各ソフトウェアのバージョンおよび環境等の違いにより動作しない場合も想定されますので、導入の際には事前に検証をされることを推奨いたします。
記載された会社名および製品名などは該当する各社の商標または登録商標です。
<table>
<thead>
<tr>
<th>Table of Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1: Introduction ................................................................. 3</td>
</tr>
<tr>
<td>1.1 About this Document ........................................................................ 3</td>
</tr>
<tr>
<td>1.2 Target Audience ............................................................................... 3</td>
</tr>
<tr>
<td>1.3 Recommended Additional Reading .................................................... 3</td>
</tr>
<tr>
<td>1.4 Technical Support ........................................................................... 3</td>
</tr>
<tr>
<td>1.5 Summary .......................................................................................... 3</td>
</tr>
<tr>
<td>1.6 Purpose ........................................................................................... 4</td>
</tr>
<tr>
<td>Chapter 2: Guidelines .......................................................................... 5</td>
</tr>
<tr>
<td>2.1 NetVault Backup Compatibility ......................................................... 6</td>
</tr>
<tr>
<td>2.2 NetVault SmartDisk Compatibility ..................................................... 6</td>
</tr>
<tr>
<td>2.3 DataDomain Compatibility and Support .............................................. 6</td>
</tr>
<tr>
<td>Chapter 3: Deployment ......................................................................... 7</td>
</tr>
<tr>
<td>3.1 Prerequisites .................................................................................. 7</td>
</tr>
<tr>
<td>3.2 Assumptions ................................................................................... 7</td>
</tr>
<tr>
<td>3.3 Configuration Guidelines ................................................................. 7</td>
</tr>
<tr>
<td>3.3.1 DataDomain ................................................................................ 7</td>
</tr>
<tr>
<td>3.3.2 NetVault: Backup ....................................................................... 9</td>
</tr>
<tr>
<td>3.3.3 NetVault: SmartDisk ................................................................... 9</td>
</tr>
<tr>
<td>Chapter 4: Procedures ......................................................................... 11</td>
</tr>
<tr>
<td>4.1 Primary Site or Source Replication Site Setup ................................... 11</td>
</tr>
<tr>
<td>4.2 Secondary Site or Destination Replication Site Setup ....................... 12</td>
</tr>
<tr>
<td>4.3 Data Replication Synchronization and FastCopy Operations ............. 13</td>
</tr>
<tr>
<td>4.3.1 Replication Synchronization ....................................................... 14</td>
</tr>
<tr>
<td>4.3.2 FastCopy and Media Process ....................................................... 14</td>
</tr>
</tbody>
</table>
Chapter 1: Introduction

1.1 About this Document
This document provides information on using the NetVault SmartDisk with NetVault Backup and a DataDomain Device and is intended as a supplement to the NetVault SmartDisk and NetVault Backup Administrator’s and Installation Guides, which describe the common procedures for installing and configuring the products.

1.2 Target Audience
This document is intended for the system administrators responsible for installing, configuring, and using the NetVault Backup and NetVault SmartDisk. An understanding of DataDomain administration and the host platform is assumed.

1.3 Recommended Additional Reading
Quest Software recommends that you have the following documentation available for reference when setting up and using this guide.

- NetVault Backup Installation and Upgrade Guide
- NetVault Backup Administrator’s Guide
- NetVault Backup Database Cross Platform Migration Guide
- NetVault SmartDisk Installation/Upgrade Guide
- NetVault SmartDisk Administrator’s Guide

http://www.bakbone.co.jp/products/product_documentation_nvb.htm

1.4 Technical Support
Quest Software is dedicated to providing friendly, expert advice to our customers. Quest Software’s highly-trained professionals are available to answer questions, offer solutions to problems and generally help make the most of any Quest software purchase. Log on to the Quest Software web site for more information.

http://www.bakbone.co.jp/support/contact_support.html

1.5 Summary
Copies of data and their attributes need to be available in case of primary storage or server / hosting infrastructure failures. They can also be beneficial and often a requirement for testing, validation, data mining, and compliance.

As data growth continues to scale upwards, managing the copies of data becomes more critical in order to reduce and minimize operational and infrastructure costs and downtime. The format and infrastructure support with these efforts varies dependent on various factors such as budget, business, contract, and legal requirements to name a few.

Today’s storage products allow use of various technologies to architect solutions that will create copies of data to ensure that data is readily available, stored in the most effective manner and highly redundant. Using NetVault Backup along with NetVault SmartDisk hosted on a DataDomain appliance is a very dependable, simple, and high performing solution that can be
leveraged to architect disaster recovery, distribution and consolidation through the replication of data.

1.6 Purpose

This document outlines how to use NetVault Backup with NetVault SmartDisk and DataDomain appliances to replicate data between locations for disaster recovery purposes. The integration of these three products at a particular location is also referred to as an NVBU Domain.

In this scenario the NetVault Backup, NetVault SmartDisk products and the DataDomain appliance(s) are integrated and running typically at a production facility and replicating to one or more remote sites. At the remote NVBU Domain(s) a second set of servers and 3rd party appliance(s) are running concurrently. In the event of an outage of service to the production NVBU Domain both backup and more importantly restore operations can be performed from the remote NVBU Domain using the NVBU server at the remote location. This scenario is referred to as the HA / DR replication scenario using One-to-One Replication technology. Refer to figure 1 for an illustration.

Figure 1. Disaster Recovery / Standby Replication Environment
Chapter 2: Guidelines

In general there are very specific attributes that must be maintained and reestablished between replication points during failover operations with SmartDisk.

Replicated Volumes must maintain volume paths and permissions relative to the source SmartDisk instance at all times. If the path to the volumes or the permissions are not set correctly relative to the SmartDisk requirements (user ownership of the volume directory structure) then there will be a misalignment in index relative path information or in the ability for the SmartDisk instance to initialize and errors will occur. To address these errors simply correct the volume paths (mount points and directory structure) relative to the originating SmartDisk instance being replicated and change the ownership of the directory structure to the SmartDisk user configured at the time of the setup process.

SmartDisk Configuration files must be identical between SmartDisk instances. There are adjustments in various areas of performance and the like but to minimize the occurrence of any issues the `<smartdiskhome>/diskmanager/etc/` directory content should be copied / replicated to the remote sites. This will typically include the volume paths and volume favour / deny settings.

The NetVault Backup server name (NetVault server name) must be the same between instances of the SmartDisk repositories. This should not be confused with the system or server hostname. The NetVault server name information is also stored in the indexes and must be maintained between source and destination sites.

The SmartDisk and NetVault Backup server relationship must be unique for each site and can only be established at the time the SmartDisk instance is added to the NetVault server. For this reason the secondary SmartDisk instances should only be added to the remote secondary NetVault server after the SmartDisk instance is running with the replicated environment variable `/ attribute requirements taken from the source or primary site.

Once the configuration both local and remote has been established the remote copy of SmartDisk can be used as fail-over so long as the copy is static and not dynamically being updated by the replication process while either the SmartDisk service or the NetVault Backup service is accessing it. The only replication scenarios supported are those in which there is an active / passive data relationship between source and destination repositories (such as independent snapshots or copies of the replicated data). If this is not possible, where the replicated data is always synchronized, then the remote or standby system must be inactive whilst the replicated data is changing. This typically requires breaking the replication. In this particular scenario we will be using the FastCopy feature provided by the DataDomain appliance to create independent read-write copies of the replicated data, sometimes referred to as clones.

Below is a basic outline of the failover process in which a FastCopy of replicated data is used to failover NetVault Backup domain operations in the event of a disaster:

1. Within the NetVault Backup Device Management window - Offline the NVSD Instance on the local source site.
2. Shutdown NetVault SmartDisk Services on the local source site.
3. Synchronize replicated data between the source and destination sites.
4. Begin or otherwise verify replication synchronization and data consistency to remote destination replication sites.
5. Within the NetVault Backup Device Management window - Offline the NVSD Instance on the remote destination site(s).
6. Shutdown NetVault SmartDisk Services on the remote destination site(s).
7. Create a (Read-Write FastCopy) for the remote destination site(s); this will create a unique set of replicated data to be used remotely. It is important to note that the remote copies must be read/write enabled.
8. Validate appropriate directory permissions on the remote site(s).
9. Bring the NetVault SmartDisk Instance on the remote site back Online by starting the NetVault SmartDisk service and then right-clicking the instance in question in the NetVault Backup device management screen and selecting the Online option.
10. Scan the SmartDisk Instance on the remote site(s).
11. Once the scan process is complete the remote or destination replication FastCopy instance can be used to conduct backup and restore operations.

2.1 Netvault Backup Compatibility

To make sure that your system meets the applicable requirements, refer to the NetVault Backup Supported Platforms matrix at:

http://www.bakbone.co.jp/products/netvault_os.html

2.2 Netvault SmartDisk Compatibility

To make sure that your system meets the applicable requirements, refer to the NetVault SmartDisk Supported Platforms and System Requirements matrix at:

http://www.bakbone.co.jp/products/nvsd_system_requirement.html

2.3 DataDomain Compatibility and Support

To make sure that your system meets the applicable requirements, refer to the DataDomain Support site at:

http://www.datadomain.com/support/
Chapter 3: Deployment

This chapter describes how to configure the NetVault SmartDisk, NetVault Backup and DataDomain appliances for use in a Disaster Recovery scenario.

3.1 Prerequisites

For information about hardware and software requirements, refer to the applicable location:

- **Hardware** – For information regarding DataDomain®, refer to the DataDomain web site: [http://www.datadomain.com](http://www.datadomain.com)

- **Minimum Software Requirements**
  - **Operating System and File System** – Both NetVault Servers must be running the exact same Operating System type and version.
  - **NetVault Backup Server Software Version** – Must be NetVault Backup Version 8.6.2 or higher. Both NVBU Servers must be running the exact same version of NetVault Backup (i.e., the same version of the “Server” component must be installed on both Source and Target).
  - **NetVault SmartDisk Software Version** – Must be NetVault SmartDisk Version 1.5.1 or higher. Both NVSD Servers must be running the exact same version of NetVault SmartDisk.

3.2 Assumptions

It is assumed that the reader and more importantly the user implementing the process outlined in this document are fully certified to install all three products. This includes the following:

- NetVault Backup installation, configuration, and administration
- NetVault SmartDisk installation, configuration, and administration
- DataDomain Appliance configuration and administration
- Intermediate networking expertise including routing, name resolution, and TCP/IP
- Intermediate NFS and CIFS Protocol setup and administration expertise
- Intermediate Windows Authentication and Active Directory administration expertise.

3.3 Configuration Guidelines

3.3.1 DataDomain

The DataDomain appliances must be setup with the appropriate replication and network filesystem support such that the local and remote NetVault SmartDisk servers can access the appropriate volumes for data access. These include replication sets, NFS export and CIFS share rules and authentication. Typically the <datadomain>/backup directory or sub-directory paths should be replicated and made available via a network filesystem protocol for full read/write access to the NetVault SmartDisk servers at both the source and destination sites along with the user account assigned for the NetVault SmartDisk instance at each location.

The replication data and respective network filesystem support should be configured as such that there is a primary path in which the local or primary NetVault SmartDisk instance provides source backup data to the source replication appliance that is then synchronized to a remote or
secondary appliance or set of appliances. Since the destination replication directory or sub-directory is read-only a read-write copy should be created. At each remote or secondary site the appliance there should be configured to have a FastCopy created and a network filesystem for the same; this should be set on each respective appliance. The FastCopy ensures the proper availability to the remote or secondary NetVault SmartDisk instances for full read-write access. Note that the FastCopy directory or sub-directory should be configured as a network filesystem with full read-write access for the secondary NetVault SmartDisk instance and not the destination of the replication set.

Example:

- Replication

replication show config output of replication:

<table>
<thead>
<tr>
<th>CTX</th>
<th>Source</th>
<th>Destination</th>
<th>Connection Host and Port</th>
<th>Enabled</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>dir://&lt;source&gt;/backup/NVSDsource</td>
<td>dir://&lt;destination&gt;/backup/NVSDdestination</td>
<td>&lt;source&gt; (default)</td>
<td>yes</td>
</tr>
<tr>
<td>2</td>
<td>dir://&lt;source&gt;/backup/NVSDsource</td>
<td>dir://&lt;destination&gt;/backup/NVSDdestination</td>
<td>&lt;destination&gt; * (default)*</td>
<td>yes</td>
</tr>
</tbody>
</table>

*Used for recovery only.

FastCopy output of destination volume:

filesys fastcopy source /backup/NVSDdestination destination /backup/NVSDfastcopy

Destination "/backup/NVSDfastcopy" already exists. Proceeding will overwrite its content with "/backup/NVSDdestination".

Are you sure? (yes|no|?) [no]: yes

ok, proceeding.

Creating snapshot "FASTCOPY-2010-09-03-14-24-11" with one-hour retention period...done

Use this snapshot to recover in case of a mistake.

Fastcopy status: fastcopy /backup/NVSDdestination to /backup/NVSDfastcopy: copied 58 files in 0.02 seconds

Filesys Sync Operation output:

filesys sync
1 files flushed

NFS

nfs show clients output of primary and secondary sites

- Primary Site Output
  /backup/NVSDsource <primary NVSD Server>  
  (rw,no_root_squash,no_all_squash,secure)

- Secondary Site Output
  /backup/NVSDfastCopy <secondary NVSD Server> 
  (rw,no_root_squash,no_all_squash,secure)

- Common Site Output

各ソフトウェアのバージョンおよび環境等の違いにより動作しない場合も想定されますので、導入の際には事前に検証をされることを推奨いたします。

記載された会社名および製品名などは該当する各社の商標または登録商標です。
The network filesystem mount points must be the same between NetVault SmartDisk instances. Since the secondary or destination replication sites must also be full read-write, serviced by a FastCopy data set from the DataDomain appliance, the logical mount points configured for access in Smartdisk should be made the same between source and destination sites.

Example:

Source site mount point logical relationship:

Unix / Linux - NFS

<table>
<thead>
<tr>
<th>DataDomain Filesystem</th>
<th>NetWork Filesystem</th>
<th>Remote Mount Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>/backup/NVSDsource</td>
<td>/backup/NVSDsource</td>
<td>&lt;primary site&gt;:/NVSD</td>
</tr>
<tr>
<td>/backup/NVSDfastCopy</td>
<td>/backup/NVSDfastCopy</td>
<td>&lt;secondary site&gt;:/NVSD</td>
</tr>
</tbody>
</table>

Windows / Unix / Linux – CIFS / Samba

<table>
<thead>
<tr>
<th>DataDomain Filesystem</th>
<th>NetWork Filesystem Share</th>
<th>Remote Mount Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>/backup/NVSDsource</td>
<td>/backup/NVSDsource</td>
<td>&lt;primary site&gt;\NVSD$</td>
</tr>
<tr>
<td>/backup/NVSDfastCopy</td>
<td>/backup/NVSDfastCopy</td>
<td>&lt;secondary site&gt;\NVSD$</td>
</tr>
</tbody>
</table>

3.3.2 NetVault Backup

The NetVault: Backup server machine name must be the same on all sites.

3.3.3 NetVault SmartDisk

SmartDisk embeds various attributes into each stream it stores.

These attributes need to be maintained between sessions of backup and recovery in order to function properly. The attributes are included in the following files:

Volume Paths
<smartdiskhome>/diskmanager/etc/storage.cfg

NetVault Server Name
<smartdiskhome>/diskmanager/etc/nvbuseservers.cfg
Unique Backup Server ID (Hash)
<smartdiskhome>/diskmanager/etc/nvbuservers.cfg

Super Server ID
<smartdiskhome>/diskmanager/etc/identity.cfg

Example of Index Content:

<smartdiskhome>/store/diskmanager/index/NVBU/server/<servername>/indices/<index>

[SmartDisk:Element]
URI = NVBU/server/de_dup_test/indices/3fd5010affc6b94c6db98bb54d72200002f000000-000000027-000000024-0001-0000_3fd5010a00c7b94c67458b6b727e000000000000
State = Staged
Keep In Staging = FALSE
Creation.End = 2010-10-16T15:39:17.000Z
Read.Start = 2010-11-11T17:08:36.000Z
Read.From = Staged
Read.End = 2010-11-11T17:08:36.000Z
Size = 1703936, B
Creation.Start = 2010-10-16T15:39:12.000Z
Section.0.Id = 0a01d53f23c7b94c3dcabef8497c0000cf050000
Section.0.Volume = /SD1/stage

It is recommended to copy the entire <smartdiskhome>/diskmanager/etc directory contents from the originating site for easy access between replication points. We recommend creating a sub-directory within the DataDomain appliance to be shared for replication that can be used to copy these files between sites. Another alternative to this is to copy the contents manually.

The network filesystem mount points must be the same between NetVault SmartDisk instances. Since the secondary or destination replication sites must also be full read-write, serviced by a FastCopy data set from the DataDomain appliance, extra care must be taken to insure the logical mount points be made the same.

Below is an example of a source and destination replication site volume path logical context:

Unix / Linux - NFS

<table>
<thead>
<tr>
<th>DataDomain Filesystem</th>
<th>NetWork Filesystem</th>
<th>Remote Mount Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>/backup/NVSDsource</td>
<td>/backup/NVSDsource</td>
<td>&lt;primary site&gt;/NVSD</td>
</tr>
<tr>
<td>/backup/NVSDfastcopy</td>
<td>/backup/NVSDfastcopy</td>
<td>&lt;secondary site&gt;/NVSD</td>
</tr>
</tbody>
</table>

Windows / Unix / Linux – CIFS / Samba

<table>
<thead>
<tr>
<th>DataDomain Filesystem</th>
<th>NetWork Filesystem Share</th>
<th>Remote Mount Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>/backup/NVSDsource</td>
<td>/backup/NVSDsource</td>
<td>&lt;primary site&gt;NVSD$</td>
</tr>
<tr>
<td>/backup/NVSDfastcopy</td>
<td>/backup/NVSDfastcopy</td>
<td>&lt;secondary site&gt;NVSD$</td>
</tr>
</tbody>
</table>
Chapter 4: Procedures

This chapter describes how to conduct installation, configuration, synchronizations, FastCopies, media scans, and other processes related to disaster recovery failover.

4.1 Primary Site or Source Replication Site Setup

4.1.1 Install and configure primary NVSD and NVBU environments

Important Note: NetVault Backup Server name must be the same in all environments otherwise the media scanning process will not function at the remote site(s).

4.1.1.1 NetVault SmartDisk
1. Run the installation of the NetVault SmartDisk software distribution.
2. Install the Store, Stage, and Index directories such that they all run from the network filesystem NFS / CIFS share. Setup the attributes needed to insure disk index is on the network filesystem.

Example:

```
/usr/smartdisk/foundation/bin/smartdisk.sh config –show

[SmartDisk:Volume]
Location = /NVSD

("/NVSD" is on a Network File System. Must be a network filesystem. Make sure none of the Volumes are located on local filesystem. )
```

3. Setup the attributes needed to disable De-Duplication and configure the GC-Window to AnyTime or as desired.

Example:

```
/usr/smartdisk/foundation/bin/smartdisk.sh config --dedupe-enable FALSE
/usr/smartdisk/foundation/bin/smartdisk.sh config --dedupe-window Anytime
/usr/smartdisk/foundation/bin/smartdisk.sh config --gc-window Anytime
/usr/smartdisk/foundation/bin/smartdisk.sh config --dedupe-active-limit Unlimited
```

4. Use the network filesystem mount path predetermined that can be configured on all sites.
5. Add Licensing.

4.1.1.2 NetVault Backup

Important Note: Ensure that firewall or routing rules are set such that network broadcast packets (TCP / IP) from all sites are blocked respectively. This will guarantee that the NetVault Backup services will not be interrupted by any remote site running the same NetVault machine name. If this is not setup properly the shutdown process of the NetVault Backup services at one site will shutdown the NetVault Backup services on all remote sites that it can broadcast and reach.
1. Run the installation of the NetVault Backup software distribution.
2. During the install make sure that the NetVault Backup server name is set to a value that can be used and managed across all associated sites.
3. Add Licensing.
4. Add the NetVault SmartDisk instance to the NetVault Backup Server to the primary or source replication site.
5. Stop the services for NetVault Backup and NetVault SmartDisk instances at the primary or source replication site and copy the $NVSDHOME/diskmanager/etc directory for safekeeping and distribution.

**Important Note:** The NetVault SmartDisk volume paths, SuperServer ID, Backp Server ID, and Backup Server name must be the same between instances. These values are stored in various files within the NetVault SmartDisk install directory and must be maintained between NetVault Backup and NetVault SmartDisk relationships. Copy the $NVSDHOME/diskmanager/etc directory contents for safekeeping in case of a disaster and for distribution.

6. Start the NetVault Backup and NetVault SmartDisk instances and begin using the local or source replication site as desired.

### 4.2 Secondary Site or Destination Replication Site Setup

**Important Note:** NetVault Backup Server name must be the same in all environments otherwise the media scanning process will not function at the remote site(s).

#### 4.2.1 Install and configure secondary NVSD and NVBU environments

**Important Note:** NetVault: Backup Server name must be the same in all environments otherwise the media scanning process will not function at the remote site(s).

**Important Note:** The NetVault Backup and NetVault SmartDisk instance attributes must be maintained between paired instances. Be prepared to copy the appropriate files taken during the primary or source replication site in the event of a disaster. Refer to step 4.1.1.2 in the previous section for details.

#### 4.2.1.1 NetVault SmartDisk

1. Run the installation of the NetVault SmartDisk software distribution.
2. Setup the attributes needed to insure disk index is on the network filesystem.

Example:

```
/usr/smartdisk/foundation/bin/smartdisk.sh config –show

[SmartDisk:Volume]
Location = /NVSD
  ("/NVSD" is on a Network File System. Must be a network filesystem. Make sure none of the Volumes are located on local filesystem. )

3. Setup the attributes needed to **disable De-Duplication** and configure the GC-Window to AnyTime or as desired.

Example:
4. Add Licensing.
5. Stop the services for NetVault SmartDisk instances at the secondary or destination replication site and copy and replace the $NVSDHOME/diskmanager/etc directory with what was taken from the primary or source replication site in step 4.1.1.2.
6. Restart Remote SmartDisk instance(s).
7. Verify volume configuration by running the $NVSDHOME/foundation/bin/smartdisk.sh or smartdisk.bat config --show command and validating the volume paths are the same on all sites.

**4.2.1.2 NetVault Backup**

*Important Note:* Ensure that firewall or routing rules are set such that network broadcast packets (TCP/IP) from all sites are blocked respectively. This will guarantee that the NetVault Backup services will not be interrupted by any remote site running the same NetVault machine name. If this is not setup properly the shutdown process of the NetVault Backup services at one site will shutdown the NetVault Backup services on all remote sites that it can broadcast and reach.

1. Run the installation of the NetVault Backup software distribution.
2. Use the NVBU Server name that was entered during the installation of the primary or source replication NetVault Backup server installation.
3. Add Licensing.

Note: Licensing should match what was installed at the source or primary site.

4. Add the NVSD instance to each of the remote sites with the Force Option.

**4.3 Data Replication Synchronization and FastCopy Operations**

DataDomain replication synchronization should be maintained in order to guarantee the highest RPO objectives. In the event of a break in replication or the need to initiate the synchronization process manually it can be generally be invoked and monitored with one of the following command examples:

```
replication add source dir://<primary>/backup/NVSDsource destination dir://<secondary>/backup/NVSDdestination
replication initialize dir://<secondary>/backup/NVSDdestination
replication resync dir://<secondary>/backup/NVSDdestination
replication sync dir://<secondary>/backup/NVSDdestination
replication watch dir://<secondary>/backup/NVSDdestination
```

Please refer to the DataDomain Operating System User Guide for more details.

4.3.1 Replication Synchronization

1. Within the NetVault Backup Device Management window - Offline the NVSD Instance on the local source site.
2. Shutdown NetVault SmartDisk Services on the local source site.
3. Synchronize replicated data between the source and destination sites.
4. Begin or otherwise verify replication synchronization and data consistency to remote destination replication sites.
5. Bring the NetVault SmartDisk Instance on the local source site back Online by starting the NetVault SmartDisk service and then right-clicking the instance in question in the NetVault Backup device management screen and selecting the Online option.
6. Continue use of the local source NetVault Backup domain.

**Important Notes:** Since the remote instances of NetVault SmartDisk are completely unaware of replication processes all instances of the NetVault SmartDisk replicated repository must be inactive during this process; it is imperative that replicated data is static, copied and presented by the replication technology to the remote NetVault Backup and NetVault SmartDisk instances when they are offline.

The process of presenting replicated data must be done offline in a standby mode. If the local or remote NetVault SmartDisk are running and accessing volumes during any type of data replication synchronization or FastCopy operations then the data consistency at the remote sites cannot be guaranteed and corruption to the NetVault SmartDisk repository may occur.

Remote or destination replication sites must use a unique point in time copy of synchronized static replicated data; it is imperative that the NetVault SmartDisk services are taken offline for any updates to these copies at both source and destination sites. Not taking these instances offline during replication synchronization or FastCopy operations may corrupt your remote sites.

Once the replicated data has been staged correctly at the remote site specifically change the store, stage, and index directory structure permissions such that the NetVault SmartDisk user has full read-write access and user/group ownership of the data structure.

4.3.2 FastCopy and Media Process

The DataDomain FastCopy function allows users to copy a file or directory tree from source to another destination directory on the DataDomain system. This function creates a point in time snapshot which can be used to populate the appropriate directory structure for use by NetVault SmartDisk.

The process for conducting a FastCopy with NetVault SmartDisk is as follows:

1. Within the NetVault Backup Device Management window - Offline the NVSD Instance on remote destination site(s).
2. Shutdown NetVault SmartDisk Services on remote site(s).
3. Begin or otherwise verify replication synchronization to remote or destination replication sites as required for data consistency as outlined in section 4.3.1.
4. Create a (Read-Write FastCopy) for the remote site(s) this will create a unique set of replicated data to be used. It is important to note that the remote copies must be read/write enabled.
5. Make sure all DataDomain filesystem data is flushed by issuing the "filesys sync" command.
6. Change directory permissions on the remote site(s) as required.
**Important Note:** Once the replicated data is static specifically change the store, stage, and index directory structure permissions such that the NetVault SmartDisk user has full read-write access and user/group ownership of the data structure.

7. Bring the NetVault SmartDisk Instance on the remote site back Online by starting the NetVault SmartDisk service and then right-clicking the instance in question in the NetVault Backup device management screen and selecting the Online option.
8. Scan the SmartDisk Instance on the remote site(s).
9. Once the scan process is complete the remote or destination replication FastCopy instance can be used to conduct backup and restore operations.

Example FastCopy command:

```bash
filesys fastcopy source /backup/NVSDdestination destination /backup/NVSDfastcopy
```