Isilon
OneFS
Version 7.2

OneFS Migration Tools Guide
## CONTENTS

<table>
<thead>
<tr>
<th>Chapter 1</th>
<th>Introduction to this guide</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>About this guide</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Isilon scale-out NAS overview</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Where to go for support</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 2</th>
<th>OneFS data migration</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OneFS migration tools</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Advantages and limitations of OneFS migration tools</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Related concepts and documents</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 3</th>
<th>Data migration planning</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Migration workflow</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>NetApp system requirements</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>VNX system requirements</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Estimating time requirements for migration</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Data migration considerations</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>NFS data migration considerations</td>
<td>14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 4</th>
<th>Data migration preparation</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Network preparation</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Cluster preparation</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Prepare the NetApp storage system</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 5</th>
<th>Data migration testing</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Test a migration from a NetApp storage system</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Test a migration from a VNX</td>
<td>21</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 6</th>
<th>Performing a data migration</th>
<th>23</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Migrate data from a NetApp storage system</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Migrate data from a VNX</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Cut over to an Isilon cluster</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Managing failed migrations</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Migration logs</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Set the migration log level</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Restart a NetApp migration</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Restart a VNX migration</td>
<td>26</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 7</th>
<th>Migration commands</th>
<th>29</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>isi_vol_copy</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>isi_vol_copy_vnx</td>
<td>31</td>
</tr>
</tbody>
</table>
CHAPTER 1

Introduction to this guide

This section contains the following topics:

- About this guide ................................................................. 6
- Isilon scale-out NAS overview ............................................. 6
- Where to go for support ....................................................... 6
About this guide

This guide describes how to migrate data from NetApp filers and EMC VNXs to EMC Isilon clusters through the `isi_vol_copy` and `isi_vol_copy_vnx` tools.

We value your feedback. Please send any comments or suggestions about this guide to docfeedback@isilon.com.

Isilon scale-out NAS overview

The EMC Isilon scale-out NAS storage platform combines modular hardware with unified software to harness unstructured data. Powered by the distributed OneFS operating system, an EMC Isilon cluster delivers a scalable pool of storage with a global namespace.

The platform's unified software provides centralized web-based and command-line administration to manage the following features:

- A symmetrical cluster that runs a distributed file system
- Scale-out nodes that add capacity and performance
- Storage options that manage files, block data, and tiering
- Flexible data protection and high availability
- Software modules that control costs and optimize resources

Where to go for support

You can contact EMC Isilon Technical Support for any questions about EMC Isilon products.

<table>
<thead>
<tr>
<th>Online Support</th>
<th>Live Chat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Create a Service Request</td>
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<table>
<thead>
<tr>
<th>Telephone Support</th>
<th>United States: 800-782-4362 (1-800-SVC-4EMC)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Canada: 800-543-4782</td>
</tr>
<tr>
<td></td>
<td>Worldwide: +1-508-497-7901</td>
</tr>
<tr>
<td></td>
<td>For local phone numbers in your country, see EMC Customer Support Centers.</td>
</tr>
</tbody>
</table>

| Help with online support | For questions specific to EMC Online Support registration or access, email support@emc.com. |
CHAPTER 2

OneFS data migration

This section contains the following topics:

- OneFS migration tools
- Advantages and limitations of OneFS migration tools
- Related concepts and documents
OneFS migration tools

You can migrate data onto Isilon clusters through data-migration tools that are built into OneFS. You can migrate data from NetApp storage systems through the isi_vol_copy tool and you can migrate data from EMC VNXs through the isi_vol_copy_vnx tool.

OneFS migration tools transfer data over the Network Data Management Protocol (NDMP). The tools leverage snapshot technology on the source devices to ensure that a point-in-time image of the file system is transferred to the Isilon cluster. Leveraging snapshot technology also allows directories that are currently being migrated to remain available to clients on the source device.

OneFS migration tools migrate files and directories, including NFS permissions for NFS versions 3 and 4, Windows ACLs, Windows Properties and Alternate Data Streams. However, the tools do not migrate system configuration settings, such as SMB shares, local user accounts, or quotas.

OneFS migration tools migrate all data contained in a specified volume or directory. You cannot exclude any directories or files within a volume or directory from being migrated.

Advantages and limitations of OneFS migration tools

You should consider the advantages and limitations of OneFS migration tools before deciding to migrate data with these tools. Other migration tools that are not built into OneFS might be the best option for your migration.

For most data migrations from NetApp storage systems or VNXs, it is recommended that you migrate data with the OneFS migration tools, isi_vol_copy and isi_vol_copy_vnx. These tools can often be more efficient than host-based tools, such as EMCopy and Robocopy, because the performance of host-based tools performance is dependent on the network connectivity of the host, while the performance OneFS migration tools depends only on the network connection between the source device and the Isilon cluster. However, you might consider migrating data with a host-based tool if one or more of the following conditions apply to your migration:

- The source device and Isilon cluster are on separate networks.
- Security restrictions prevent the source device and Isilon cluster from communicating directly.

OneFS migration tools are available only for specific versions of OneFS, NetApp ONTAP, and the VNX Operating Environment. If you are migrating data from operating systems that OneFS migration tools do not support, you might need to migrate data with other tools. For more information, see NetApp system requirements and VNX system requirements.

Related concepts and documents

It is recommended that you be familiar with the following concepts related to Isilon data migration before performing a migration.

- Isilon administration. For more information, see the *OneFS Web Administration Guide* and *OneFS CLI Administration Guide*.
- VNX identity management. For more information, see the *VNX Open Systems Configuration Guide*.
- VNX administration. For more information, see the *OneFS Web Administration Guide* and *OneFS CLI Administration Guide*.
- NetApp identity management and administration. For more information, see the NetApp website.
- SMB file migration. For more information, see *SMB File Migration to EMC Isilon*.
- NFS file migration. For more information, see *NFS File Migration to an EMC Isilon Cluster*.
OneFS data migration
CHAPTER 3
Data migration planning

This section contains the following topics:

- Migration workflow
- NetApp system requirements
- VNX system requirements
- Estimating time requirements for migration
- Data migration considerations
Migration workflow

It is recommended that you follow the migration workflow to ensure that data is migrated successfully.

Each migration should pass through the following stages:

Preparation
The preparation stage includes determining what data will be migrated from the source device and defining where data will be migrated to on the Isilon cluster. This stage also includes configuring settings to maximize the performance and reliability of data migration.

Testing
The testing stage includes selecting a smaller, representative data set, migrating data to the Isilon cluster, and recording performance statistics. This allows you to verify that your network settings support transfer between the source device and the Isilon cluster and estimate how much time the migration process will take.

Migration
Initial data transfer
The initial data transfer stage includes migrating all data from a directory on the source device to the Isilon cluster. This process can take a very long time to complete, depending on the amount of data being transferred.

Incremental data transfers
The incremental data transfer stage includes migrating any changes that occur to the data after the initial data transfer. This ensures that a minimal amount of data need be transferred at the time of the cutover.

Final data transfer and cutover
The final data transfer and cutover stage includes prohibiting clients from accessing data on the source device, migrating changes to the data one more time, and redirecting clients to access their data on the Isilon cluster.

NetApp system requirements

You can migrate data from a NetApp storage system to an Isilon cluster with the \texttt{isi_vol_copy} tool only if your environment meets the following system requirements.

\begin{itemize}
  \item The NetApp storage system and the Isilon cluster must be connected by either a WAN or a LAN. It is recommended that you perform migrations through a LAN.
  \item The NetApp storage system must be running NetApp ONTAP 7.x.
  \item NDMP must be enabled on the NetApp storage system. You are not required to enable the NDMP daemon on the Isilon cluster.
  \item An NDMP user account and password must be configured and enabled on the NetApp storage system.
\end{itemize}
VNX system requirements

You can migrate data from an EMC VNX to an Isilon cluster with the isi_vol_copy_vnx tool only if your environment meets the following system requirements.

- The VNX and the Isilon cluster must be connected either by a WAN or a LAN. It is recommended that you perform migrations through a LAN.
- The VNX must be running either VNX Operating Environment 7.x or Celerra DART 5.6.0 or later.
- On the Isilon cluster, at least one access zone must be configured to use the same authentication providers as the VNX.
- An NDMP user must be configured on the VNX Data Mover.

Estimating time requirements for migration

It is recommended that you estimate the amount of time that will be required for you to complete a data migration.

The total amount of data being migrated is not the only factor that determines time requirements. The size and number of files being transferred can also greatly influence the performance of a data migration. Smaller files require more overhead, and thus migrating smaller files takes more time than migrating larger files.

The following time-estimation results were obtained during Isilon migration testing:

<table>
<thead>
<tr>
<th>File size range</th>
<th>GB / Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 KB - 1 KB</td>
<td>0.414</td>
</tr>
<tr>
<td>1 KB - 8 KB</td>
<td>3.019</td>
</tr>
<tr>
<td>8 KB - 16 KB</td>
<td>9.678</td>
</tr>
<tr>
<td>16 KB - 32 KB</td>
<td>17.720</td>
</tr>
<tr>
<td>32 KB - 64 KB</td>
<td>30.899</td>
</tr>
<tr>
<td>64 KB - 124 KB</td>
<td>45.319</td>
</tr>
<tr>
<td>128 KB - 384 KB</td>
<td>69.231</td>
</tr>
<tr>
<td>384 KB - 1 MB</td>
<td>78.693</td>
</tr>
<tr>
<td>1 MB - 10 MB</td>
<td>81.733</td>
</tr>
<tr>
<td>10 MB - 100 MB</td>
<td>85.207</td>
</tr>
<tr>
<td>Over 100 MB</td>
<td>85.300</td>
</tr>
</tbody>
</table>

The results from the preceding table were obtained under the following conditions:

- Data was migrated from an EMC VNX to an Isilon cluster through the isi_vol_copy_vnx tool.
- The Isilon cluster was running OneFS 7.0.2.
- The VNX was running VNX Operating Environment 7.0.
- It was a stand-alone migration.
Data migration considerations

As you prepare to migrate data to an Isilon cluster, keep in mind the following considerations:

- Local users and groups are not migrated to the Isilon cluster, so if a local user or group owns a file, the file might not have an owner on the target cluster.
- Migration does not take into account deduplication. Files are migrated as if they were not deduplicated. However, once files are transferred to the Isilon cluster, you can deduplicate the data again with the SmartDedupe software module.
- If the path of a symbolic link changes during migration, the symbolic link will break and you will need to rebuild the symbolic link.
- Export paths, share paths, and hostnames might change after a migration.
- If a firewall exists between your Isilon cluster and either the NetApp storage system or the EMC VNX, the firewall might block incoming data packets. To ensure that data migrations are successful, it is recommended that you configure your firewall to perform a stateful inspection of incoming data packets, rather than disable your firewall. For information about configuring a stateful inspection, see your firewall documentation.
- It is recommended that you do not back up files or directories on source VNXs during the migration process. If you back up data that is being migrated on a VNX at any point during the process, the data will not be backed up correctly. The migration process begins when the initial migration is started and ends when the cutover stage is complete.
- To migrate data faster, you can run multiple migrations in parallel. However, it is recommended that you run no more than four simultaneous migrations per node in the cluster.
- The names of all directories and files must contain only UTF-8 characters.
- OneFS migration tools do not migrate attributes that are specific to NetApp ONTAP, VNX Operating Environment, or Celerra DART.

NFS data migration considerations

The following considerations are applicable only if you are migrating NFS data to an Isilon cluster.

- If you are migrating data from multiple source devices, and the source devices are not configured with a common source of authentication, you may introduce duplicate User IDs (UIDs) on the Isilon cluster. If two users share a UID, and files owned by the users are migrated to the cluster, both users will have the same access to each other’s files when the files are migrated to the cluster. To work around this issue, you can change the UID for one of the users; however, if you do this, you must also remember to change the permissions of all files that the user has access to reflect the changes.
- Isilon clusters do not support extended proprietary file attributes.
- Isilon clusters do not support the compressed or encrypted file attributes.
- The `isi_vol_copy_vnx` tool does not migrate file creation times.
Data migration planning
CHAPTER 4

Data migration preparation

This section contains the following topics:

- Network preparation ................................................................. 18
- Cluster preparation .................................................................. 18
- Prepare the NetApp storage system ......................................... 18
Network preparation

It is recommended that you optimize the network infrastructure and connectivity between the source device and the Isilon cluster.

It is recommended that you maximize network bandwidth between the source device and the Isilon cluster by connecting the two systems over 10Gb/s ethernet cables and setting MTU at 9000 bytes, if possible. It is also recommended that you perform migrations over isolated networks so migrations do not compete with clients for network bandwidth. Limit network traffic on the network to ensure maximum throughput.

Cluster preparation

Before you migrate data to an Isilon cluster, you must prepare the cluster in the following ways.

• Create a directory that will serve as the target of all migration operations. Migrating data to a dedicated directory will minimize the impact of the migration on the rest of the cluster. After the migration is complete, you can move data to more appropriate locations throughout the filesystem.

• Create equivalent exports and shares on the Isilon cluster, and set up SmartPools policies to govern these exports. Do not migrate data directly to the exported directories.

• If local users exist on the source device, create equivalent accounts on the Isilon cluster.

• Ensure that data will not be replicated with the SyncIQ tool at the same time that data is migrated to the Isilon cluster. This might require you to modify replication-policy schedules.

• Disable all SmartQuotas quotas. Do not re-enable quotas until the migration is completed.

Prepare the NetApp storage system

If you plan to migrate data from a NetApp storage system to an Isilon cluster, you must prepare the NetApp storage system before you begin migrating data.

Procedure

1. Ensure that the NetApp storage system is configured to transfer data through NDMP v4.
   a. Verify the NDMP version by running the following command:

      ndmp version

   b. Optional: Set the NDMP version to v4 by running the following command.

      ndmpd version 4

2. Enable the challenge authentication method by running the following command:

      options ndmpd.authtype challenge
CHAPTER 5

Data migration testing

This section contains the following topics:

- Test a migration from a NetApp storage system ..................................................... 20
- Test a migration from a VNX ................................................................................... 21
Test a migration from a NetApp storage system

It is recommended that you test migration from a NetApp storage system before you begin your migration.

Procedure

1. Identify directories on the NetApp storage system that contain small, representative samples of the data that will be migrated.

2. Create a directory on the Isilon cluster that will contain the data migrated during the test.

3. Initiate the full migration for each test directory on the source NetApp storage system by running the `isi_vol_copy` command.

   The following command migrates data to `/ifs/data/netapp_migration/test`:

   ```bash
   isi_vol_copy netapp.ip.address:/vol/volume_name/media \ /ifs/data/netapp_migration/test -sa user-name: -full
   ``

   The system displays output similar to the following example:

   The transfer is complete.
   Elapsed time: 5 hours, 1 minutes, 22 seconds.

4. Record the amount of time taken to transfer the data for each directory.

5. Verify that data and permissions were transferred to the cluster correctly.

6. Continue migrating data for the next week, recording the amount of time required for each between incremental migrations and the amount of time taken to complete the incremental migrations.

   The following command incrementally migrates data to `/ifs/data/netapp_migration/test`:

   ```bash
   isi_vol_copy netapp.ip.address:/vol/volume_name/media \ /ifs/data/netapp_migration/test -sa user-name: -incr
   ``

7. Record the amount of data transferred to the test directories.

   The following command displays the amount of data contained in `/ifs/data/netapp_migration/test`:

   ```bash
   du -hs /ifs/data/netapp_migration/test
   ``

8. Record the number of files transferred to the test directories.

   The following command displays the number of files contained in `/ifs/data/netapp_migration/test`:

   ```bash
   ls -lR /ifs/data/netapp_migration/test | egrep -c '^-'
   ``

9. Optional: Compile the results of your test in a table and evaluate potential migration time requirements.

   The following table is an example of an evaluation table:

<table>
<thead>
<tr>
<th>Size (GB)</th>
<th>Number of files</th>
<th>Initial migration</th>
<th>Final migration</th>
<th>Time between incremental migrations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 1</td>
<td>606</td>
<td>1,199,463</td>
<td>3:39:19</td>
<td>0:21:04</td>
</tr>
</tbody>
</table>
Data migration testing

<table>
<thead>
<tr>
<th>Test</th>
<th>Size (GB)</th>
<th>Number of files</th>
<th>Initial migration</th>
<th>Final migration</th>
<th>Time between incremental migrations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 2</td>
<td>351</td>
<td>3,476,712</td>
<td>5:46:03</td>
<td>1:35:32</td>
<td>24:00:00</td>
</tr>
<tr>
<td>Test 3</td>
<td>1,815</td>
<td>6,016,284</td>
<td>13:26:28</td>
<td>1:42:09</td>
<td>24:00:00</td>
</tr>
<tr>
<td>Test 4</td>
<td>1,679</td>
<td>6,011,737</td>
<td>14:10:14</td>
<td>1:51:04</td>
<td>24:00:00</td>
</tr>
</tbody>
</table>

Test a migration from a VNX

It is recommended that you test migration from a VNX before you begin your migration.

Procedure

1. Identify directories on the VNX that contain small, representative samples of the data that will be migrated.
2. Create a directory on the Isilon cluster that will contain the data migrated during the test.
3. Initiate the full migration for each test directory on the source VNX storage system by running the **isi_vol_copy_vnx** command.

   The following command migrates data to /ifs/data/vnx_migration/test:

   ```
   isi_vol_copy_vnx vnx.ip.address:/directory/media /ifs/data/vnx_migration/test -sa user-name: -full
   ```

   The system displays output similar to the following example:

   ```
   The transfer is complete.
   Elapsed time: 5 hours, 1 minutes, 22 seconds.
   ```

4. Record the amount of time taken to transfer the data for each directory.
5. Verify that data and permissions were transferred to the cluster correctly.
6. Continue migrating data for the next week, recording the amount of time between incremental migrations and the amount of time taken to complete the incremental migrations.

   The following command incrementally migrates data to /ifs/data/vnx_migration/test:

   ```
   isi_vol_copy_vnx vnx.ip.address:/directory/media /ifs/data/vnx_migration/test -sa user-name: -incr
   ```

7. Record the amount of data transferred to the test directories.

   The following command displays the amount of data contained in /ifs/data/vnx_migration/test:

   ```
   du -hs /ifs/data/vnx_migration/test
   ```

8. Record the number of files transferred to the test directories.

   The following command displays the amount of data contained in /ifs/data/vnx_migration/test:

   ```
   ls -lR /ifs/data/vnx_migration/test | egrep -c '^-'
9. Optional: Compile the results of your test in a table and evaluate potential migration time requirements.

The following table is an example of an evaluation table:

<table>
<thead>
<tr>
<th>Test</th>
<th>Size (GB)</th>
<th>Number of files</th>
<th>Initial migration</th>
<th>Final migration</th>
<th>Time between incremental migrations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 1</td>
<td>606</td>
<td>1,199,463</td>
<td>3:39:19</td>
<td>0:21:04</td>
<td>24:00:00</td>
</tr>
<tr>
<td>Test 2</td>
<td>351</td>
<td>3,476,712</td>
<td>5:46:03</td>
<td>1:35:32</td>
<td>24:00:00</td>
</tr>
<tr>
<td>Test 3</td>
<td>1,815</td>
<td>6,016,284</td>
<td>13:26:28</td>
<td>1:42:09</td>
<td>24:00:00</td>
</tr>
<tr>
<td>Test 4</td>
<td>1,679</td>
<td>6,011,737</td>
<td>14:10:14</td>
<td>1:51:04</td>
<td>24:00:00</td>
</tr>
</tbody>
</table>
CHAPTER 6

Performing a data migration

This section contains the following topics:

- Migrate data from a NetApp storage system ......................................................... 24
- Migrate data from a VNX ..................................................................................... 24
- Cut over to an Isilon cluster ................................................................................ 25
- Managing failed migrations .................................................................................. 25
Migrate data from a NetApp storage system

You can migrate data from a NetApp storage system to an Isilon cluster through the `isi_vol_copy` tool.

It is recommended that you divide your data migrations into chunks and repeat this procedure for each chunk that you want migrate.

**Procedure**

1. Initiate the full migration by running the `isi_vol_copy` command:

   The following command migrates data from a NetApp storage system to `/ifs/data/netapp_migration/`:

   ```sh
   isi_vol_copy netapp.ip.address:/vol/volume_name/media \
   /ifs/data/netapp_migration/ -sa user-name: -full
   ```

   The system displays output similar to the following:

   ```
   The transfer is complete.
   Elapsed time: 5 hours, 1 minutes, 22 seconds.
   ```

2. Verify that data and permissions were transferred to the cluster correctly.

3. Continue performing scheduled, incremental data transfers until you are ready to transfer clients to the Isilon cluster.

   The following command incrementally migrates data from a NetApp storage system to `/ifs/data/netapp_migration/`:

   ```sh
   isi_vol_copy netapp.ip.address:/vol/volume_name/media \
   /ifs/data/netapp_migration/ -sa user-name: -incr
   ```

---

Migrate data from a VNX

You can migrate data from a VNX to an Isilon cluster through the `isi_vol_copy_vnx` tool.

It is recommended that you divide your data migrations into chunks and repeat this procedure for each chunk that you want migrate.

**Procedure**

1. Initiate the full migration by running the `isi_vol_copy_vnx` command:

   The following command migrates data from a VNX system to `/ifs/data/vnx_migration/test`:

   ```sh
   isi_vol_copy_vnx vnx.ip.address:/directory/media \
   /ifs/data/vnx_migration/test -sa user-name: -full
   ```

   The system displays output similar to the following:

   ```
   The transfer is complete.
   Elapsed time: 5 hours, 1 minutes, 22 seconds.
   ```

2. Verify that data and permissions were transferred to the cluster correctly.

3. Continue performing scheduled, incremental data transfers until you are ready to transfer clients to the Isilon cluster.
The following command incrementally migrates data from a VNX storage system to /ifs/data/vnx_migration/test:

```bash
isi_vol_copy_vnx vnx.ip.address:/directory/media \ 
/ifs/data/vnx_migration/test -sa user-name: -incr
```

### Cut over to an Isilon cluster

After data has been successfully migrated to an Isilon cluster, you can perform a cut over to allow clients to access their data on the Isilon cluster.

**Procedure**

1. Restrict access to the source device or set the data on the source device to read-only.
2. Initiate the final incremental data transfer by running either the `isi_vol_copy` or `isi_vol_copy_vnx` command with the `-incr` option.

   The following command incrementally migrates data from a NetApp storage system to /ifs/data/netapp_migration/:

   ```bash
   isi_vol_copy netapp.ip.address:/vol/volume_name/media \ 
   /ifs/data/netapp_migration/ -sa user-name: -incr
   ```

3. Transfer files to their final locations on the Isilon cluster.
4. Validate that the data is ready to be accessed by clients.
5. Update the client connections and name resolution protocols.
6. Redirect clients to the Isilon cluster.

### Managing failed migrations

If a migration fails, you can view migration logs to determine what caused the failure. You can also restart migrations to begin migrating data again; migrations do not automatically restart after a failure.

### Migration logs

When you migrate data through a OneFS migration tool, OneFS generates a migration log. If a migration fails, you can view the migration log to identify the cause of the failure. These logs are separate from the output of the migration tools; the migration-tool output is not stored after the migration completes.

OneFS retains 10 migration log files at a time. When OneFS detects that the cluster contains more than 10 migration log files, OneFS deletes the oldest log file.

OneFS stores migration logs on the node that the migrations were started from; to access a log, you must be connected to the node that contains the log. The default location of migration logs related to the `isi_vol_copy` tool is `/var/log/isi_vol_copy.log`. The default location of migration logs related to the `isi_vol_copy_vnx` tool is `/var/log/isi_vol_copy_vnx.log`.

### Set the migration log level

If problems arise during migration, you might want to increase the migration log level to help you troubleshoot. Increasing the migration log level increases the amount of data stored in the migration logs.

If you choose to increase the log level for a migration command, always ensure that you set the log level back to the default setting after you have completed your
troubleshooting. Increased log levels can negatively impact migration performance and should not be used unless you are investigating a problem.

Procedure

1. Set the migration log level by running the `isi_ilog` command with the `--level` and `--syslog_threshold` options.

   The following command sets the log level for `isi_vol_copy` to debug:

   ```
   isi_ilog -a isi_vol_copy --level debug --syslog_threshold debug
   ```

2. After you have completed your investigation, reset the log settings by running the `isi_ilog` command with the `--default` option.

   The following command resets the log settings for `isi_vol_copy_vnx`:

   ```
   isi_ilog -a isi_vol_copy_vnx --default
   ```

Restart a NetApp migration

If a data migration from a NetApp storage system fails, you can restart the migration from the point at which the migration failed.

Procedure

1. Restart the migration by running the `isi_vol_copy` command with the exact same parameters that you specified to begin the migration.

   For example, if you ran the following command to begin an incremental migration, and the migration failed, you would need to run the same command again to restart the migration:

   ```
   isi_vol_copy netapp.ip.address:/vol/volume_name/media \\ /ifs/data/netapp_migration/ -sa user-name: -incr
   ```

   The system displays output similar to the following:

   ```
   The transfer is complete.
   Elapsed time: 1 hours, 2 minutes, 35 seconds.
   ```

Restart a VNX migration

If a data migration from a VNX fails, you can restart the migration. To restart a VNX migration, you must run a full migration, even if the migration that failed was an incremental migration.

Procedure

1. Delete the directory on the Isilon cluster that data was being migrated to.

   The following command deletes `/ifs/data/vnx_migration`:

   ```
   rm -Rf /ifs/data/vnx_migration
   ```

2. Recreate the migration directory on the cluster.

   The following command creates `/ifs/data/vnx_migration`:

   ```
   mkdir /ifs/data/vnx_migration
   ```

3. Restart the migration by running the `isi_vol_copy_vnx` command with the `--full` option.
The following command restarts the migration of `/ifs/data/netapp_migration/`:

```bash
isi_vol_copy_vnx vnx.ip.address:/directory/media \ 
/ifs/data/vnx_migration/ -sa user-name: -full
```
Performing a data migration
CHAPTER 7

Migration commands

This section includes the following topics:

- `isi_vol_copy` ........................................................................................................... 30
- `isi_vol_copy_vnx` ................................................................................................... 31
isi_vol_copy

Migrates data from a NetApp storage device.

Syntax

isi_vol_copy

{<src_filer>:<src_dir> <dest_dir>
 | -full | -incr)
 | [-sa <username>: [<password>]]
 | [-sport <port>]
 | [-dport <port>]
 | [-dhost <host>]
 | [-maxino <integer>]
 | -list [-detail]
 | -contexts <server>
 | [-sa <username>: [<password>]]
 | -cleanup <server>
 | [-sa <username>: [<password>]]}

Options

<src_filer>
   Specifies the IP address or domain name of the NetApp storage device.

<src_dir>
   Specifies the absolute path of the directory on the NetApp storage device to migrate.

<dest_dir>
   Specifies the absolute path of the directory on the cluster to migrate data to.

-full
   Migrates all data from the source to the target directory.

-incr
   Migrates only data that has been modified since the last migration was run.

-sa <username>[<password>]
   Specifies the username and password of a user on the NetApp storage device. If the
   <username> specified is not the name of the root account, specify <password> as the
   NDMP password of the user. To view the NDMP password of a user, run the ndmpd
   password command on the NetApp storage device.

   It is recommended that you do not specify a password through this option. Instead,
   specify only a username. If you specify a password as part of the command, the
   password will be visible to all other users logged in to the cluster. If you do not
   specify a password, and one is required, you will be prompted for the password. If
   you enter a password at the prompt, the password will not be visible to other users
   on the cluster.

-sport <port>
   Specifies the NDMP port that OneFS will connect to on the NetApp storage device. The
   default value is 0, which causes OneFS to connect to the default NDMP port
   configured on the NetApp storage device.

-dport
   Specifies the NDMP port on the Isilon cluster that OneFS will coordinate the data
   migration through. The default value is ANY, which causes OneFS to connect through
   any available port.
-dhost <host>
  Specifies the name or IP address of the interface on the Isilon cluster that OneFS will
  coordinate the data migration through. This can be useful if the cluster has multiple
  network interfaces and the majority of the data must be transferred through a link
  other than the outgoing NDMP control interface.

-maxino <integer>
  Specifies the maximum number of files that can be created on the NetApp volume.
  This option can be useful if the NDMP stream incorrectly reports the maximum
  number of files, which can cause the migration to fail. Manually specifying the correct
  maximum number of files prevents this issue.

-list
  Displays the current status of all migration sessions.

-detail
  Displays more detailed information about migration sessions.

-contexts <server>
  Displays information about interrupted migration sessions that can be restarted. This
  information is retrieved from the NetApp storage device.
  Specify <server> as an IP address of the NetApp storage device.

-cleanup <server>
  Deletes information about non-restartable migration sessions on both the Isilon
  cluster and the NetApp storage device.
  Specify <server> as an IP address of the NetApp storage device.

isi_vol_copy_vnx

Migrates data from a VNX storage device.

Syntax

isi_vol_copy_vnx
  <src_filer>:<src_dir> <dest_dir>
  [-full | -incr]
  [-sa <username>[:<password>]]
  [-sport <port>]
  [-dport <port>]
  [-dhost <host>]

Options

<src_filer>
  Specifies the IP address or domain name of the VNX.

<src_dir>
  Specifies the absolute path of the directory on the VNX that is being migrated to the
  cluster.

<dest_dir>
  Specifies the absolute path of the directory that data is being migrated to.

-full
  Migrates all data from the source to the target directory.

-incr
  Migrates only data that has been modified since the last migration was run.
-sa <username>[<password>]
  Specifies the username and password of a user on the VNX.
  It is recommended that you do not specify a password through this option. Instead
  specify only a username. If you specify a password as part of the command, the
  password will be visible to all other users logged in to the cluster. If you do not
  specify a password and one is required, you will be prompted for the password. If you
  enter a password at the prompt, the password will not be visible to other users on the
  cluster.

-sport <port>
  Specifies the NDMP port that OneFS will connect to on the VNX. The default value is
  0, which causes OneFS to connect to the default NDMP port configured on the VNX.

-dport <port>
  Specifies the NDMP port on the Isilon cluster that OneFS will coordinate the data
  migration through. The default value is ANY, which causes OneFS to connect through
  any available port.

-dhost <host>
  Specifies the name or IP address of the interface on the Isilon cluster that OneFS will
  coordinate the data migration through. This can be useful if the cluster has multiple
  network interfaces and the majority of the data must be transferred through a link
  other than the outgoing NDMP control interface.