

Discovery Snowball User Guide

Version 1.0

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A Supplement to
The Discovery File Based Footage Delivery Policy, Version 3.0
and the Discovery Global Technical Specifications, Version 6



Purpose

Discovery has compiled this basic user guide to assist their production community in delivering original camera master (OCM) footage using AWS Snowball Edge (SBE) devices per Discovery's current File Based Footage Delivery Policy (FBFD) version 3.0.

This guide is intended to provide basic information for Discovery's production partners to configure a host computer system to properly access an AWS Snowball Edge device, properly load OCM Volumes to the device and return the SBE to the regional AWS facility.

Before proceeding please thoroughly review Discovery's current FBFD policy to ensure you understand Discovery's requirements for footage delivery. This document can be downloaded from Discovery's Producers Portal.

For more detailed information on SBE please review AWS documentation

<https://docs.aws.amazon.com/snowball/latest/developer-guide/using-device.html>

Overview

The AWS Snow family consists of several devices used for migrating large amounts of data into AWS cloud storage. For Discovery's purposes you will primarily be using the Snowball Edge, a self-contained compute/storage system about the size of a medium Pelican case.

When you receive the SBE device you will need to connect it to power and your internal network. You will use a host computer system also connected to your internal network to access the SBE and to copy data from your local repository – this may be direct attached storage on your host system or network attached storage - using a terminal window and the specific command line syntax and processes as set forth in this document.

Examples Used in This Document

Throughout this document we will present examples of how to use the command line interface to access the AWS applications and copy data to the SnowballEdge. In these examples **orange** text represents what you will see on your screen. The **green** text represents the commands you will type for a specified action.

All commands that you will type require very specific syntax, are case sensitive, and must be typed exactly as represented in these examples.



Setting Up the Host Computer System

Prior to requesting/receiving the SBE device you will want to setup your local environment. This includes selecting your local host computer system you will be using to access the SBE device. The host computer will need to have the Python programming language installed and configured. In addition, you will need two command line utilities, provided by AWS, installed and running on your host system. This section provides instructions for downloading these three applications and installing them on the host system you will use to access the SBE.

Required Applications:

- Python (ver 3.x recommended)
- AWS Snowball Client
- AWS CLI

Setup for MAC OS

Install Python

Most recent versions of the MAC OS already have Python installed. Check to see if Python is installed on your system.

Open a Terminal window and at the prompt type "python" and press <Enter>. If Python is already installed the app will load and the screen will display the version installed:

```
emergtech$ python
Python 2.7.10 (default, Feb7 2017, 00:00:15)
[GCC 4.2.1 Compatible Apple LLVM 8.0.0 (clang-800,0m34)] on darwin
Type "help", "copyright", or "license" for more information.
>>>
```

If the response is "command not found" you will need to install Python. Close the Terminal window. Use the following link to download and install Python on your host system:

<https://www.python.org/downloads/mac-osx/>

Download and Install the AWS Snowball Client

Download the Snowball Client app from:

<https://aws.amazon.com/snowball/resources/>

Filename should resemble "snowball-client-mac-1.0.1-367.tar.gz" (version number may vary)

Drag/move the file into your Applications folder

Unzip the file. This should create a new folder named:

"snowball-client-mac-1.0.1-374"



Check for /usr/local/bin:

When the app installs it will need to use the /usr/local/bin/ folder to run properly. Most Mac OS already have this folder created, but if not, you will need to create it prior to running the install command. To check for the /usr/local/bin/ folder open a new Terminal window and type the following command at the prompt:

```
emergtech$ ls /usr/local/bin/
```

If the screen returns "No such file or directory" you will need to create the folder. If the screen returns a list of folders or files then the directory already exists and you can skip the next step and proceed to the Snowball Client installation process.

To create the /usr/local/bin directory type the following at the prompt in Terminal. If prompted, enter your password:

```
emergtech$ sudo mkdir -p -m 775 /usr/local/bin  
Password:
```

Install the Snowball Client:

Open a new Terminal window and at the prompt navigate/change directory into the /Applications/ snowball-client-mac-1.0.1-374 folder:

```
emergtech$ cd /Applications/snowball-client-mac-1.0.1-374/
```

At the prompt type the following command and press <Enter>, if prompted enter your password:

```
emergtech$ sudo ./install.sh  
Password:
```

The Snowball Client will install to your system.

Download and Install the AWS CLI App

The AWS CLI app is easiest installed from the command line in Terminal. Open a new Terminal window.

Navigate to the Applications folder:

```
emergtech$ cd /Applications/
```

At the prompt type the following and press <Enter> :

```
emergtech$ curl "https://s3.amazonaws.com/aws-cli/awscli-bundle.zip" -o "awscli-bundle.zip"
```

When the download is complete, at the prompt type the following and press <Enter>:

```
emergtech$ unzip awscli-bundle.zip
```

And finally type the following at the prompt and press <Enter>

Enter your password if prompted:

```
emergtech$ sudo ./awscli-bundle/install -i /usr/local/aws -b /usr/local/bin/aws  
Password:
```

This will complete the AWS CLI app installation.



Setup for Windows OS

Install Python

Most Windows systems will not have Python installed by default.

To check if Python is installed Open a command window:

(Press Windows+R to open "Run" box. Type "cmd" and then click "OK" to open a Command Prompt.)

At the prompt type "python" and press <Enter>

If Python is already installed and added to the system PATH variable, the app will load and the screen will display the version installed:

```
emergtech$ python
Python v3.6.4 :d48eceb, Dec 19 2017, 06:54:40) [MSC v.1900 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
```

If the response is "python not recognized as an internal or external command" you will need to install Python using the instructions below:

Close the Terminal window.

Use the following link to download and install Python on your host system:

<https://www.python.org/downloads/windows/>

Download the appropriate installer for your Windows system.

Download and Install the AWS Snowball Client

Download the windows installer from

<http://snowball-client.s3-website-us-west-2.amazonaws.com/snowball-client-win.msi>

Run the installer to install to your host computer.

Download and Install the AWS CLI App

Download the AWS CLI installer from:

<https://s3.amazonaws.com/aws-cli/AWSCLISetup.exe>

Run the installer file to install to your host computer.

To test the installation open a new command window and at the prompt type "aws --version" and then press <Enter>

Your on screen return should look similar to the following:

```
emergtech$ aws --version
aws-cli/1.19.3 Python/3.7.4 Windows/10 botocore/1.13
```

This completes the initial setup for your Mac or Windows host system. Once the Snowball device arrives at your location you can begin the process of configuring your apps to copy data to the Snowball.



Using the Snowball Device

The Snowball device is a sealed unit that has three doors – a front, back, and a top – which can be opened by latches. The top door contains the power cable and the LCD shipping label. The other two doors can be opened and slid inside the device so that they're out of the way while you're using it. By opening the doors, you get access to the LCD touch screen display embedded in the front side of the device, and the power and network ports in the back.

Connect the device to AC power with the provided cable and to your local network using a Cat6/RJ45 network cable.

Press the power button above the LCD screen on the front panel.

The Snowball will power on and if your network is configured for DHCP, will acquire a dynamic IP address. It can take a few minutes for the Snowball to run through its power-on sequence. Once completed you can select the network tab on the front LCD and see the assigned IP address – or if preferred you can use the LCD touch screen to assign a static IP address.

Configure Apps and Unlock the Device

The Snowball device employs several security features to prevent unauthorized use. There are two sets of matching keys that must be used for every command that accesses the device. Instead of having to type these key pairs every time you enter a command you can create a configuration file that is automatically referenced each time you send a command to the device.

To configure the SnowballEdge Client app you will need a manifest file and an unlock key. These are generated when the device is received at your location. The technical contact provided on your Snowball request form will receive an e-mail from <Hive@Discovery.com> with a link to download the manifest file and the unlock key. The email should also include the bucket name which you will use later in the process for copying footage. This information can also be accessed in Discovery's Producers Portal.

We recommend creating a text document on your desktop and copy/paste the unlock key and the bucket name into this doc. Later when you need these character strings you can copy/paste instead of having to type them every time. Using the link provided, download the manifest file to your local host system.

The manifest file and unlock key are unique to each Snowball device. You will only need to configure the SnowballEdge Client once for each device. However, each time you begin working with a new snowball device you will need to take these steps to configure the SnowballEdge Client for that device.

Configure SnowballEdge Client

Open a Terminal window or a Windows command prompt (depending on your OS)

At the prompt type "snowballEdge configure" and press <Enter>

When prompted enter the requested information:

```
emergtech$ snowballEdge configure
Snowball Edge Manifest Path: /path/to/manifest/file/JID0ba51ddb-0c09-4bee-864e-2f51ec3c3a70_
manifest.bin
Unlock Code: bdbbe-10654-a9fd3-15e74-4d87a (your unique unlock code)
Default Endpoint: https://123.4.56.789 (your SBE IPAddress)
```



Unlock Snowball Device

Once snowball client is configured you will need to unlock the device prior to use.

At the command prompt type "snowballEdge unlock-device" and press <Enter>

```
emergtech$ snowballEdge unlock-device
```

It may take a minute or so for the device to unlock. You can check status on the front LCD panel.

Locked -> Unlocking -> Ready.

When the device is in "Ready" status you can proceed to configuring the AWS CLI app with the second pair of security keys.

Configure AWS CLI

In this step you will create a configuration file for the AWS CLI app using two security keys retrieved from the snowball device using the SnowballEdge Client app you previously configured. These keys are unique to each Snowball device, so each time you begin working with a different device you will need to execute this process.

Open a Terminal window or a Windows command prompt (depending on your OS)

At the prompt type "snowballEdge list-access-keys" and press <Enter>

```
emergtech$ snowballEdge list-access-keys
{
  "AccessKeyIds": "AKIACEMGE3DAMBZGIYDSOJRG4ZFBLYLTLEFTX3XYHFIP0JP5INMK"
}
```

The screen will show a lengthy alpha-numeric string, this is the unique access key for this SBE, copy/paste this into your text document without including the surrounding " " quote marks. You will use this in the next step.

At the prompt type "snowballEdge get-secret-access-key --access key-id

AKIACEMGE3DAMBZGIYDSOJRG4ZFBLYLTLEFTX3XYHFIP0JP5INMK" where the access key is the string you retrieved in the previous step, and then press <Enter>

```
emergtech$ snowballEdge get-secret-access-key --access-key-id
AKIACEMGE3DAMBZGIYDSOJRG4ZFBLYLTLEFTX3XYHFIP0JP5INMK
aws_access_key_id = AKIACEMGE3DAMBZGIYDSOJRG4ZFBLYLTLEFTX3XYHFIP0JP5INMK
aws_secret_access_key = R7QxzFFluHc9VZfPgU8SjWJiULX2g1LBxu98bE99
```

The secret access key will be displayed on screen. copy/paste this into your text document for use in the next steps.

At the prompt type "aws configure" and press <Enter>

```
emergtech$ aws configure
AWS Access Key ID [None]: copy/paste key frm prev step
AWS Secret Access Key [None]: copy/paste secret key frm prev step
Default region name [None]: no entry, press enter
Default output format [None]: no entry, press enter
emergtech$
```

This completes configuration for the AWS CLI app and you are ready to begin copying data to the SBE.



Copying data to the Snowball Device

You are now ready to begin copying the source footage OCM Volumes from your local storage to the Snowball Edge device. Please refer to Discovery's File Based Footage Delivery policy version 3.0 to ensure you are organizing the OCM volumes properly prior to copying to the Snowball Edge device.

To copy data to the snowball device,
Open a Terminal window or a Windows command prompt (depending on your OS)

At the prompt enter the following command:

```
emergtech$ aws s3 sync /path/to/source/material s3://snowball bucketname --endpoint http://  
ipaddressofsnowball:8080
```

In this example `/path/to/source/material` would be the path to the footage OCM Volumes on your local storage.

`s3://snowball bucketname` would be the unique bucket name for your snowball job this is provided in the initial email to the Technical contact.

`ipaddressofsnowball` would be the IP address of your snowball device

For example, a properly configured command might look like this:

```
emergtech$ aws s3 sync C:\Prd1234\footage\cards\ s3://dci-prod-onramp-footage-123456-us-  
east-1/ --endpoint http://192.168.1.169:8080
```

The `sync` command is recursive so in the preceding example it will copy all the folders and files within the `cards` folder into the root of the s3 bucket on the snowball. However, it will not copy the `cards` folder unless you append that at the end of the s3 bucket name.

Example below:

```
emergtech$ aws s3 sync C:\Prd1234\footage\cards\ s3://dci-prod-onramp-footage-123456-us-  
east-1/cards --endpoint http://192.168.1.169:8080
```

This can be very useful for copying just the OCM Volumes to the root of the s3 bucket as per Discovery's FBFD policy.

The `sync` command will also not copy folders/files that already are present at the destination path. If you begin a copy process and it is interrupted for any reason, you can run the exact same sync command to restart it and it should only transfer the files that were interrupted or had not begun prior to the interruption.

The `sync` command is the preferred method to transfer data to the Snowball. However, `sync` only works on the folder level. If you need to transfer a single file you would need to use the `cp` (or copy) command. The syntax remains the same:

```
emergtech$ aws s3 cp C:\Prd1234\footage\myfile.mxf s3://dci-prod-onramp-footage-123456-us-  
east-1/ --endpoint http://192.168.1.169:8080
```

Once your copy instance begins the screen will show you status including files completed, files in progress, amount of data left, and current transfer speeds.



Optimizing Data Transfer Speeds

Transfer speeds from your local storage to the Snowball device can vary widely depending on a number of different factors which include the type of storage you are moving data from, your network configuration, other traffic on the network, and limitations of the types of connections to your host computer and storage arrays.

All that said, there are some options that might help improve your aggregate transfer speeds. The easiest method to try is breaking up your OCM Volumes into multiple groups, or top level folders, then opening a new Terminal window or Windows Command prompt and running the sync command for each of those top level folder concurrently.

Another option might be to set up more than one host computer to access the Snowball device. Once the device is unlocked you can have multiple host systems copying data to the snowball at the same time.

Dividing your OCM Volumes between several storage systems attached to different computers might help expedite the loading to the snowball device.

Notes on Working with Multiple Snowball Devices

Each Snowball device can store up to 80TB of data. If your footage delivery is more than 80TB, you will receive multiple Snowball devices. Each Snowball will have a unique manifest file and a unique unlock key. These unique keys will be associated to a specific Snowball Job ID (JID).

When you receive the Snowball device the JID will be displayed on the shipping label. Pay close attention so you apply the correct manifest and unlock key when configuring the SnowballEdge Client app.

