# Data Download to Google Drive – Software Design Document

HPC-DME provides APIs to download a single data object, a list of data objects and a collection (all data objects in a collection). Supported destinations include AWS S3, Globus S3 and API attachment

A new requirement is to provide ability to download files to Google Drive. The Google Drive destination is supported for files stored in Cleversafe archive, and not supported for POSIX archive.

This document provides the software design to enable this capability.

## Single File Download

### API Design

The existing single file download API will be extended to support Google drive destination for the download request. The input JSON request will be the following:

{

"googleDriveDownloadDestination": {

"destinationLocation": {

"fileContainerId": "<The Google Drive ID>",

"fileId": "<The file name to be created in the Google Drive>"

},

"accessToken" : "<An authenticated access token to communicate w/ Google Drive>"

}

}

### Detailed Design

The following changes/additions to the code base are needed to implement download to Google Drive:

#### HpcDataTransferTypes.xsd

* Create a complex type HpcGoogleDriveDownloadDestination. This complex type should model the Google destination as described in the API above.
* Add to HpcDataObjectDownloadRequest an attribute of type HpcGoogleDriveDownloadDestination

#### HpcDataManagement.v2.xsd

* Add to HpcDataObjectDownloadRequestDTO an attribute of type HpcGoogleDriveDownloadDestination

#### HpcDataManagementBusServiceImpl.java

* Update validateDataObjectDownloadRequest() to validate Google Drive destination is supported by Cleversafe archive only. Throw an exception with detailed error message if requested for POSIX archive

#### HpcDataTransferService.java

* Update downloadDataObject() to accept a HpcGoogleDriveDownloadDestination parameter in addition to the other parameters its currently accepting

#### HpcDataTransferServiceImpl.java

* Update downloadDataObject() to accept a HpcGoogleDriveDownloadDestination parameter in addition to the other parameters its currently accepting
* Update downloadDataObject() implementation to detect if a download to Google drive destination was called and perform it by calling a new private method performGoogleDriveAsynchronousDownload()
* Create HpcGoogleDriveDownload internal class that implements HpcDataTransferProgressListener. This class will be used to track progress of the google drive download (similar to how progress of the AWS S3 download is tracked)
* Implement performGoogleDriveAsynchronousDownload() as the following
  + Use S3 data-transfer-proxy to create a download URL to the file in the archive
  + Use Google Drive data-transfer-proxy to transfer the file from the archive to the Google Drive location. Send a progress indicator instance.
  + Create a HpcDataObjectDownloadResponse object to return with appropriate data.

#### New HpcDataTransferProxyImpl.java

* Create a new implementation of HpcDataTransferProxy interface and place it in a new package integration.googledrive.impl
* Include the new package in the pom.xml <Private-Package> section
* Instantiate the new HpcDataTransferProxyImpl class in the beans-configuration and add it to the list of data transfer proxies.
* Create a thread executor (pool) for downloading files to Google Drive.
* The new HpcDataTransferProxyImpl class should implement the downloadDataObject() method by using the POC code performed to assess feasibility. The downloadDataObject() should be run async using a thread from the pool (this is similar to how AWS S3 download is performed)