**BlackPearl Spectra S3 Client Certification Test Plan**

**Version 0.6**

**1/28/2016**

1. **Revision History**

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| **Version** | **Date** | **Author** | **Changes** |
| 0.1 | 11/9/15 | GSJ | Initial format and content. Designed for BlackPearl Software V1.2 |
| 0.2 | 11/11/15 | SDE | Updates for Cache Reclamation – Cache size reduction – Atomic Replacement. |
| 0.3 | 11/19/15 | GSJ | Consolidate feedback into single document, update to include test results directly in the document. Clean up all tests |
| 0.4 | 11/30/15 | GSJ | Revised tests to simplify, shorten. |
| 0.5 | 12/1/15 | GSJ | Consolidated BlackPearl documentation to single web link and misc. cleanup. |
| 0.6 | 1/28/16 | GSJ | Updates to reduce file sizes, modify plan after initial testing |

1. **Introduction**

The document describes the certification tests for a BlackPearl Client presenting a Spectra S3 compatible interface. Complete details of the Spectra S3 Certification Program can be found in the **Spectra S3 Certification Program** link in the Reference Information section below.

1. **Reference Information**

**Developer Website:** For information on the Spectra S3 interface and developing a Spectra S3 compatible interface, please refer to the Developer Website on Spectra Logic.com at: <https://developer.spectralogic.com/ds3/>

**BlackPearl:** For detailed information about BlackPearl, please refer to the Spectra Logic BlackPearl user documentation at: <https://support.spectralogic.com/documentation/user-guides/#BlackPearl_user_guides>

**Spectra S3 Client Certification Program:** For information about the BlackPearl Spectra S3 Client Certification Program refer to the Certification Program Website: <https://developer.spectralogic.com/certification/>

**Important Notice:** The remainder of this document assumes that the user is familiar with details of the Spectra S3 interface, the BlackPearl product, information contained on the Spectra Logic Developer Site, information contained on the Spectra Logic Certification Program Site and other resources as listed in the Reference Information section of this document.

1. **Test Setup, Installation of the Host Client Software, Connection to BlackPearl and Configuration**

After you have complete development and testing of your Spectra S3 compatible Interface you may decide to pursue certification with Spectra Logic – Please refer to the **Spectra S3 Client Certification Program** link shown above. If you choose to proceed, please have your answers to the Client Questionnaire (<https://developer.spectralogic.com/client-questionnaire/>) completed and then contact Spectra S3 Certification Program personnel (<https://developer.spectralogic.com/contact/> ). Spectra Certification Personnel will work with you to determine the appropriate test setup, test equipment requirements, test time, installation of host software and client, and other testing program details. Review the installation of your product and BlackPearl connection and configuration to verify that everything is working properly prior to commencing the testing.

Typically the testing will be done in Spectra Logic's Testing and Certification Lab. In this case, Spectra Logic will work with you to have your software installed in the Testing Lab. You will have the option to access the Testing Lab remotely or by visiting the Lab in our Boulder, Colorado offices.

1. **Logging and Result Capture Requirements for Certification**

* **Log files:** Please pull a log set daily from BlackPearl during certification testing. These log files are used to assist with confirming proper Interface behavior and debugging any failures that may occur. Instructions for downloading the BlackPearl logs can be found in the User Guide: Refer to the “AutoSupport” chapter and the section titled “Log Sets”.  
  In addition to daily log set, if there is an error please capture a log set for that error.
* **Screen Captures:** Screen captures will be required for several of the tests presented in this document to enable Spectra Logic to verify test results and certify a product. Please ensure that:
  1. The person performing the test understands how to capture a screen image of the information that is requested. In Windows, this can be accomplished by using the Windows Snipping Tool (<http://windows.microsoft.com/en-us/windows/use-snipping-tool-capture-screen-shots?src=ia&iaaid=50012900&ialnk=title#1TC=windows-7>)
  2. The screen images can be copied into this Test Plan document that is required to be submitted to Spectra Logic to complete the Certification Process.

1. **Sequential List of Tests That Must Be Performed Using the Host Application and Results That Must be Captured**
2. Attempt to access BlackPearl with invalid user credentials (invalid Access ID and Secret Key).
   1. Capture a screen image that shows the system status once the system reports an error, most likely when credentials are entered or when the application tries to PUT a file using the invalid credentials. Paste the screen image below:
3. Attempt to access a bucket that doesn’t exist or to which the user does not have access to (PUTs and GETs)
   1. Using the BlackPearl User Interface:
      1. Create a new user with credentials that are different than the credentials the application is currently using.
      2. Create a bucket with the user credentials created above.
   2. From the application, attempt to PUT data into the new bucket using the application's current user credentials (not the user created above).
      1. Capture a screen image that clearly shows the application error. Paste the screen image below:
   3. From the host application, try to GET data from that bucket.
      1. Should report failure status of file not found – Capture a screen image that clearly shows the application error. Paste the screen image below:
4. Attempt to GET an object from BlackPearl that doesn’t exist.
   1. Open different Spectra client (Deep Storage Browser or Java CLI)
   2. Capture a screen image of DSB or CLI that clearly shows the list of files. Paste the screen image below:
   3. DELETE an object(s) using the DSB or CLI
   4. Attempt to restore deleted object(s) through application
   5. Capture a screen image that clearly shows the application status of “object does not exist” and gracefully return this error to end user. Paste the screen image below:
5. Archive (i.e. Bulk Put) 3 objects larger than the chunk size to BlackPearl Simultaneously.
   1. Force the chunk size to 100GB by setting the data policy of the bucket you will use for this test to “Single LTO6 Copy” in the web management GUI.
   2. Ingest 3 110GB files from Z:\Test\_Files\_110GB so that the ingested files are on the E drive. If your application does not need to ingest files, move the files to the E drive prior to starting this test.
   3. Issue a command to archive the 3 objects from the E drive to BlackPearl simultaneously (i.e. Bulk Put)
   4. Capture start time START TIME MUST BE IN GMT/UTC (you can record the GMT/UTC time from here http://www.worldtimeserver.com/current\_time\_in\_UTC.aspx):\_\_\_\_\_\_\_\_\_\_\_\_\_
   5. Wait until the file transfers have completed before continuing.
   6. Capture a screen image that shows the application completed or error. Paste the screen image below:
   7. Capture BlackPearl Performance
      1. Open the BlackPearl User Interface performance screen (see the **BlackPearl User Guide** section titled “View Performance Metrics”). Set pool to cache and resolution to “60s (25hours)” – then download CSV. Save the file as PUT3x110GB.CSV.
6. Restore (i.e. Bulk Get) 3 objects larger than the chunk size simultaneously
   1. Delete the original files from their original location if appropriate.
   2. Clear cache by executing the instructions located here: <https://developer.spectralogic.com/how-to-clear-blackpearl-cache/>
   3. Issue a command to simultaneously recover (i.e. Bulk Get) the 3 files archived in Item 4 above back to their original location
   4. Capture job start time:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   5. Capture a screen image that clearly shows the application completed or error. Paste the screen image below:
   6. Capture BlackPearl Performance
      1. Open the BlackPearl User Interface performance screen (see the **BlackPearl User Guide** section titled “View Performance Metrics”). Set pool to cache and resolution to “60s (25hours)” – then download CSV. Save the file as GET3x110GB.CSV.
7. Archive (i.e. Bulk Put) 250 objects of approximately 1GB size to BlackPearl
   1. Ingest 250 1GB files from Z:\Test\_Files\_1GB so that the ingested files are on the E drive. If your application does not need to ingest files, move the files to the E drive prior to starting this test.
   2. Issue a command to archive the 250 objects from the E drive to BlackPearl simultaneously (i.e. Bulk Put)
   3. Capture job start time. START TIME MUST BE IN GMT/UTC (you can record the GMT/UTC time from here: http://www.worldtimeserver.com/current\_time\_in\_UTC.aspx):\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. Capture a screen image that shows the application completed or error. Paste the screen image below:
   5. Capture BlackPearl Performance
      1. Open the BlackPearl User Interface performance screen (see the **BlackPearl User Guide** section titled “View Performance Metrics”). Set pool to cache and resolution to “60s (25hours)” – then download CSV. Save the file as PUT250.CSV.
8. Restore (i.e. Bulk Get) 250 objects of approximately 1GB size from BlackPearl
   1. Delete the original files from their original location if appropriate.
   2. Clear cache: by executing the instructions located here: <https://developer.spectralogic.com/how-to-clear-blackpearl-cache/>
   3. Issue a command to simultaneously recover (i.e. Bulk Get) the 250 files archived in Item 6 above back to the E drive
   4. Capture start time:\_\_\_\_\_\_\_\_\_\_\_\_\_
   5. Capture a screen image that shows the application completed or error. Paste the screen image below:
   6. Capture BlackPearl Performance
      1. Open the BlackPearl User Interface performance screen (see the **BlackPearl User Guide** section titled “View Performance Metrics”). Set pool to cache and resolution to “60s (25hours)” – then download CSV. Save the file as “GET250.csv”.
9. Test Cache full condition by writing files and reducing the size of the BlackPearl Cache:
   1. Put the tape library backend in quiescent mode: Login to the BlackPearl Management GUI and on the Advanced Bucket Management Screen – select the tape partition, then select Action > “Put Tape Partition in Standby”.
   2. Login to BlackPearl command line console (management IP, with the same login credentials used for GUI) - using an SSH client (like Putty) on your application server.
   3. From the console, run the **config s3cachefilesystem list**. Note: keep this ID handy, it will be used in other test (including the next test).

black-pearl> **config s3cachefilesystem list**

**ID**                                     Name    Max Capacity

**e34bba1d-842d-11e5-81d6-002590c1177c**   **cache**   --

* 1. Reduce the size of the Cache using the following command. And update the cache size to 150GB with the max\_capacity parameter in bytes. Use the ID from step c with the id parameter.

**config s3cachefilesystem update** --id=e34bba1d-842d-11e5-81d6-002590c1177c --max\_capacity=150000000000

* 1. Verify the cache size has been set with this command:

Black-pearl> **config s3cachefilesystem show**

          ID: e34bba1d-842d-11e5-81d6-002590c1177c

          Name: cache

  Max Capacity: 150000000000

* 1. Transfer 175 1GB files
     1. Keep transferring objects until a Cache Full condition is reached.
     2. Cache can be monitored from the BlackPearl Web Management Interface Dashboard
  2. Capture screen images that clearly show the application response:
     1. Once cache is full, the application should present a cache full condition, and/or wait patiently for the condition to clear and not hang. Paste the screen image of the condition or the jobs waiting in the application:
     2. Paste a screen image of the Dashboard Screen on BlackPearl User Interface:
     3. (optional) It is acceptable to have timeout at some point. Paste the screen image:
     4. Put the tape library backend in active mode: Login to the BlackPearl Management GUI and on the Advanced Bucket Management Screen – select the tape partition, then select Action > “Activate Tape Partition”.
     5. Once the jobs resume, or cache is no longer full. Paste below the screen image of the Applications Jobs screen showing the job complete:
  3. **Important:** Once testing is complete reverse the cache reduction that was performed above
     1. Repeat step d but leave the max capacity empty “--max\_capacity=”. To reset cache back to maximum size.
     2. Verify the cache size have been set with this command:

Black-pearl> **config s3cachefilesystem show**

          ID: e34bba1d-842d-11e5-81d6-002590c1177c

          Name: cache

  Max Capacity: --

1. NOTE: Contact your testing administrator for assistance in completing this step Resuming a job where a connection has failed when doing an object PUT
   1. Interrupt data using Proxy (Details need to be added)
   2. Because of the nature of the HTTP interaction, the client should be able to continue where it left off as long as it knows which files in the job it has successfully sent so far. We have a couple ways that this can be handled. They can save the Job ID and resume the job, they can look and see what files are outstanding by listing all the objects, or in 3.0 they can choose to ignore name conflicts when creating the job in which case BP will only request the files that are new.
   3. Capture screen shots that show the job interrupted and then the job completed after it has resumed or restarted:

**Perform the Following Tests if These Commands are Supported in the Application**

These tests must be completed if you use any of the features described below.

1. Updating an existing object in BlackPearl - test object overwrite (Atomic rewrite, keep latest version)
   1. Setup: In BlackPearl User Interface, create a new bucket and select a data policy with versioning (Data Policy "Versioning" set to "Keep Latest").
      1. Optionally: create a new data policy, in "Versioning" select “Keep Latest”, and pick a tape storage domain.
      2. To check for versioning, from BlackPearl User Interface on the Advanced Bucket Management screen at the bottom Data Policies are listed. Select the Single Copy on Tape, then click action Edit.
   2. PUT a file into that bucket,
   3. Modify file in application and then upload a new version of the file to BlackPearl using the same object name.
   4. PUT of same file again with the same file name/GUID, it should succeed. Please record your answer: (Succeed or Fail):\_\_\_\_\_\_\_\_\_\_\_\_\_
   5. Then, test a GET of the new/modified file recently sent, is it the modified file? Please record your answer: (Modified or Original):\_\_\_\_\_\_\_\_\_\_\_\_\_
   6. Capture a screen image that clearly shows the application completed or error. Paste the screen image below:

1. Request data from BlackPearl that is on a tape that has been ejected from the library
   1. Use a Bucket that has data written by your application, it can be from the previous test.
   2. Eject that tape:
      1. From BlackPearl User Interface, On the Buckets screen – select the bucket, then Action -> Show Physical Placement
      2. From the Tape Management screen, select that tape and eject it. This will place the tape in the EE pool.
   3. Clear the cache. from the SSH console on BlackPearl run the following command:   
      **config s3cachefilesystem update** --id=e34bba1d-842d-11e5-81d6-002590c1177c --reclaim
   4. GET the objects in that bucket that have now been ejected
   5. Capture screen images that clearly show the application response: Waiting for the condition to clear. The application should wait patiently for the condition to clear and not hang. Paste the screen image below:
   6. Reimport the tape: From the Tape Management screen, action -> Online All Tapes.
   7. Capture screen images that clearly show the error condition (Time out or waiting for condition to clear) has cleared. Paste the screen image below:
2. If the application supports multiple buckets or multiple storage targets that can be mapped to a bucket
   1. Create two buckets (if the client supports bucket creation)
      1. Capture a screen image that shows how to create the additional buckets. Paste the screen image into below:
   2. PUT data to both buckets
      1. Capture a screen image that shows the application completed with objects in both buckets. Paste the screen image below:
   3. GET data from both buckets
      1. Capture a screen image that shows the application completed with no objects in either bucket. Paste the screen image below:
3. NOTE: IGNORE THIS TEST: If the application is capable of creating a DS3 bucket, create a bucket and do the following
   1. set default job priorities (optional) (Need to determine where this is set)
   2. select data policy (optional)
   3. show screen shot of both settings (if applicable):
4. Optional: Manually change job priorities
   1. List all active jobs in BP – capture screen shot of your application:
   2. In BlackPearl GUI, on S3 Jobs – capture screen shot showing the job with the priority:
   3. Select and change a jobs priority – capture in screen shot of your application:
   4. In BlackPearl GUI, on S3 Jobs – capture screen shot showing the job with the *new* priority:
5. Eject a bucket or tape
   1. Edit Tape Eject information: If supported by the application, enter information about the eject location of a tape cartridge and assign it a label
      1. Capture a screen image that shows how to edit the eject information. Paste the screen image below:
   2. Eject a bucket or a tape
      1. Capture a screen image of the Tape Management screen on BlackPearl showing the tape(s) status as offline/ejected:

1. Host application showing a job is fully persisted to tape or disk archive location:
   1. If application can show whether an object is fully persisted or not by using job polling or using notifications:
      1. PUT data into a bucket
      2. Capture a screen image that shows the BlackPearl Job Status complete in the BlackPearl S3 Jobs Screen. Paste the screen image below:
      3. Capture a screen image from the application showing the same job is not complete/persisted. Paste the screen image below:
      4. After the job is completed/persisted to tape, capture a screen image from the application showing the same job is complete/persisted. Paste the screen image below:
2. If application can list objects in a bucket, show that it can handle (paginate) a large list
   1. PUT 500 objects of 1GB size to BlackPearl (can use objects from prior tests above)
   2. Capture a screen image from the application showing user interface with objects displayed in a first page. Paste the screen image below:
   3. Display the second page of objects in the application.
   4. Capture a screen image from the application showing user interface with objects displayed in a second page. Paste the screen image below: