Autodesk®
Stone® Switched 2009

Installation and User Guide

Autodesk®

Autodesk® Inferno® 2009, Autodesk® Flame® 2009, Autodesk® Flint® 2009, Autodesk® Smoke® 2009, Autodesk® Backdraft® Conform 2009

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1 Introduction

Summary

About This Document

This document includes information about Autodesk® Stone® Switched . It describes how to configure your hardware and software to switch framestores between Autodesk Visual Effects and Finishing workstations (Autodesk Inferno®, Autodesk Flame®, Autodesk Flint®, Autodesk Smoke®, Autodesk Backdraft® Conform).

Intended Audience

System administration knowledge of 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 Linux, 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 visual effects and editorial work.

Stone Switched 2009 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 2009 Configuration Guide*.

NOTE: Stone Switched 2009 supports only Stone FS volumes. Workstations using standard file system volumes for their Visual Effects and Finishing media storage cannot be included in a Stone Switched network.

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 workstationsconnected to your Stone Switched configuration, provided that both workstations are using the Stone FS filesystem.

Minimal Hardware and Software Configuration

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 minimal hardware configuration for the Autodesk x346 is:

- Intel® Xeon® 3.6 GHz Single Core Processor
- 4 GB RAM
- At least 4 x 73 GB SCSI Ultra 320 drives
- Hardware RAID 5
- Red Hat® Enterprise Linux® Workstation 4, Update 2 (64 bit)
- XFS filesystem
- 2-port Broadcom PCI-E 133 low-profile network adapter

If you have an x345 NAS from a previous release of Stone Switched, you will need to upgrade it to the x346 NAS, as described in "Workflow for Setting Up a x346 NAS from Scratch" on page 55.

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 Configuration Guide*.

Workstations — Workstations on the same Wire® network, running a Visual Effects and Finishing application under Red Hat Enterprise Linux Workstation 4, Update 2 or 3.

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 Visual Effects and Finishing 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. Every workstation in the Stone Switched configuration must run the Stone Switched daemon.

You install both the Stone Switched application and the Stone Switched daemon through an install package that you download from the Autodesk Web site.

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 Visual Effects and Finishing products (Linux Red Hat Enterprise Linux WS 4, Update 2 or 3).

Autodesk Stone and Wire — This is installed automatically with any Visual Effects and Finishing application.

Supported Stone Switched Configurations and Switch Rules

A Stone Switched installation can include both 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.

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:

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.

Additional Recommended Rules

The following two rules are not mandatory for switching framestores, but not respecting them can have an impact on the performance of your Stone Switched setup:

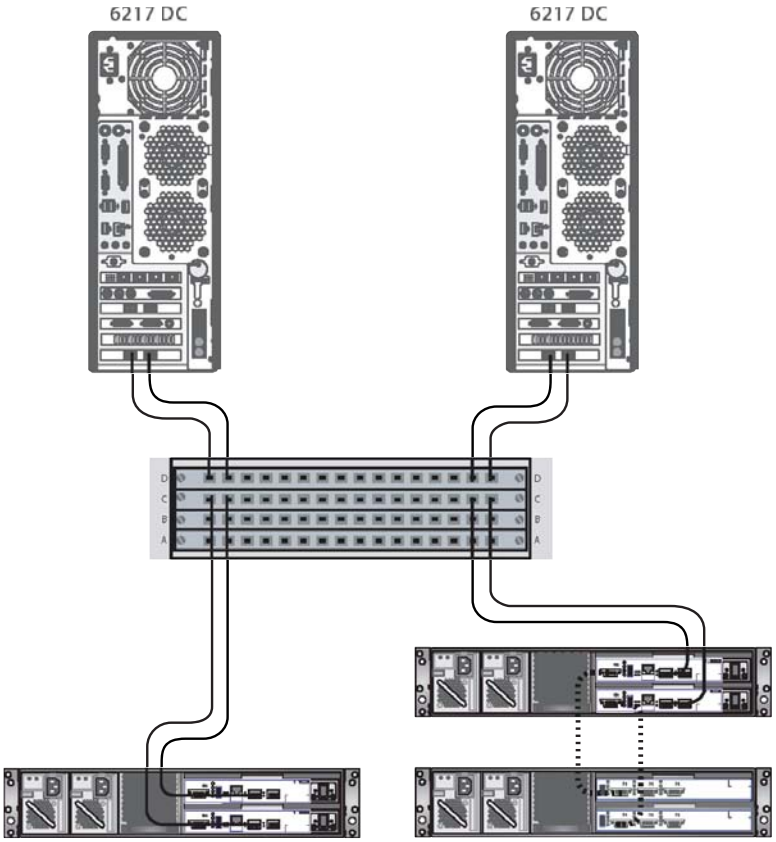
- Have the same number of LUNs.
- Have filesystems composed of the same number of physical disks. Note that the size of the disks may vary. For example, the filesystem on one storage system may be composed of 15 disks of 73 GB, and the filesystem on the other system may be composed of 15 disks of 146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

Sample Stone Switched Configuration

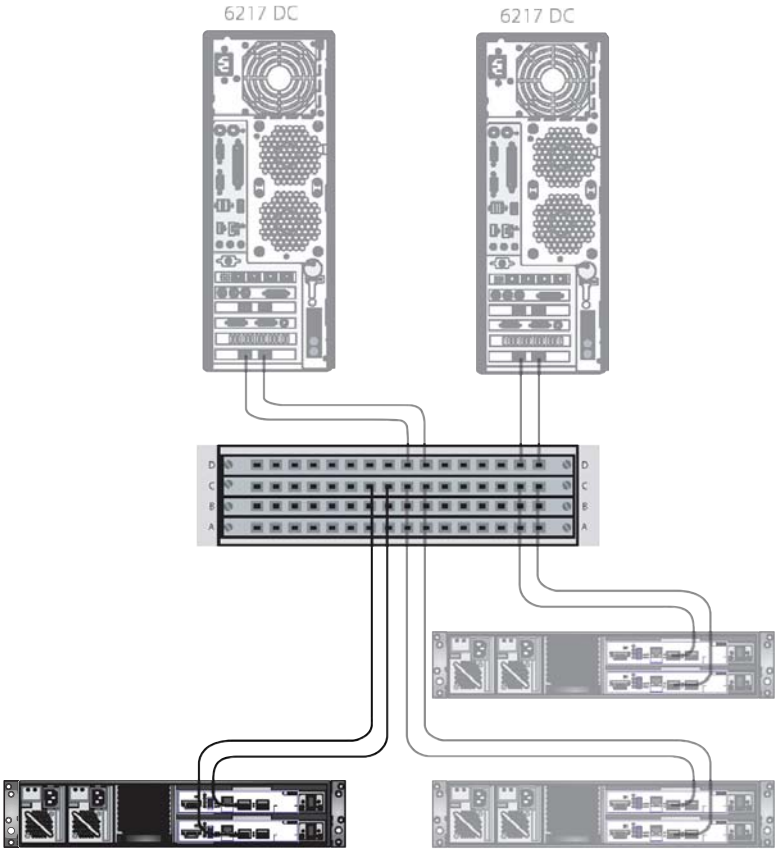
The first diagram in this section illustrates the following connections through the 64-port patch panel: an IBM® 6217 DC workstation connected to a 2-loop XR-series storage, and an IBM 6217 DC workstation connected to a 2-loop XR-series storage.

The second diagram illustrates a configuration with a dangling framestore.

Sample Stone Switched Configuration



Sample Dangling Framestore Configuration



Compatibility

The following applications are concurrent versions and are compatible with one another:

- Autodesk Inferno 2009
- Autodesk Flame 2009

- Autodesk Flint 2009
- Autodesk Smoke 2009
- Autodesk Backdraft Conform 2009
- Autodesk Stone and Wire 2009
- Autodesk Burn™ 2009

This release is *not* compatible with previous releases of Visual Effects and Finishing products.

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

Host	Framestore	Read- and Write- Capabilities
Current version	Current version	Full read- and write-capabilities
Newer	Older	Read-only capabilities
Older	Newer	No read- or write- capabilities. Contents not visible

Fixed and Known Bugs

For a list of fixed and known bugs for Stone Switched 2009, refer to the *Release Notes* for your application.

Related Documentation

This release has documentation that helps you install, configure, and use the software. The documentation is available from your product DVD, on the Autodesk web site, and installed with the product (as PDF files and as an HTML help system).

For a list of of all the documentation available, visit *http://www.autodesk.com/me-documentation*. From this page you can access the complete documentation library.

You should also refer to your product's release notes for all late-breaking release information.

Contacting Customer Support

For contact information for Autodesk Media and Entertainment Customer Support, consult your release notes, or 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*.

2 Installing Stone Switched

Summary

Stone Switched Installation Workflow

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

NOTE: Stone Switched 2009 supports only Stone FS volumes. Workstations using standard filesystem volumes for their Visual Effects and Finishing media storage cannot be included in a Stone Switched network.

To install and configure Stone Switched:

1. Prepare to install Stone Switched. See "Preparing for Installation" on page 11.

2. Connect the patch panel to the network. See "Connecting the Patch Panel to the Network" on page 14.
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 15.
4. Set up the NAS. See "Setting Up the Autodesk NAS" on page 16.
5. Install the Stone Switched application on every workstation to use in the Stone Switched environment. See "Stone Switched Installation" on page 21.
6. Ensure that the Stone Switched application is installed and configured on all machines on which you want to run it. See "Configuring the Stone Switched Daemon" on page 22.
7. Install the license code on each workstation where you will be using the Stone Switched user interface. See "Installing a Stone Switched License Code" on page 13.
8. 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 22.
9. Configure the storage to use the NAS server. See "Creating the Central Framestore Directories on the NAS" on page 23.
10. 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 24.
11. Define a centralized Stone and Wire metadata directory. See "Defining the Stone and Wire Metadata Directory" on page 25.
12. (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 "Migrating Media from Standalone to Stone Switched Configuration" on page 26.
13. Set the user IDs for each Autodesk application on each workstation in the configuration. See "Assigning Compatible User IDs" on page 27.
14. Configure all the host workstations in the Stone Switched configuration, whether connected directly or over the network. See "Configuring the Wire Network" on page 28.

    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.

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.

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 40.
    - Use the Filesystem Configuration panel to switch filesystems of two different hosts in the Stone Switched configuration. See "Switching Storage" on page 41.

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 among those supported. See "Supported Stone Switched Configurations and Switch Rules" on page 3.

2. Untar the Stone Switched package for the workstation to set up.

3. Choose the machines to be included in the Stone Switched network: each of them must run the Stone Switched daemon. Any machine with an Autodesk Visual Effects and Finishing application can be included in the Stone Switched network, as long as it uses only Stone FS framestores.

4. 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.

5. 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 12.

6. 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.
7. 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 13.
8. 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 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.

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 12.
2. Request a temporary license for each of those workstations. See "Requesting a Temporary License" on page 13.
3. Install the temporary license on each workstation. See "Installing a Stone Switched License Code" on page 13.
4. When you receive permanent license codes, install them. See "Installing a Stone Switched License Code" on page 13.

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. Type **`dlhostid`**.

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

   ```
   DLHOST01=886C2B75E8E57E4B03D784C3A2100AC0
   ```

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

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.

To obtain the license by:	Use:
Telephone	1-800-925-6442
E-mail	me.licensing@autodesk.com
Fax	1-514-954-7199

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:

   `cd /usr/local/flexlm/licenses`
3. Open the *DL_license.dat* file in a text editor and add the license code provided by Autodesk to the file.
4. 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.

WARNING: 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:

   • 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. So, ports 16 and 17 on a 32-port patch panel are ports A-16 and B-1 on a 64-port patch panel.

   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, in 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 31.

NOTE: If your 64-port switch uses row/column addressing, you will need to enable the "Use Row/Column Addressing" option in the Stone Switched application. See "Defining the Stone Switched Configuration" on page 31.

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.

2. On the workstation, open a web browser and navigate to *http://192.168.0.1*.

   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 , as root, type:

   ```
   shutdown -g0
   ```

   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 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.

   Make sure all the connections made to the Stone Direct disk arrays are made with the appropriate 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 or 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 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:

   ```
   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 Wire Filesystem and Networking 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.

Configure the NAS by setting up the XFS filesystem on the data disk (the disk that will hold the metadata for all framestores in the Stone Switched configuration), and by assigning an IP address to the NAS that integrates it into your network. This procedure should be performed by the system administrator.

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.

Type:	To:
df /	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.
fdisk -l	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.

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.

Type:	To:
p	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 */dev/sdb1* is 1.
d<partition_number>	Delete each of the existing partitions on the disk, if any exist. Repeat for each partition on the data disk.
p	Verify you have deleted all partitions on the disk.
x	Enter expert command mode. in expert command mode, type **g** followed by **ENTER** to create an IRIX® partition table. Then type **r** followed by **ENTER** to exit expert command mode.
p	Display the IRIX partition table you just created.
n	Create a new partition. When prompted for the partition number, type **7** and press **ENTER**. until you return to the *fdisk* utility command prompt.
t	Tag the disk as an XFS filesystem. When prompted for the partition number, type **7** and press **ENTER**. When prompted for the Hex Code, type **a**. (the code for an XFS filesystem) and press **ENTER**.

Type:	To:
p	Verify the partition table is accurate before you write it to disk.
w	Write the partition table and exit the *fdisk* utility.

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=cylinders 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 <mount_point>

   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:

   `df -Th`

10. Add a line for the filesystem to the */etc/exports* file.

    `<mount_point>` **`*(rw,sync,no_root_squash)`**

    For example:

    `/mnt/NAS_DISK *(rw,sync,no_root_squash)`

11. Export the filesystem.

    `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.

   NOTE: The default root password on a fresh installation of Red Enterprise Linux WS 4, Update 2 is **`password`**. For security purposes you should change this password.

3. To change the IP address and hostname of the NAS, open the */etc/hosts* file in a text editor.

   The following information appears:

   ```
   # Please do not remove the localhost entry
   127.0.0.1 localhost.localdomain localhost
   192.168.1.10 tunisia.yourcompany.com tunisia
   ```

   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. To change the hostname and gateway value, open the */etc/sysconfig* file in a text editor.

   The following information appears:

   ```
   NETWORKING=yes
   HOSTNAME=tunisia.yourcompany.com
   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. Open the */etc/basp/team-gec* file in a text editor and 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 netmask number.

   Change the values to match your configuration.

7. If your network can support jumbo frames, ensure that the **`ONBOOT=`** parameter is set to **`YES`** and add the **`MTU`** line to both the */etc/sysconfig/network-scripts/ifcfg-eth0* and */etc/sysconfig/network-scripts/ifcfg-eth1* files.

   After opening the files in a text editor, the following information appears:

   ```
   ONBOOT=YES
   ```

   Add the following line:

   `MTU=9000`

   Change the values to match your configuration.

8. Add a name server in the */etc/resolv.conf* file. Open the file in a text editor and add the following line:

   `nameserver 192.168.1.2`

9. 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.

10. Choose Authentication Configuration and press **ENTER**.

11. 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**.

Press Tab until you reach the:	Then:
Next field	press **ENTER**.
OK field	press **ENTER** to return to the terminal.

12. 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 2009 is used to write data on the NAS, you can create a local user called `flame2009` with a user ID `106` and a group ID `100` by typing:

    `useradd -u 106 -g 100 flame2009`

    NOTE: For more information, consult the *man page* of the *useradd* command or type **`useradd --help`** in a terminal.

13. Reboot the NAS by typing:

    `reboot`

Stone Switched Installation

To install the Stone Switched package:

1. On the workstation on which you want to install the Stone Switched package, log in as root.
2. Go to the directory where you stored the Stone Switched package. This package consists of the following files:

   INSTALL

   sws.sw.framework-<version & build number>.x86_64.rpm

   sws.sw.ui-<version & build number>.x86_64.rpm

3. To install Stone Switched, run the *INSTALL* script by typing:

   `./INSTALL`

4. If you are upgrading the application, old (previous) and new *sws.cfg* files appear beside each other in a *diff* window. The left panel displays the old *sws.cfg* file settings. The right panel displays the default *sws.cfg* that will be installed with your application. Make sure to import the settings from the file of the previous version into the new file.
5. Save and close the *sws.cfg* file when done.

Configuring the Stone Switched Daemon

The Stone Switched daemon (*swsd*) is an agent installed on all workstations connected to the switch, which controls the service and hardware of each workstation. This procedure describes how to set up the communication between the Stone Switched user interface and the Stone Switched daemons.

To configure the Stone Switched daemon:

1. On the workstation where you want to run the Stone Switched daemon, log in as root.
2. Type:

   ```
   cd /usr/discreet/sws/cfg/
   ```

3. Open the *swsd.cfg* file in a text editor, scroll to the [GENERAL] section and verify that the Port keyword is set correctly.

Keyword	Description
Port	The TCP port number used by the user interface to communicate to the *swsd* daemon. The default value is 7186. Only change this value if your system administrator warrants it.

4. Save and close the *swsd.cfg* file.
5. Toverify that the Stone Switched daemon is activated at startup, type:

   ```
   chkconfig sws on
   chkconfig --list | grep sws
   ```

   `sws` must be on for level 2, 3, 4, and 5.

6. Restart the Stone Switched daemon by typing:

   ```
   /etc/init.d/sws restart
   ```

Repeat the procedure for each workstation where you installed the Stone Switched application.

Sharing the Stone Switched Configuration File

All instances of the Stone Switched application must have access to the Stone Switched configuration file (*sws.cfg*). In addition, to ensure a consistent experience when using the Stone Switched configuration application, the Stone Switched user interface configuration file (*swsui.cfg*) must be available to all Stone Switched workstations.

To share the Stone Switched configuration file:

1. On a workstation where you installed the Stone Switched application, log in as root.
2. Back up the configuration files by typing:

   ```
   cp /usr/discreet/sws/cfg/sws.cfg
   /usr/discreet/sws/cfg/sws.cfg.backup
   ```

   ```
   cp /usr/discreet/sws/cfg/swsui.cfg
   /usr/discreet/sws/cfg/swsui.cfg.backup
   ```

3. Do one of the following:

   - If you are upgrading or already have the configuration files, copy them to the NAS by typing:

     ```
     cp /usr/discreet/sws/cfg/sws.cfg
     /hosts/<nas>/<shared directory>/sws.cfg
     ```

     ```
     cp /usr/discreet/sws/cfg/swsui.cfg
     /hosts/<nas>/<shared directory>/swsui.cfg
     ```

   - If this is a new installation, create the configuration files by typing:

     ```
     touch /hosts/<nas>/<shared directory>/sws.cfg
     ```

     ```
     touch /hosts/<nas>/<shared directory>/swsui.cfg
     ```

4. Delete the local version of the configuration files by typing:

   ```
   rm /usr/discreet/sws/cfg/sws.cfg
   ```

   ```
   rm /usr/discreet/sws/cfg/swsui.cfg
   ```

5. Create links on the workstation to the configuration files you just transferred to the NAS by typing:

   ```
   ln -s /hosts/<nas>/<shared directory>/sws.cfg
   /usr/discreet/sws/cfg/
   ```

   ```
   ln -s /hosts/<nas>/<shared directory>/swsui.cfg
   /usr/discreet/sws/cfg/
   ```

6. 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 framestores 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 terminal, go to the */usr/discreet/sw/tools* directory and 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`.

2. On the workstation, create the framestore directories on the NAS by typing:

   `mkdir /hosts/``<nas hostname>`**`/data/`**`<framestore id>`**`/`**

   `mkdir /hosts/``<nas hostname<`**`/data/`**`<framestore id>`**`/sw`**

3. Repeat this procedure for each framestore on the Stone Switched network.

Defining the Central Path

The central path tells each host where the projects and clip libraries are located. The central path is defined in the */usr/discreet/cfg/centralPath.cfg* configuration file. You must define it on every Visual Effects and Finishing workstation connected to your network, whether or not it is part of the Stone Switched network.

Libraries for the LOCAL configuration can either be stored on the NAS for hosts that are using Stone Switched (see "Configuring the Wire Network" on page 28 for further information on SWS), or locally in */usr/discreet/*.

To define the central path:

1. Log in as root on the workstation to configure.
2. Stop Stone and Wire by typing:

   `/etc/init.d/stone+wire stop`
3. Go to the */usr/discreet/cfg* directory.

   NOTE: If the directory does not exist, create it by typing:
   `mkdir /usr/discreet/cfg`
4. Open the *centralPath.cfg* file in a text editor.

   NOTE: If the file does not exist, create it by typing:
   `touch /usr/discreet/cfg/centralPath.cfg`
5. On line 1, enter one of the following keywords.

Type:	To:
`CENTRAL`	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.
`LOCAL`	Specify that projects and clip libraries are located on the host, in */usr/discreet/*.

   Use **`CENTRAL`** for workstations that are connected to the Stone Switched configuration, and **`LOCAL`** for workstations that are not in the Stone Switched configuration, but communicate via Wire to workstations that are in the Stone Switched configuration.
6. 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.
7. Define the Stone and Wire metadata directory. See "Defining the Stone and Wire Metadata Directory" on page 25.

Defining the Stone and Wire Metadata Directory

The Stone and Wire database contains the association between a framestore ID and soft-imported media path. This database must be centralized in a Stone Switched configuration.

To centralize the Stone and Wire database:

1. Log in a root.
2. Stop Stone and Wire by typing:

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

3. Go to the */usr/discreet/sw/cfg* directory and open the *stone+wire.cfg* file in a text editor.
4. Locate the [MetadataDirectory] section.

Keyword	Description
RootPath	Path to the root directory on the NAS. Usually **/hosts/<nas hostname>/data/**
Centralized	Indicates if the framestore ID name must be added to the path. Must be set to **true**.

5. Do one of the following:
   - If you do no want to migrate the metadata, restart the Stone and Wire database daemon by typing:

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

   - If you want to migrate the metadata, you have to move it to a centralized location. See "Migrating Media from Standalone to Stone Switched Configuration" on page 26.

Migrating Media from Standalone to Stone Switched Configuration

After configuring the NAS, you can copy existing media metadata from the workstations to the NAS directory you created. This procedure is only necessary if you want to keep your existing media in the Stone Switched configuration. Repeat the following procedure on each workstation whose media you want to preserve in the Stone Switched configuration.

NOTE: You must have configured the central path before migrating media from standalone to Stone Switched configuration. See "Defining the Central Path" on page 24.

To copy existing metadata to the NAS directory:

1. Log in as root on the workstation from which you want to migrate the metadata.
2. Stop Stone and Wire by typing:

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

3. Copy the existing projects, clip libraries, and the Stone and Wire database to the NAS by typing:

   cd /usr/discreet/

   cp -rp clip project
   /hosts/<nas hostname>**/data/**<framestore id>**/**

   cd /usr/discreet/sw/

   cp -r swdb/ /hosts/<nas hostname>**/data/**<framestore_id>**/sw/**

   NOTE: This process may take several minutes, depending on the size of the projects and the clips.

4. Back up the original directories in */usr/discreet/* by logging in as root and typing:

   cd /usr/discreet/

   mv <directory> <backup>

   where <directory> is the original directory, and <backup> is the path to the backup directory. For example:

   mv /usr/discreet/clip /usr/discreet/clip_bkp

   mv /usr/discreet/project /usr/discreet/project_bkp

   mv /usr/discreet/sw/swdb /usr/discreet/sw/swdb_bkp

5. Start Stone and Wire by typing:

   /etc/init.d/stone+wire start

Assigning Compatible User IDs

Assign the same user ID to all instances of the same software on all workstations in your Stone Switched configuration. For example, on each workstation in your configuration where Flame 2009 is installed, Flame 2009 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.

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 and create a backup of the *passwd* file:

   cp passwd passwd_backup

3. Open the *passwd* file in a text editor.

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

   ```
   smoke2009:x:4800:100:smoke
   2009:/usr/discreet/smoke_2009:/bin/tcsh
   ```

   ```
   flame2009:x:4801:100:flame
   2009:/usr/discreet/flame_2009:/bin/tcsh
   ```

   where `4800`, and `4801` are the user IDs for Smoke 2009, and Flame 2009, respectively.

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

   ```
   smoke2009:x:12009:100:smoke
   2009:/usr/discreet/smoke_2009:/bin/tcsh
   ```

   ```
   flame2009:x:22009:100:flame
   2009:/usr/discreet/flame_2009:/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.

5. Follow the same procedure on each workstation in the Stone Switched configuration. Following the example in step 4, you assign the user ID of `22009` to Flame 2009 on each workstation in the Stone Switched configuration.

Configuring the Wire Network

Stone and Wire 2009 uses three components to manage your system: the *sw_probed* daemon, *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 enable the self-discovery option in the configuration file. The *sw_probed.cfg* file already exists if you are configuring Stone Switched on an existing Stone and Wire installation. In that case, make sure the keyword is set as described in the following procedure. The self-discovery option is mandatory in a Stone Switched environment to enable proper Wire networking.

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:

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 24.
4. Go to the */usr/discreet/sw/cfg* directory and open the *sw_probed.cfg* file in a text editor.
5. Make sure that `SelfDiscovery=yes`. Refer to the *Autodesk Stone and Wire Filesystem and Networking Guide* for more information on the `SelfDiscovery` option.
6. Restart Stone and Wire by typing:

   `/etc/init.d/stone+wire restart`
7. Repeat steps 1-6 for each host on the Stone Switched network.

3 Configuring Stone Switched

Summary

Defining the Stone Switched Configuration

Using the Stone Switched application, create a default Stone Switched configuration 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 44.

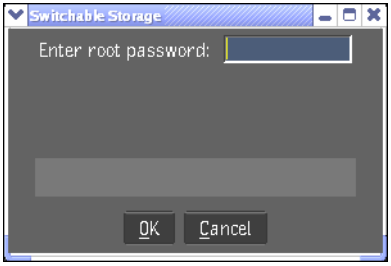
WARNING: The software configuration must exactly represent the way in which the filesystems and hosts are physically connected to the patch panel or you will not be able to successfully switch framestores.

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 all Autodesk Visual Effects and Finishing 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 Visual Effects and Finishing application account.
3. Double-click the Stone Switched icon on the desktop.

   The Stone Switched login dialog appears.



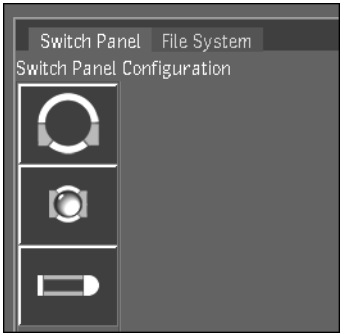
4. In the login dialog, enter the root password for the workstation in the Password field.

   The Stone Switched panel appears.
5. Configure the switch panel. See "To configure the switch panel:" on page 33.
6. Configure the hosts and framestores. See "To configure the hosts and framestores:" on page 35.
7. Connect the framestores. See "To connect the filesystems:" on page 39.
8. Apply the configuration. See "Applying Your Configuration and Exiting" on page 40.

   The software is now configured to match the physical hardware configuration.

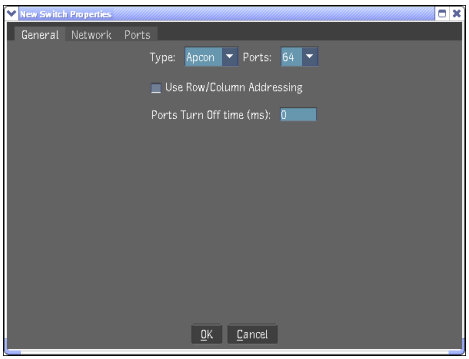
To configure the switch panel:

1. Click the Switch Panel Configuration tab.



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

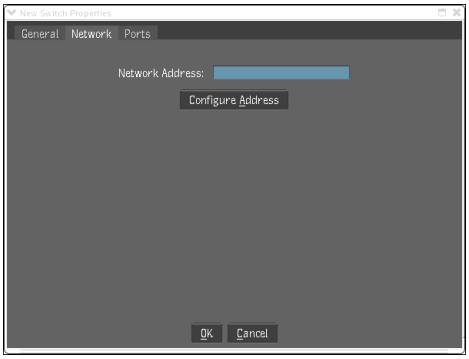
The New Switch Properties dialog appears. The General tab displays the type of switch panel connected and the number of ports available.



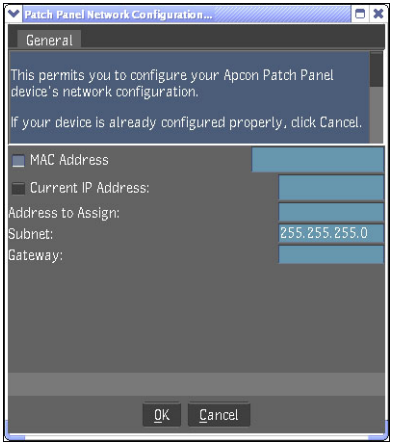
3. Optional: If you have a 64-port switch that uses row/column addressing, you must enable the Use Row/Column Addressing option.

NOTE: The field *Port Turn Off time (ms)* forces the switch to disconnect, for the time specified, the ports affected by a switch before applying the new configuration. Some newer models of the switch have this option available in the firmware. The value is in milliseconds. If the value is 0, it uses the default switch behaviour set in the firmware.

4. If your patch panel already has an IP address, enter the IP address in the Network Address field and go to step 6. If your patch panel does not have an IP address, go to step 5.



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



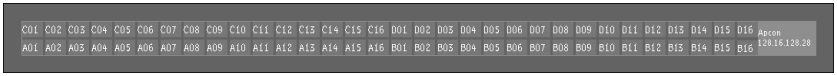
You will require either the current IP address or the MAC® address of the patch panel. The MAC address may be located on the back of the patch panel. For new configurations, there is a sticker on the back of your Stone Switched patch panel that states “Ethernet Address”, followed by either a hyphen (-) 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.

6. In the Patch Panel Network Configuration dialog, click OK.
7. In the New Switch dialog, click OK.

   A graphic representing the patch panel appears.

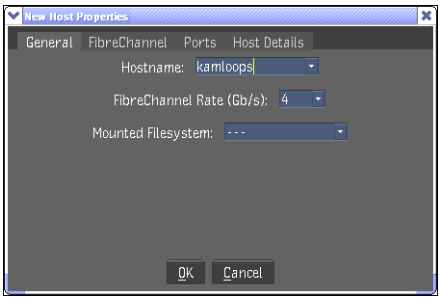


   NOTE: To save your configuration settings without applying them, click Save. If you click Exit Switch Config without saving, configurations that you defined are lost.

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.

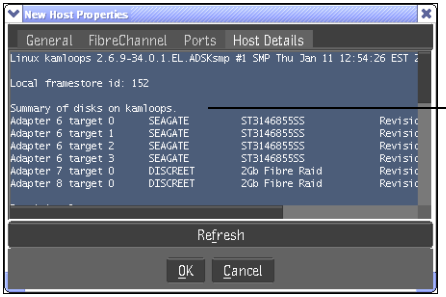
   The New Host dialog appears.



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

   `ping -c 1` `<hostname>`

3. On the Host Details tab, click Refresh.

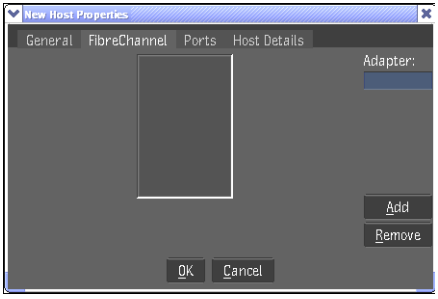


The tab displays the list of storage available to the workstation defined in the General tab.

4. In the displayed list, locate the section named *Summary of disks*.

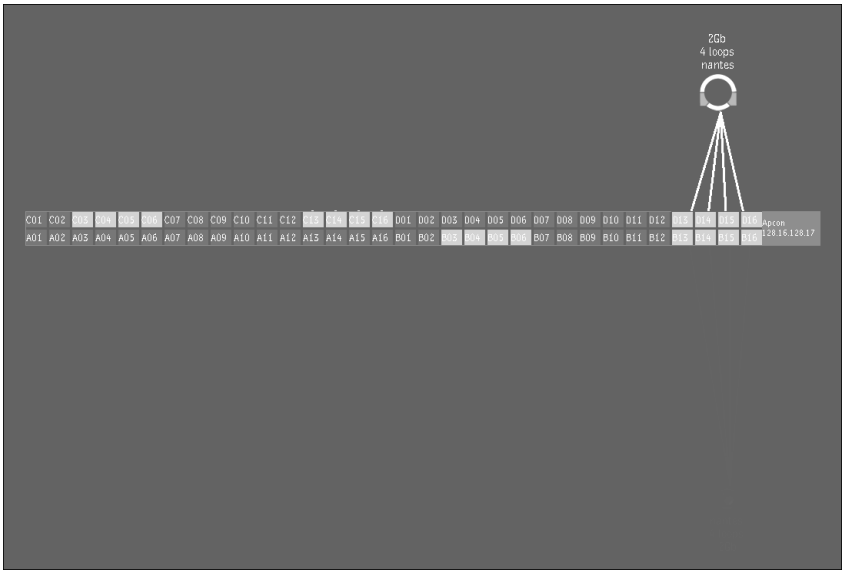
5. In the *Summary of disks* section, locate the adapters with the `AUTODESK, DISCREET`, or `STON+WIR` qualifiers; write down their adapter number.

6. On the FibreChannel tab, enter each adapter you wrote down in the previous step. Do this by entering the adapter ID in the Adapter field, and then clicking Add.



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

8. 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.



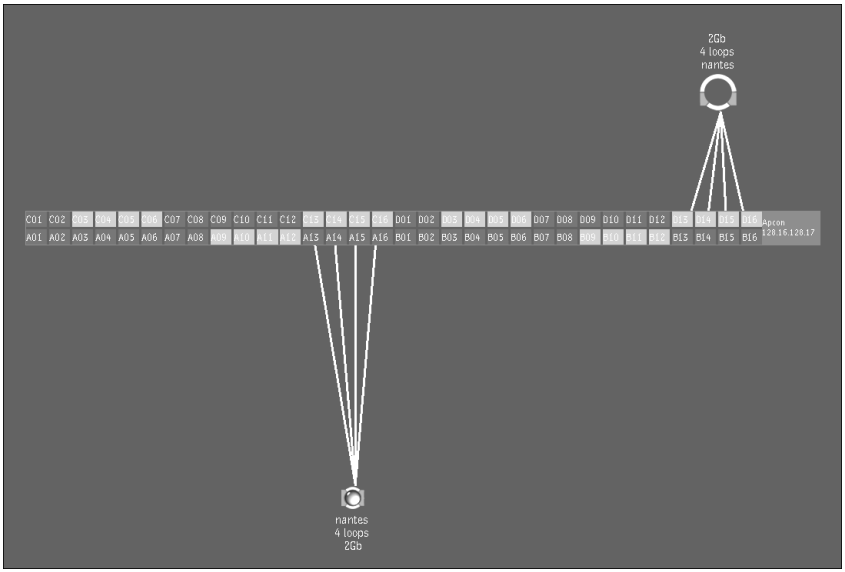
9. Repeat step 7 for each fibre channel controller on each host connected to the patch panel. The number of loops appears below the name of the host.

   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.

10. 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.



11. Repeat step 10 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.

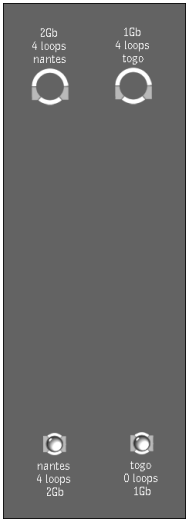
Connecting the Filesystems to the Hosts

Once you define how the switch, hosts, and filesystems are physically connected, you can define which hosts are virtually connected to which filesystems.

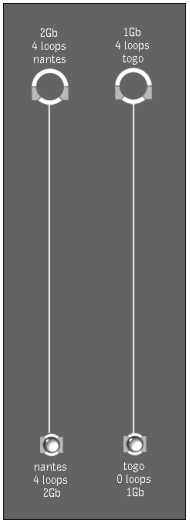
To connect the filesystems:

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

WARNING: If you click Apply and, while that operation is in progress, you kill the Stone Switched application or it crashes, the Stone Switched configuration may become corrupted.

When you create a Stone Switched setup, you can save and apply the configuration, or just save it without applying it.

Select:	To:
Save	Save your configuration without applying it. Your configuration will be saved automatically and loaded the next time you enter the Stone Switched application.
Apply and Save	Save your configuration and apply it. The Stone Switched server stops Stone and Wire on each host, and 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`
About	Display copyright information about the Stone Switched application.
Exit Switch Config	Exit Stone Switched. If you click Exit and then click Yes without saving, any configurations that you have defined are lost.

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:

   `mkdir -pr /hosts/``<NAS>`**`/`**`<Shared_folder>`**`/`**`<Framestore_id>`

3. Copy the framestore metadata to the NAS:

   mkdir /hosts/<NAS>**/**<Shared_folder>**/**<Framestore_id>**/**

   mkdir /hosts/<NAS>**/**<Shared_folder>**/**<Framestore_id>**/sw/**

   cp -r /usr/discreet/clip /hosts/<NAS>**/**<Shared_folder>**/**<Framestore_id>**/**

   cp -r /usr/discreet/project /hosts/<NAS>**/**<Shared_folder>**/**<Framestore_id>**/**

   cp -r /usr/discreet/sw/swdb /hosts/<NAS>**/**<Shared_folder>**/**<Framestore_id>**/sw**

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:

   mkdir -p /hosts/<NAS>**/**<Shared_folder>**/**<Framestore_id>**/**

   mkdir -p /hosts/<NAS>**/**<Shared_folder>**/**<Framestore_id>**/sw**

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:

   /etc/init.d/stone+wire reload

8. Switch the original storage.

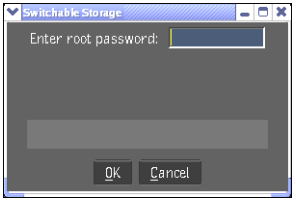
Switching Storage

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 Visual Effects and Finishing application account.
3. Double-click the Stone Switched icon on the desktop.

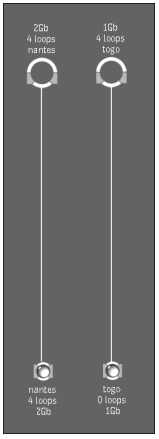
   The Stone Switched panel appears.



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 6 for each host.

8. Verify the configuration is correct.

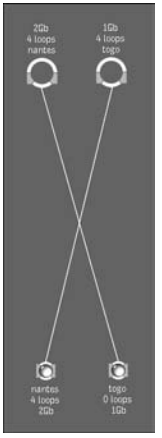
WARNING: Attempting to cancel or pause the switch operation after you initiate it may cause problems with the configuration. It is important to verify the configuration prior to applying it.

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.

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 are located on the NAS if they were saved with the project directory. These setups will be moved with the framestore when you perform a switch. If you chose to save your batch setups in a different location, they will not be moved when performing a switch.

Command Line Utilities (DL Tools)

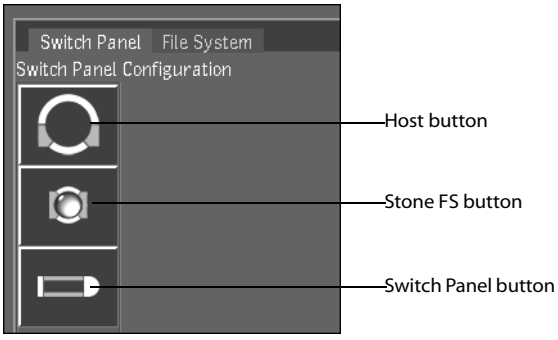
If you used command line utilities (DL tools) after you performed a switch, the utilities will affect the files and clips on the current framestore of the host. In other words, DL tools stay associated with the host.

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.

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.

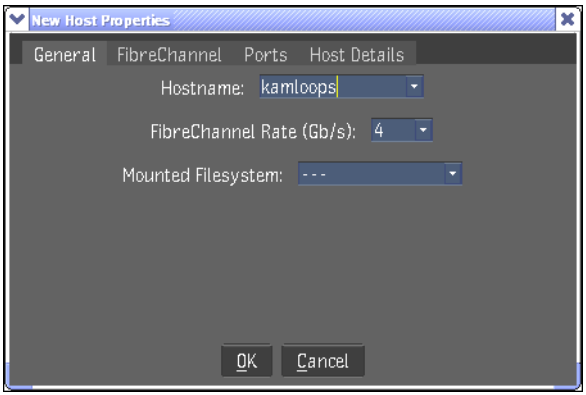
Dialogs

When you click the Host or Stone FS button, the associated dialog appears.

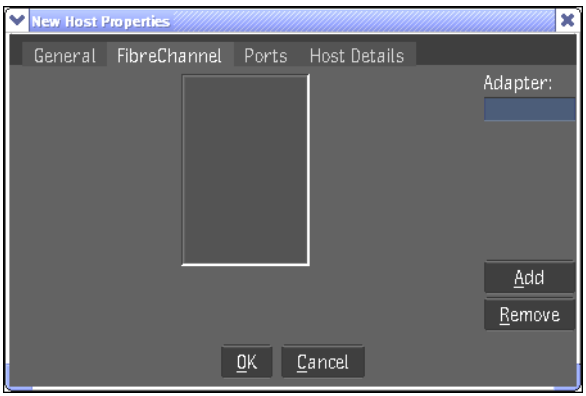
New Host Properties Dialog

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

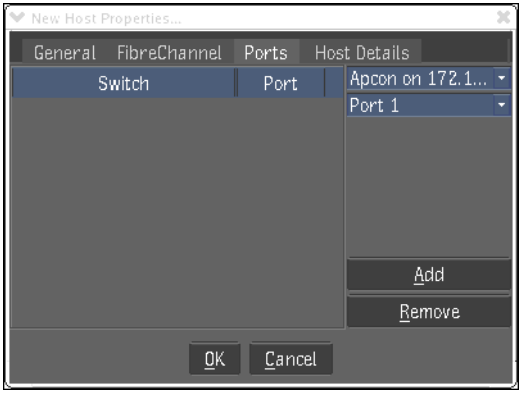
General tab — Use to enter the name of the host in the Hostname field and the throughput of the adapters, and to select the filesystem you want to connect.



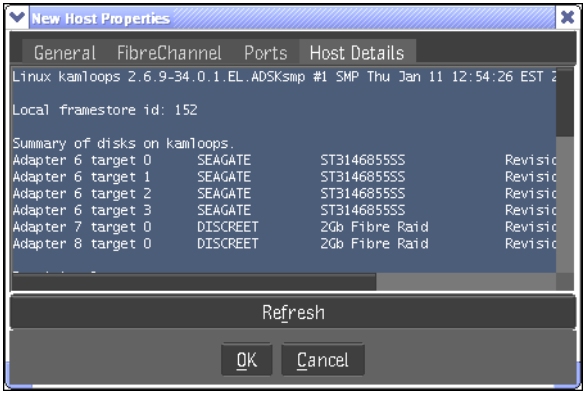
FibreChannel tab — Use to add fibre channel adapters, as determined in the Host Details tab. Enter each adapter ID in the Adapter field. After entering each value, click Add.



Ports tab — Use to assign the fibre channel ports on the host to ports on the patch panel.

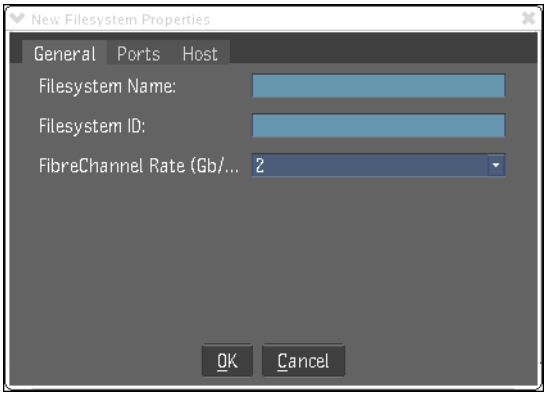


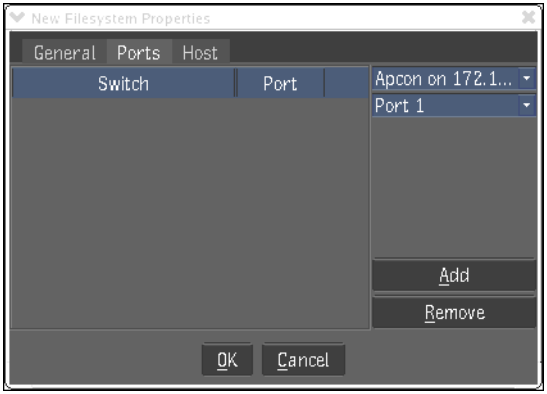
Host Details — Use to determine the adapters to enter in the Fibre Channel tab.

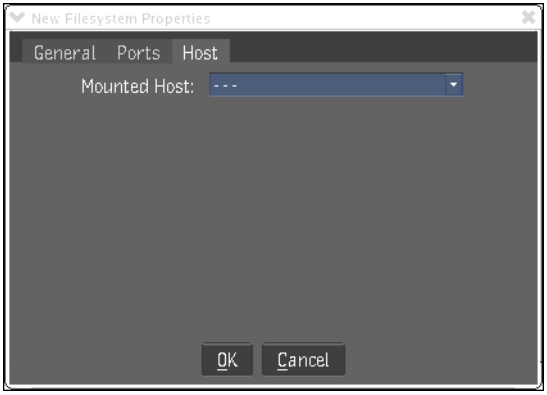


New Filesystem Properties Dialog

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 43.


New Filesystem Properties
General
Ports
Host
Filesystem Name:
Filesystem ID:
FibreChannel Rate (Gb/...
2
OK
Cancel


New Filesystem Properties
General
Ports
Host
Switch
Port
Apcon on 172.1...
Port 1
Add
Remove
OK
Cancel


New Filesystem Properties
General
Ports
Host
Mounted Host:

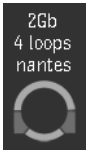
OK
Cancel

Icons

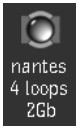
When you click OK in the New Host Properties, or New Filesystem Properties dialog, an icon appears on the Switch Panel Configuration panel to represent the host or filesystem.

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.

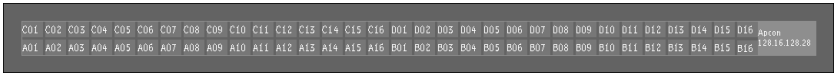


Filesystem icon — Represents a filesystem.



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 an icon to a number or a number to an icon on the patch panel to connect the patch panel to the icon.

Enabling Framestore Name Auto-generation

In order for the framestore name to be automatically updated after a switch, the `AutoName` parameter must be enabled in the *sw_storage.cfg* configuration file.

To enable the AutoName parameter:

1. Open the */usr/discreet/sw/cfg/sw_storage.cfg* configuration file in a text editor.
2. Locate the `AutoName` parameter in the [`Framestore`] section, uncomment it, and set its value to `True`:

   ```
   AutoName = True
   ```

3. Save and close the *sw_storage.cfg* file.
4. Restart Stone and Wire by typing:

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

Once this option has been enabled, framestore names will be automatically generated. The format of auto-generated names is *fs<ID>*, where <ID> is the framestore ID.

4 Troubleshooting

Summary

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.

Problem	Cause and Resolution
In the Stone Switched application, ports on my switch panel appear red.	The port has become inactive. Verify your hardware connections. You are accessing the patch panel through the Apcon web utility. Exit the web utility.
I receive the following error message: `<filesystem name> supports 2Gb, however, <filesystem name> supports 1Gb. Mixed speeds are not yet supported.`	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.
I receive the following error message: `<hostname> is in use.`	When you perform the switch, certain workstations in the configuration are still running an application. Close all applications and/or run the *vic* utility. Refer to the "Utilities" chapter in the user guide for your application.

Problem	Cause and Resolution
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 to configure your Stone FS. For complete information on the *sw_config* utility, refer to the *Autodesk Stone and Wire 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 does not perform the switch if the error is detected soon enough. If the switch has already begun, the user will be presented with the following choices: • Fix the problem manually. Log to the machine in question and investigate; the operations are suspended during that time. • Leave the system as it is. Rollback to the state before the current configuration was applied. • Continue. Use this option if the patch panel has already been updated.
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. For more details, see "Problems With .lock Files" on page 53.
I can't see some framestores in the Network panel after a Stone Switch.	On the workstations that are not registering on the Network panel, log in as root and restart Stone and Wire by typing: **`/etc/init.d/stone+wire restart`**
I wish to troubleshoot an error.	Look at the */usr/discreet/sws/log/swsd.log.* <*X*> file, where <X> represents the number of the log.

Problems With .lock Files

Any application that opens a volume, sets a lock file when it opens the volume. The lock file includes the IP address associated with the volume. If the application exits abnormally, it may not clean up its lock files. Restarting the application usually cleans up the lock files the next time it attempts to open the volume.

However, if you change the IP address associated with the volume after the lock files are created, the next time an application attempts to open the volume, you receive an error message that it is unable to set the lock on the volume. The error message includes the path to the lock file. You must manually delete the lock file.

To delete a lock file:

1. In a terminal, navigate to the directory containing the lock file:

   `<central_path>/<framestore_id>/clip/Stonefs`

   where <central_path> is the path where the metadata is centralized. See "Defining the Central Path" on page 24.

2. Delete the lock file by typing:

   `rm .ref-lock`

WARNING: Before deleting the lock file, make sure that the framestore isn't actually in use. Deleting a lock file can generate serious problems.

A Setting Up a x346 NAS from Scratch

Summary

Workflow for Setting Up a x346 NAS from Scratch

Use the workflow in this section to upgrade to an x346 NAS.

To set up a 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 55.
3. Install Red Hat Enterprise Linux WS 4, Update 2 and the Discreet® Kernel Utility (DKU) version 2.0. Refer to the Installation and Configuration Guide for Red Hat Enterprise Linux 4, Update 2.
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 16.
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, in the CD-ROM drive of the NAS.
2. Power on the NAS.
3. Wait for the ServeRAID Manager window to appear.

   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 four disks are visible, restart 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.