**BlackPearl Spectra S3 Client Certification Test Plan**

**Version 0.3**

**11/11/2015**

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 |

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 SpectraLogic.com at: <https://developer.spectralogic.com/ds3/>

**BlackPearl:** For further detailed information refer about BlackPearl, please refer to the following documents:

**BlackPearl User Guide**: <http://support.spectralogic.com/python/documents/Spectra%20BlackPearl%20User%20Guide.pdf>

**BlackPearl Site Preparation Guide**:

<https://support.spectralogic.com/documentation/user-guides/blackpearl-site-prep-guide>

**BlackPearl Network Setup Tips**:

<https://support.spectralogic.com/documentation/user-guides/blackpearl-network-setup-tips>

**BlackPearl DS3 API Reference**:

<https://support.spectralogic.com/documentation/user-guides/blackpearl-ds3-api-reference>

**BlackPearl Drive Installation Guide**:

<https://support.spectralogic.com/documentation/service-and-maintenance-guides/blackpearl-install-drive.pdf>

**BlackPearl Rack Mounting Guide**: <http://support.spectralogic.com/python/documents/Spectra%20BlackPearl%20rackmount%20guide.pdf>

**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 Site and others 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.

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

* **Log files:** Please pull a log set daily from BlackPearl. These log files are used to assist with 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 snip of (or capture a screen shot and snip or crop) 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#1TC=windows-7> )
  2. The host system computer connected to the BlackPearl User Interface has sufficient disk storage space to capture the screen snips.
  3. The screen snips can be copied into the test results summary 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.
   1. Capture a screen snip that clearly 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 snip below:
3. PUT a single object with size less than the current chunk size. For BlackPearl V1.2, the default chunk size should be set to 100GB.
   1. Capture a screen snip (or snips) that clearly shows the status of the job: a) In Progress and b) Completed with status of completed or error. Paste the screen snips below:
4. GET an object that already exists from BlackPearl (to a fresh location in application so there is no conflict with original source – can use the same object as the previous test)
   1. Capture a screen snip (or snips) that clearly shows the status of the job: a) In Progress and b) Completed with status of completed or error. Paste the screen snips below:
5. Attempt to access a bucket that 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 in 4.a.i above.
   2. From the host application, attempt to PUT data into the new bucket using the applications current user credentials (not the ones created in 4.a.i above).
      1. Capture a screen snip that clearly shows the application error. Paste the screen snip below:
   3. From the host application, try to GET data from that bucket, if application can see or thinks there is data in the bucket
      1. Should report failure status – Capture a screen snip that clearly shows the application error. Paste the screen snip below:
6. Updating an existing object in BlackPearl - test atomic replacement (keep latest versioning)
   1. Setup: In BlackPearl User Interface, created a new bucket and select a data policy with versioning.
      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 Orignal):\_\_\_\_\_\_\_\_\_\_\_\_\_
   6. Capture a screen snip that clearly shows the application completed or error. Paste the screen snip below:

1. Updating an existing object in BlackPearl (if allowed) - failure when PUT with same object name (when versioning is turned off)
   1. PUT a file into a bucket that has the Versioning set to “None”
      1. To Check, from BlackPearl User Interface on the Advanced Bucket Management screen,
   2. Optionally, modify file in application and then upload a new version of the file to BlackPearl using the same object name.
   3. PUT of same file again with the same file name/GUID, does it succeed (Succeed or Fail)?\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. Does the PUT fail (Yes or No)?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   5. Capture a screen snip that clearly shows the application completed or error. Paste the screen snip below:
2. GET an object from BlackPearl that doesn’t exist
   1. Open different Spectra client (DSB or CLI)
   2. Capture a screen snip of DSB or CLI that clearly shows the list of files. Paste the screen snip into the “Test Results” document with a heading of “List of objects from BlackPearl that exist”.
   3. DELETE an object(s) using the DSB or CLI
   4. Attempt to restore deleted object(s) through application
   5. Capture a screen snip that clearly shows the application status of “object does not exist” and gracefully return this error to end user. Paste the screen snip below:
3. PUT single object larger than current chunk size. For BlackPearl V1.2, the default chunk size should be set to 100GB.
   1. Capture a screen snip (or snips) that clearly shows the status of the job: a) In Progress and b) Completed with status of Success or Error. Paste the screen snips below:
4. GET an object larger than the current chunk size that already exists from BlackPearl (delete or restore to a fresh location so no conflict with original source – can use the same object as the previous test)
   1. Capture a screen snip (or snips) that clearly shows the status of the job in Progress. Paste the snip(s) below:
   2. Capture a screen snip (or snips) that clearly shows the status of Success or Error. Paste the screen snip(s) below:
5. BULK PUT 5 150GB objects to BlackPearl (assumes 150GB is larger than the current chunk size)
   1. Capture start time:\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Capture job complete time:\_\_\_\_\_\_\_\_\_\_\_\_
   3. Capture a screen snip that clearly shows the application completed or error. Paste the screen snip below:
   4. 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 BPPerformBULKPUT5x150GB.CSV.
      2. Capture a screen snip that clearly shows the Performance Screen. Paste the screen snip below:
6. BULK GET 5 150GB objects to BlackPearl (assumes 150GB is larger than the current chunk size)
   1. Capture start time:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Capture job complete time:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Capture a screen snip that clearly shows the application completed or error. Paste the screen snip below:
   4. 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 BPPerformBULKGET5x150GB.CSV.
      2. Capture a screen snip that clearly shows the Performance Screen. Paste the screen snip below:
7. PUT 1000 objects of 1GB size to BlackPearl
   1. Capture start time:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Capture job complete time:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Capture a screen snip that clearly shows the application completed or error. Paste the screen snip below:
   4. 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 BPPerformPUT1000.CSV.
      2. Capture a screen snip that clearly shows the Performance Screen. Paste the screen snip below:
8. GET 1000 objects of 1GB size from BlackPearl
   1. Capture start time:\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Capture job complete time:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Capture a screen snip that clearly shows the application completed or error. Paste the screen snip below:
   4. 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 “BPPerformGET1000.csv”.
      2. Capture a screen snip that clearly shows the Performance Screen. Paste the screen snip below:
9. Test Cache full condition by writing files and reducing the size of the BlackPearl Cache:
   1. PUT tape library backend in quiescent mode On the Advanced Bucket Management Screen – select the tape partition, select action “Quiescent Tape Partition”. Make sure to undo this once complete with this test.
   2. Login to BlackPearl console (management IP, with the same login credentials used for GUI) - using an SSH client (like Putty) on your application server, or reference the “Certification Getting Started guide” for the windows VM
   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 200GB or 500GB 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=500000000000

* 1. 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: 500000000000

* 1. Optionally, in the Advanced Bucket Management Screen set the tape partition to Standby (in quiesced state). This will help the cache fill up faster.
  2. Transfer x files of 1GB (>larger than cache size set), where x is likely between 125% or 150% of the cache size set in step d.
     1. Keep transferring objects until a Cache Full condition is reached.
     2. Cache can be monitored from the BlackPearl User Interface Dashboard
  3. Capture screen snips 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 snip of the condition or the jobs waiting in the application:
     2. Paste a screen snip of the Dashboard Screen on BlackPearl User Interface:
     3. (optional) It is acceptable to have timeout at some point. Paste the screen snip:
     4. After the condition has cleared, or a timeout was reache as above, - bring the tape partition back online (out of standby or unquiesce tape partition) on the Advanced Bucket Management screen. Once the jobs resume, or cache is no longer full. Paste below the screen snip of the Applications Jobs screen:
  4. 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 size of HDDs.
     2. Then verify again by repeating step e. Should see “Max Capacity: --” value What Should this value be????

1. BULK GET data from tape (not in cache)
   1. PUT 1000 objects of 1GB Size to BlackPearl
   2. Wait for all jobs to ‘complete’ (see the **BlackPearl User Guide** section titled “View DS3 Jobs Information”)
   3. Clear cache: from the SSH console on BlackPearl run the following command:   
      **config s3cachefilesystem update** --id=e34bba1d-842d-11e5-81d6-002590c1177c --reclaim
   4. GET objects 0 through 333
      1. Capture a screen snip that clearly shows the application completed or error. Paste the screen snip below:
   5. GET objects 334 through 667
      1. Capture a screen snip that clearly shows the application completed or error. Paste the screen snip below:
   6. GET objects 668 through 999
      1. Capture a screen snip that clearly shows the application completed or error. Paste the screen snip below:
2. 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 snips 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 snip below:
   6. Reimport the tape: From the Tape Management screen, action -> Online All Tapes.
   7. Capture screen snips that clearly show the error condition (Time out or waiting for condition to clear) has cleared. Paste the screen snip below:
3. NOTE: IGNORE THIS TEST: 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 2.4 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 this:

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

1. If the application supports multiple buckets or multiple storage targets that can be mapped to a bucket
   1. Create two buckets
      1. Capture a screen snip that shows how to create the additional buckets. Paste the screen snip into below:
   2. PUT data to both buckets
      1. Capture a screen snip that shows the application completed with objects in both buckets. Paste the screen snip below:
   3. GET data from both buckets
      1. Capture a screen snip that shows the application completed with no objects in either bucket. Paste the screen snip below:
2. 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):
3. 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:
4. 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 snip that shows how to edit the eject information. Paste the screen snip below:
   2. Eject a bucket or a tape
      1. Capture a screen snip of the Tape Management screen on BlackPearl showing the tape(s) status as offline/ejected:

1. Host application showing a job is fully persisted:
   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 snip that shows the BlackPearl Job Status complete in the BlackPearl S3 Jobs Screen. Paste the screen snip below:
      3. Capture a screen snip from the application showing the same job is not complete/persisted. Paste the screen snip below:
      4. After the job is completed/persisted to tape, capture a screen snip from the application showing the same job is complete/persisted. Paste the screen snip 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
   2. Capture a screen snip from the application showing user interface with objects displayed in a first page. Paste the screen snip below:
   3. Display the second page of objects in the application.
   4. Capture a screen snip from the application showing user interface with objects displayed in a second page. Paste the screen snip below: