Fibre Channel tab:

- Click Detect to detect all fibre channel adapters and the throughput of the adapters.
- Enter a value in the Adapter field for each adapter. After entering each value, click Add.
**Ports tab** — Use to assign the fibre channel ports on the host to ports on the patch panel.

![Ports tab image]

**File System tab** — Use to select the filesystem you want to connect to this host.

![File System tab image]

**Advanced tab** — If you added your fibre channels manually (using the Add button), switch to the Advanced tab to enter the throughput of the adapters.
New Filesystem Properties Dialog
The New Filesystem Properties dialog has three tabs. Use the General tab to enter a filesystem name in the Filesystem Name field, the ID number in the Filesystem ID field, and the throughput speed. See “Naming Filesystems” on page 47.
General Properties Dialog
Use the General Properties dialog to examine or set the Stone Switched daemon properties.
Icons
When you click OK in the New Host Properties, or New Filesystem Properties dialog, an icon appears on the Switch Panel Configuration panel to represent the host or filesystem.

**NOTE:** Remove icons by right-clicking the icon and choosing Remove. View properties of the icon by right-clicking and choosing Properties.

**Host icon** — Represents the host workstation such as an Octane2 or Linux workstation.

**Filesystem icon** — Represents a filesystem.

**NOTE:** All volumes in the same filesystem are represented as one filesystem where a volume could be stonefs, stonefs1, or stonefs2.

**Switch Panel icon** — Represents the Stone Switched patch panel.

**NOTE:** Drag from an icon to a number or a number to an icon on the patch panel to connect the patch panel to the icon.
Configuring Stone Switched
Troubleshooting

This chapter proposes possible resolutions to problems that you may encounter when working with Stone Switched.

A good practice for troubleshooting is to log on to each workstation involved in the switch so you can monitor the feedback in the console of each workstation. However, do not start any software except for the workstation running Stone Switched. By logging on to each workstation, you will be able to follow the switch in the console and therefore be able to troubleshoot problems more easily.

Use the following table to troubleshoot common Stone Switched configuration problems.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause and Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the Stone Switched application, ports on my switch panel appear red.</td>
<td>The port has become inactive. Verify your hardware connections. You are accessing the patch panel through the Apcon web utility. Exit the web utility.</td>
</tr>
<tr>
<td>I receive the following error message: The configuration utility is currently in use by &lt;hostname&gt;.</td>
<td>A host may be accessing the storage that is involved in the switch via Stone and Wire. Rebooting without closing the Stone Switched application can cause this problem to occur. Close the connection to the storage before performing the switch. If the message recurs even if the host is not using the Stone Switched application, restart the Stone Switched daemon.</td>
</tr>
<tr>
<td>Problem</td>
<td>Cause and Resolution</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>I receive the following error message: <code>&lt;filesystem name&gt;</code> supports 2Gb, however, <code>&lt;filesystem name&gt;</code> supports 1Gb. Mixed speeds are not yet supported.</td>
<td>The likely cause of this error message is that you are trying to switch storage configurations that are incompatible. For example, you can only switch a 1-GB two-loop with a 1-GB two-loop storage.</td>
</tr>
<tr>
<td>I receive the following error message: <code>&lt;hostname&gt;</code> is in use.</td>
<td>When you perform the switch, certain workstations in the configuration are still running an application. Close all applications and/or run the <code>vic</code> utility. Refer to the “Utilities” chapter in the user's guide for your application.</td>
</tr>
</tbody>
</table>
| I am unsure of the storage associated with the various hosts in my configuration. | You can verify the number of controllers and drives per controller for each host by typing: `hinv`  
You can verify the type of drives that are attached to the workstation by typing: `cd /usr/discreet/sw/` `disk_summary`  
You can verify which framestore is mounted on your host by typing: `cd /usr/discreet/sw/tools` `sw_framestore_dump-local` |
| I want to configure my storage differently.                            | Use the `sw_config` utility. For complete information on the `sw_config` utility, refer to the Autodesk Stone and Autodesk Wire 2007 Filesystem and Networking Guide.                                           |
| I realized after I had initiated the switch, that my configuration was not set up correctly to support Stone Switched. | When you perform a switch, errors in the configuration are automatically detected by the system. The system will not attempt to perform the switch. The configuration will revert (roll back) to the settings before the switch was attempted. |
| I receive seemingly unexplainable .ref.lock errors.                    | Reference locks are placed on all workstations in the Stone Switched configuration when you switch storage to prevent access of framestores in the configuration—until the switch is complete.  
One of the workstations in your Stone Switched configuration may have had an abnormal termination. In this case, you may receive .ref.lock errors. To reset the lock on all the host workstations in your Stone Switched configuration, you need to exit and re-enter the Stone Switched panel. |
Setting Up the x346 NAS from Scratch

Summary

Workflow for Setting Up the x346 NAS from Scratch ........................................  57
Configuring the Hardware RAID .................................................................  58

Workflow for Setting Up the x346 NAS from Scratch

Use the workflow in this section describes to set up an x346 NAS to work with Autodesk Stone Switched 2007.

NOTE: Autodesk ships the NAS for Stone Switched already configured so under normal circumstances you should not need to use this appendix. It is provided as information that may be useful in troubleshooting situations.

To set up the x346 NAS from scratch:

1. Archive all metadata on the data disk of the NAS. One way to do this is to archive everything to a tar file and copy that file to another location on the network.

   NOTE: Do not copy the archive to the system disk of the NAS as the system disk is reformatted during the upgrade procedure.

2. Configure the hardware RAID inside the x346. See “Configuring the Hardware RAID” on page 58.


4. Configure the XFS filesystem that will contain the metadata for all media on all framestores in the Stone Switched configuration.
5. Assign the IP address and set up load balancing and jumbo frames. See “Setting Up the Autodesk NAS” on page 19.

6. Restore the metadata you archived prior to the upgrade.

### Configuring the Hardware RAID

You must configure the hardware RAID inside the NAS prior to installing Linux.

⚠️ **WARNING:** You should not configure the hardware RAID inside the NAS unless you intend to subsequently perform a fresh install of Linux on the NAS.

**To configure the hardware RAID inside the NAS:**

1. Insert the ServeRAID Support CD included with your Stone Switched shipment, in the CD-ROM drive of the NAS.

2. Power on the NAS.


   **NOTE:** This may take a few minutes. Be sure you do not interrupt the boot process by responding to any of the prompts that appear.

4. At the bottom of the ServeRAID Manager window, click Cancel, then click Yes to confirm the cancel.

5. Set the caching behaviour of the hardware RAID in the ServeRAID Manager window as follows:
   - Expand localhost and select controller1 to display the four internal hard disks on one of the channels.
   - Right-click each disk and select Change write-cache mode to write.

6. Click Create to create a disk array.

   **NOTE:** If not all of the four disks are visible, reseat the drives and reboot the computer.

7. Select Custom Configuration to manually configure the controller, then click Next to display the window in which you define arrays.

8. On the right side of the window, click the New Array A tab, and on the left side of the window, select all of the drives. You can **CTRL**-click to select each drive or **SHIFT**-click to select the range of drives.
9. Click >> (Add all drives) to move all the drives to the array.

   **NOTE:** All drives are data drives. Do not specify any hot spares.

10. Click Next to display the window in which you define logical drives.

11. Define the logical drives as follows:

    - Select 5 from the drop-down RAID Level list.
    - Enter 20000 in the Data field.

12. Click Define New Logical Drive.

    You will install Red Hat Enterprise Linux WS on the logical drive you define above. A second logical drive is created from the remaining disk space. You will format it as an XFS filesystem, and it will hold all of the metadata for all framestores in the Stone Switched configuration. If necessary, set the RAID level of the second logical drive to 5.

13. Click Next to display a summary of the configuration you just created.

14. Review the configuration. If you need to modify any settings, click Back.

15. Click Apply, then click Yes when prompted to apply the new configuration.

    The configuration is saved in the ServeRAID controller as well as on the physical drives.

16. Click Restart to exit from the ServeRAID Manager, eject the CD from the CD-ROM drive, and reboot.
Setting Up the x346 NAS from Scratch