Spectra RioBroker
User Guide

www.SpectraLogic.com

Part Number

90990141 Revision H

Revision History

Revision	Date	Description
D	June 2020	Updated for RioBroker 2.1 release.
E	June 2021	Updated for RioBroker 3.1 release.
F	October 2021	Updated for RioBroker 3.2 release.
G	January 2023	Updated for RioBroker 3.4.2 release.
H	December 2023	Updated for RioBroker 3.5 release.

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Contents

Chapter 1 - Spectra RioBroker Archive Solution

This guide is for installers, administrators, and users of the Spectra® RioBroker® application in conjunction with a production and archive structure.

OVERVIEW

At its core, RioBroker is a sophisticated data mover augmented with features that aid in creating, monitoring, managing, and reporting on jobs to store and retrieve data from modern object storage systems. With the adoption of modern object storage systems, legacy middle-ware is no longer required but many of those sub functions are still required. RioBroker bridges the gap between file based and object based systems and streamlines the overall management and migration of data.

At the heart of the modern storage system provided by Spectra Logic is the BlackPearl Converged Storage System, an appliance designed to provide a simple, RESTful interface to a variety of tier 2 storage targets.

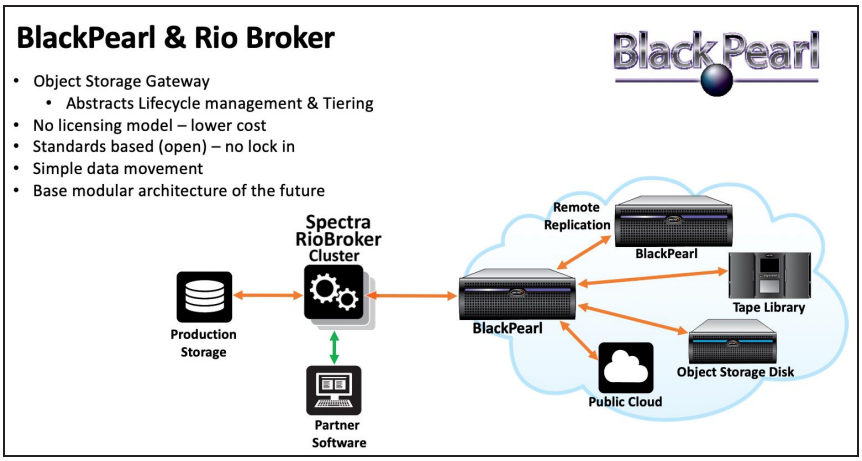

Figure 1 RioBroker with BlackPearl workflow.

While direct integration with a BlackPearl system is possible, most software clients find the need for a data mover "helper". RioBroker was developed to meet this need.

RioBroker provides:

- Job based data movement in or out of Object Storage.
- "Endpoints", or sources, can be NAS, proprietary storage enabled by an installed client, any CIFS or NFS target, FTP servers, or S3 targets, and are generally referenced by predefining the endpoint in the user interface or using a URI.
- "Devices", or targets, which include BlackPearl systems or Spectra Vail nodes for both archive and restore, as well as a variety of other legacy middle-ware options for read-only.
- Job creation, monitoring, and control via the user interface.
- Global search across targets with built in restore.
- An optional Partial-File Recovery (PFR) plug-in enabling indexing as well as PFR restore.
- Speed and High Availability scaling by clustering RioBroker instances.

- Object browse via the user interface.
- Abstraction of storage targets with a simple immutable interface.
- Off-load of client software from data movement responsibilities.

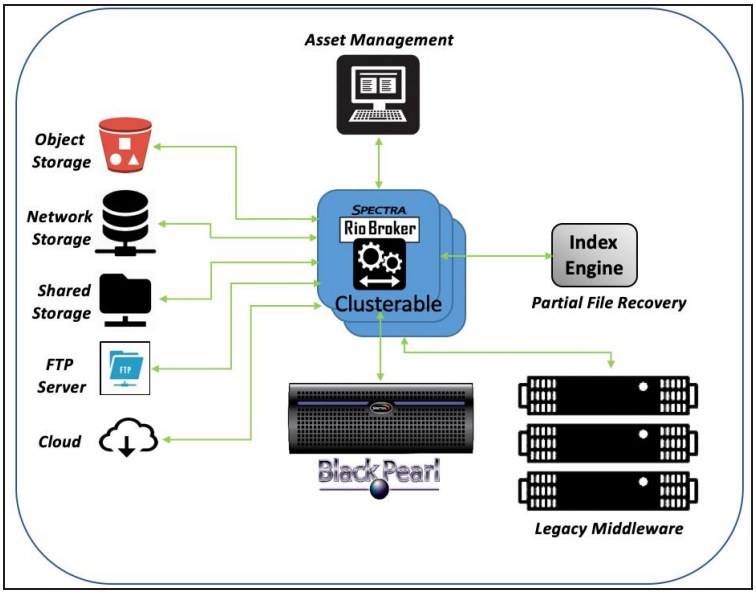

Figure 2 RioBroker with third party software workflow.

RioBroker is typically set up either as a VM or on a bare metal stand-alone server. A RioBroker system is typically set up as either a single instance or a cluster with an odd number of members. RioBroker instances must be added in pairs to achieve an odd number of cluster instances. The master node is the primary instance to which the clients connect, other RioBroker nodes act as cluster members which are assigned archive or restore jobs by the master node. The RioBroker database is shared across the cluster members for protection in the event of the loss of a cluster member. Each cluster member must have the same permissions and configured with the correct mount points so that any cluster member can move data in and out of any endpoint or target.

RioBroker has its own database that allows addition of any metadata tags either at the point of ingest or at any time thereafter that can be directly accessed by the client, through the user interface, or the RESTful interface.

The RioBroker Command Line Interface includes a utility to backup and download the full RioBroker database and settings, and should supplement a normal and frequent backup process.

Benefits include:

- Data movement does not require third party software.
- Ability to move individual files to a BlackPearl system.
- Provides a layer of abstraction over the BlackPearl interface allowing for much easier development.
- Stable API – Changes to the BlackPearl API do not affect the Spectra RioBroker API.
- Scalable and cluserable.
- Provides a global search across all agents and direct restore.
- Single name space for legacy and new systems.
- Provides system monitoring, auditing, PFR, and user metadata for objects.
- Restore archived objects to endpoints outside of legacy data flows in case of emergency, or to support outside workflows and auditing.

Related Publications

The following documents related to the Spectra BlackPearl system and Spectra RioBroker application are available on the Support Portal website at *support.spectralogic.com*.

- The *Spectra RioBroker Release Notes* provide the most up-to-date information about the Spectra RioBroker application, including information about the latest software releases and documentation updates.
- The *Spectra BlackPearl Converged Storage System User Guide* provides detailed information about configuring, using, and maintaining your Spectra BlackPearl system.
- The *Spectra BlackPearl Release Notes and Documentation Updates* provide the most up-to-date information about the BlackPearl system, including information about the latest software releases and documentation updates.
- The *RioBroker Partial File Restore Plugin Installation and User Guide* provides information on installing, configuring, and using the PFR plugin.

To view the RioBroker API documentation after the application is installed on a host server:

- If you are on the server where the RioBroker application is installed:
  - In the RioBroker user interface, click the **Settings** icon (a gear), and select **System**, then click **API Docs** (see System Screen on page 116).
  - Using a supported web browser (see Supported Browsers on page 20), enter `https://localhost:5050/api/viewer/index.html` and press the Enter key.
- If you are on a host on the same network as the RioBroker server, using a supported web browser (see Supported Browsers on page 20), enter the IP address for the server instead of '`localhost`' (for example `https://`*xxx.xxx.xxx.xxx*`:5050/api/viewer/index.html`) and press the Enter key.

Typographical Conventions

This document uses the following conventions to highlight important information:

IMPORTANT Read text marked by the "Important" icon for information that helps you complete a procedure or avoid extra steps.

CAUTION Read text marked by the "Caution" icon for information you must know to avoid losing data or application configuration.

Note: Read text marked with "Note" for additional information or suggestions about the current topic.

Chapter 2 - Install the Spectra RioBroker Application

This chapter describes how to install the Spectra RioBroker application.

REQUIREMENTS

The following sections describe the requirements for using the Spectra RioBroker application.

Spectra Logic Requirements

A BlackPearl Converged Storage System or a BlackPearl S3 system must be configured and available for network communications with the Spectra RioBroker application and a Spectra RioBroker client. See "Initial Configuration" and "Configuring Advanced Bucket Management" in the *Spectra BlackPearl Converged Storage System User Guide*.

Operating System Requirements

The Spectra RioBroker application is available for 64-bit Microsoft® Windows® operating systems. The Spectra RioBroker application was tested on:

- Windows Server 2019

The Spectra RioBroker application is also available for RHEL 8.x and Rocky8 Linux operating systems.

Server Requirements

The host server must meet the following requirements to run the Spectra RioBroker application:

- Six CPU cores each with a minium speed of 1.3 GHz.
- 64 GB RAM
- 500 GB SSD disk space
- 10 Gb/s network connection to both the BlackPearl system data port(s) and production storage

Version Compatibility

The Spectra RioBroker application is compatible with BlackPearl software versions 4.1.*x* and 5.*x*.

IMPORTANT Do not use the refresh or back buttons on a web browser to navigate the user interface. Any manual changes, such as the number of jobs displayed are lost if the refresh or back buttons are used.

Supported Browsers

Spectra Logic only supports using Google® Chrome™ version 75 or later, on Windows® and macOS® to access the user interface.

Note: Elements of the RioBroker user interface may fail to display if the browser window is compressed horizontally.

Best Practices

Performance

Archive and restore performance may be improved by maximizing the transfer rates with the following guidelines:

- Include as many files in a job as possible. This allows the Spectra RioBroker application to efficiently group the files during the transfer to or from a BlackPearl system.

  Note: Starting with RioBroker 3.0, the maximum number of files per job is 10,000. RioBroker 2.1 and earlier are limited to 1,000 files per job.

- Send transfer requests in parallel. The Spectra RioBroker application can process multiple archive and restore commands in parallel. Clients should send the archive and restore requests as soon as possible and in parallel to achieve maximum transfer performance.

Multi-Node Cluster

If you plan to create a multi-node cluster, it is very important that the IP address of the master node does not change. Setting a static IP address for the master cluster node is highly recommended.

Archive and Restore of Filenames containing Control Characters

If your Media Asset Management (MAM) environment uses control characters in filenames, when the files are archived using the RioBroker application, the control characters are ignored. Spectra Logic recommends restoring the files using the RioBroker user interface and then archiving the restored files again to update the MAM database with the new filenames.

Host System Memory Usage

The Spectra RioBroker application uses ArangoDB as its database infrastructure. While the RioBroker application is in use, the ArangoDB service may utilize up to 80% of the system's available memory. Once the 80% threshold is reached, the ArangoDB application begins to clear memory that is no longer needed.

SPECTRA RIOBROKER USER INTERFACE OVERVIEW

The user interface provides browser-based configuration, management, and monitoring of the Spectra RioBroker application. The following sections describe the common features that appear in all screens in the user interface.

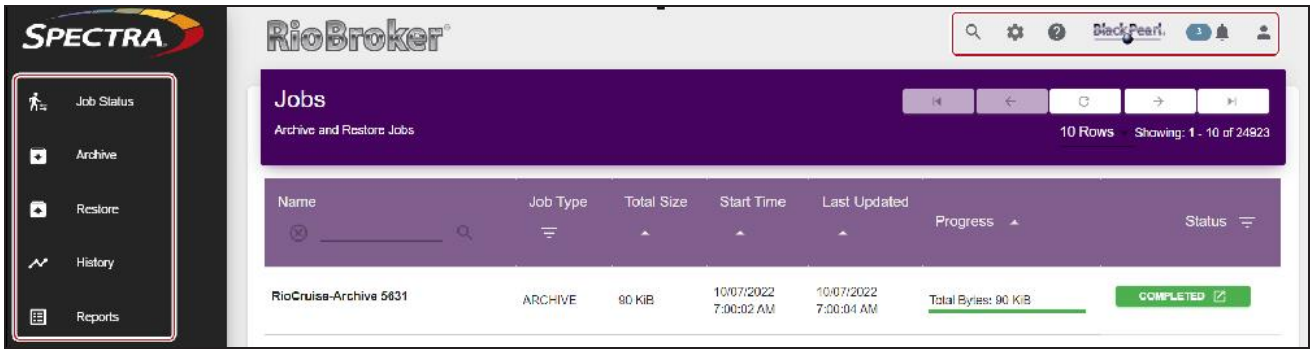

Figure 3 The Jobs screen of the Spectra RioBroker application user interface.

Taskbar

The taskbar displays along the left edge of each screen. Use the taskbar to access the Job Status, Browse, and Reports screens.

The following table provides an overview of the selections in the taskbar.

Taskbar	Description
Job Status	The Job Status navigation link takes you to a screen displaying the status of active, completed, canceled, and failed jobs. See View Job Status on page 73 for more information.
History	The **History** navigation link takes you to the history screen where you can view the number of jobs, files, and bytes processed by the RioBroker application, as well as data for a specified broker or date range. See History on page 110 for more information.
Browse	The Browse navigation link takes you to a screen that allows you to search for files based on the file's broker, prefix, metadata, and archive start and stop dates. It also allows you to restore files found during a search. See Browse and Restore Objects on page 78 for more information.
Reports	The **Reports** navigation link takes you to a screen that allows you to view all currently configured settings for the RioBroker application, as well as generating object search reports. See Reports on page 112.

Toolbar

The toolbar displays in the upper right corner of each screen. The following table provides an overview of the selections in the toolbar.

Icon	Meaning	Description
	Search	Takes you to the Search screen used to search configured brokers for files to restore. See Manage Brokers on page 90 for more information.
	Settings	Provides access to the Settings menu which allows you to configure or access the following: • System • Cluster • Devices • Brokers • Endpoints • Logs
	Help	Takes you to the help system. **Note:** This link currently directs you to the Spectra Logic Support portal.
	BlackPearl Statistics	Takes you to the BlackPearl statistics screen. See Manage Brokers on page 90. **Note:** This button only displays after one or more BlackPearl systems is configured.
	Messages	Takes you to the Messages screen. When there are unread messages on the system, the number of messages displays next to this icon.
	User	Provides access to the Logout function.

Other Icons

The table below describes icons that display on various screens in the user interface. Buttons that contain text of the button action in the button itself are not described below.

Icon	Meaning	Description
	Delete	Click to delete devices, agents, cluster members, or logs.
	Edit	Click to edit agents.
	Information	Click to get information about an endpoint.
	Download	Click to download a log set.
	Cancel	Click to cancel an in-progress job. **Note:** This button only displays in RioBroker 3.1, or earlier. Starting with RioBroker 3.2, the Job Manager button displays.
	Job Manager	When a job is in-progress, click to open the Job Manager window to change the job priority, or to cancel the job.
	Retry Job	Click to retry a job that failed or was manually canceled.
	Restore	After performing a file search, click to restore a file to a configured endpoint.
	Details	Click to view detailed information.
	Refresh	Click to refresh the information on screens and panels.
	Next / Previous	Click to display the previous or next page of information, if more than one page of information exists.
	Beginning / End	Click to display the beginning or end of all information, if multiple pages of information exist.

Terminology Definitions

Cluster

A set of Spectra RioBroker application installations that reference each other in order to form a set of servers that scale out for increased data movement with shared databases. The master node assigns jobs to secondary nodes in the cluster. Secondary nodes fail over to each other in the event of a failure.

Using a RioBroker cluster increases performance. A single RioBroker node processes 10 tasks per job simultaneously. Each additional custer multiplies this by 10 per cluster.

Device

Any archive target that the Spectra RioBroker application can use to archive or restore objects, including a BlackPearl system, FlashNet application, or a Time Based Partial File Restore device. Each device is individually set up as a generic target for the purposes of physical and logical connection.

Agent

A logical interface to a device. Each agent includes the API protocol to interface with its respective device as well as ancillary translation protocols if the stored objects have to be uniquely manipulated for that particular archive system. Each BlackPearl agent points to exactly one BlackPearl bucket.

Broker

A logical construct that defines a specific archive environment which must include exactly one default archive agent on a BlackPearl system or Spectra Vail node. Each broker can also contain one or more other read-only agents from which objects can be retrieved. Any number of brokers can be defined within the RioBroker application so as to allow multi-bucket support for archives.

Install The RioBroker Application for Windows

Use the instructions in this section to install the RioBroker application for the first time in a Microsoft Windows operating system environment.

Note: To upgrade the application from RioBroker 2.x to RioBroker 3.x, see the *RioBroker Application Release Notes*.

Install the RioBroker Software

Use the following instructions to download and install the Spectra RioBroker software for a new installation of the RioBroker application.

1. Contact Spectra Logic Professional Services or Technical Support for access to the RioBroker installer (see Contacting Spectra Logic on page 3).
2. Start the installation by double clicking `SpectraRioBrokerSetup-x.x.x.msi`, where x.x.x indicates the version of the software.
3. Follow the on-screen instructions to install the application.

Note: If prompted by the installer, reboot your Windows system.

Configure the Local System User Account

Unless you specified a user account for the Spectra RioBroker service during installation, the RioBroker service is run by the Local System User. For an Avid PAM installation accessing Avid Nexis, no changes to permissions are required.

However, if your file storage uses a Server Message Block (SMB) protocol, such as CIFS, then the Local System User often does not have access to all storage locations or permissions to read from and write to the storage locations. Use the table below to select the privileges to configure for the user running the RioBroker service.

Note: Consult an IT administrator to configure the RioBroker service user.

Role	Privileges	Configuration Instructions
A domain administrator **Recommended**	Able to migrate / restore any files and folders on a computer in the domain, with or without a two-way trust relationship.	Configure a Domain Administrator or Backup Operator on the next page.

Role	Privileges	Configuration Instructions
A local group administrator	Able to migrate / restore files and folders on the local computer to which the local group applies. This must be configured on the RioBroker server and each source storage location and target storage location.	Configure a Local Group Administrator or Backup Operator below.
A custom owner of files and folders that is not an administrator - **Not Recommended**	Custom privileges on the RioBroker server, source storage locations, and target storage locations.	Contact Spectra Logic Professional Services to discuss requirements and possible issues. See Contacting Spectra Logic on page 3.

Configure a Domain Administrator or Backup Operator

1. Create a user account for running the RioBroker service.

Note: Spectra Logic recommends that you select the **User cannot change password** and **Password never expires** check boxes when creating the new user.

2. Add the new user account as a member of the Domain Administrators or Backup Operators group.
3. Configure the RioBroker service to run under the new user.

Note: After configuring the service, if you use the RioBroker installer “repair” option, these settings are reverted to the default and must be configured again.

Configure a Local Group Administrator or Backup Operator

1. Create a User Account for running the RioBroker Service.

Note: Spectra Logic recommends that you select he **User cannot change password** and **Password never expires** check boxes when creating the new user.

2. Make the new user account a local Administrator or Backup Operator on the RioBroker server, all source locations, and all target storage locations.
3. Configure the RioBroker service to run under the new user.

Note: After configuring the service, if you use the RioBroker installer “repair” option, these settings are reverted to the default and must be configured again.

Install the RioBroker Application for Linux

Use the instructions in this section to install the RioBroker application for the first time in a Linux operating system environment.

1. Contact Spectra Logic Professional Services or Technical Support for access to the RioBroker RPM installer (see Contacting Spectra Logic on page 3).
2. Run the installer by entering:

   `rpm -i SpectraRioBrokerSetup-3.5.0.10-`*`xxxxx`*`-1.x86_64.rpm`

   where *xxxxx* refers to the version you downloaded in Step 1 on page 27.
3. Ensure the RioBroker service is running by entering:

   `service riobroker status`

Chapter 3 - Configure the Spectra RioBroker Application

This chapter describes how to configure and test the Spectra RioBroker application.

Log into the Spectra RioBroker Application

1. Using a supported web browser (see Supported Browsers on page 20), do one of the following:

- If you are on the server, enter `https://localhost:5050` and press Enter.
- If you are on a host on the same network as the server, enter the IP address for the RioBroker server instead of `localhost` (for example `https://`*xxx.xxx.xxx.xxx*`:5050`) and press Enter.

Notes:
- The application requires a secure connection.
- If necessary, resolve the security warning for the application. If desired, you can use a custom SSL key and certificate file using API commands.
- The Spectra RioBroker user interface has a 60 minute session time out setting.
- Elements of the RioBroker user interface may fail to display if the browser window is compressed horizontally.

2. If this is the first time launching the application, the Cluster Welcome screen displays. Otherwise, the login page displays (see Step 4 on page 30).

Figure 4 The Cluster Welcome screen.

3. Create a new cluster, or join an existing cluster.

   A cluster is a logical designation for a set of Spectra RioBroker installations that reference each other in order to form a set of servers that scale for increased data movement using shared databases. The master node assigns jobs to secondary nodes in the cluster. Secondary nodes fail over to each other in the event of a failure.

Note: When creating a multi-cluster configuration, it is very important that the IP address of the master node does not change. Setting a static IP address for the master cluster node is highly recommended.

CAUTION If the IP address of the master node in the cluster changes, the cluster dissolves and all data transfers stop. No data loss occurs, but as you can only access data using the master node, data is unavailable. The cluster cannot be restored and must be manually recreated. Contract Spectra Logic Technical Support for assistance (see Contacting Spectra Logic on page 3).

Create Cluster:

a. Click **New**. The Create Cluster dialog box displays.

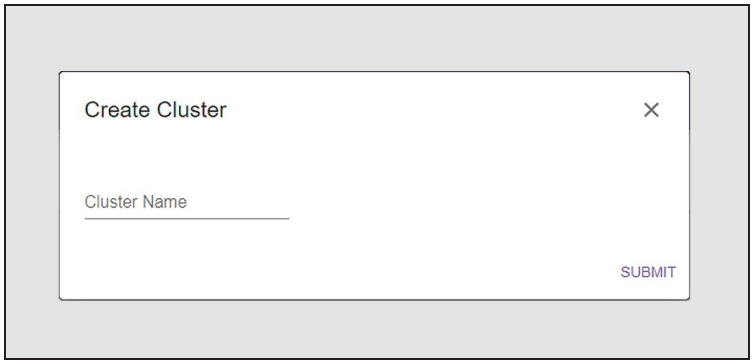

Figure 5 The Create Cluster dialog box.

b. Enter the desired **Cluster Name**.

c. Click **Submit**. After a short delay, the Spectra RioBroker login screen displays.

Join Cluster:

a. Click **Join**. The Join Cluster dialog box displays.

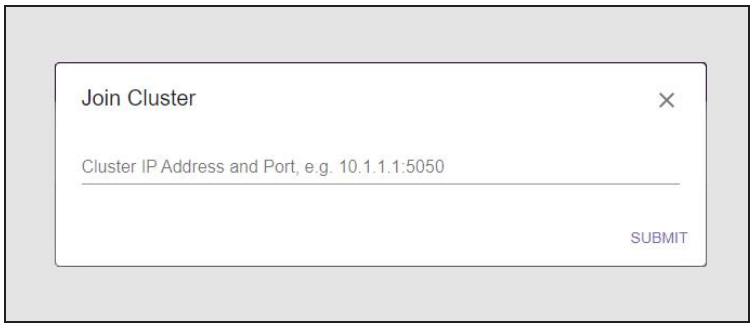

Figure 6 The Join Cluster dialog box.

b. Enter the cluster URL in the format: *<IP address>:<port>*.

Note: Port 5050 is the default port used by the Spectra RioBroker application.

c. Click **Submit**. The Spectra RioBroker login screen of the **master node** displays.

4. On the login screen, enter the **Username** and **Password**.

Note: The default username and password are both "**spectra**".

Figure 7 The Login screen.

5. Click **Login**. The Jobs screen displays showing an overview of all archive and restore jobs.

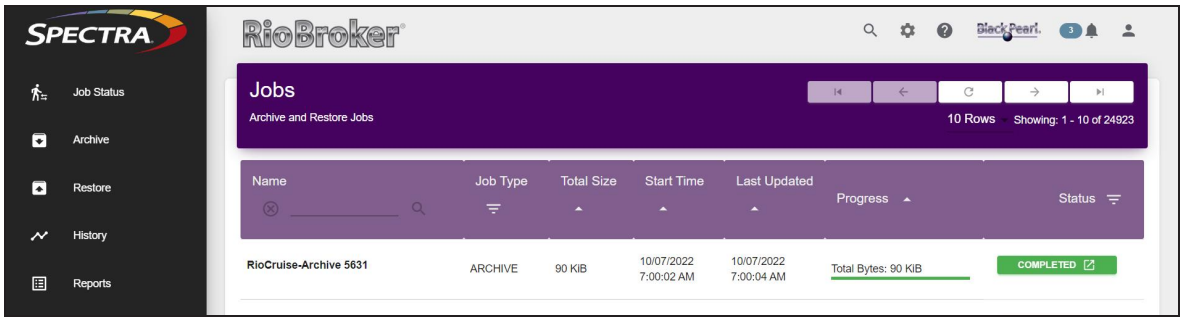

Figure 8 The Jobs screen.

Create a Device

Once you are logged in to the application, use the instructions below to create a device as a data repository target. A device is any archive target that the Spectra RioBroker application can use to archive or restore objects. Each device is individually set up as a generic target for the purposes of physical and logical connections.

You can create a Spectra BlackPearl converged storage system device, a Diva device, a FlashNet device, a Spectra Vail device, or a Time Based Partial File Restore (TBPFR) device.

On the toolbar in the upper-right of the application window, click **Settings** (gear icon) > **Devices**. The Devices screen displays.

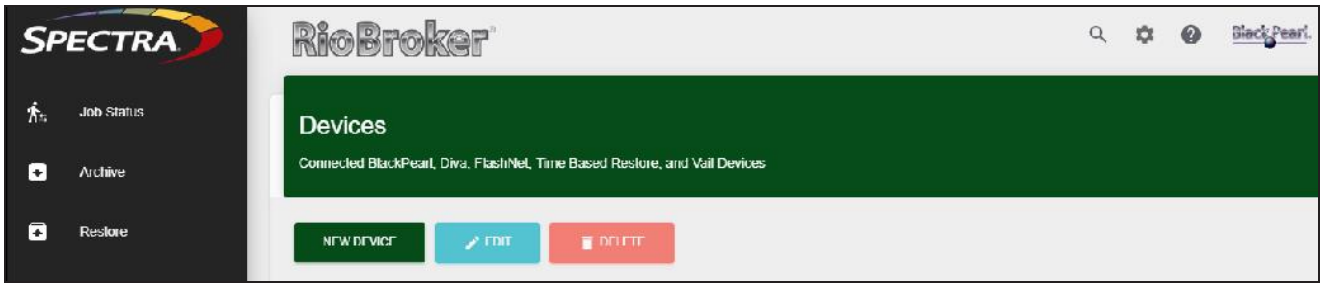

Figure 9 The Devices screen.

Select the type of device that you want to create:

- Create a BlackPearl Device, below
- Create a Diva Device on the next page
- Create a FlashNet Device on page 34
- Create a Spectra Vail Device on page 36
- Create a Time Based Partial File Restore Device on page 37

Create a BlackPearl Device

Use the instructions below to create a BlackPearl device.

1. Click **New Device**. The New Device dialog box displays.

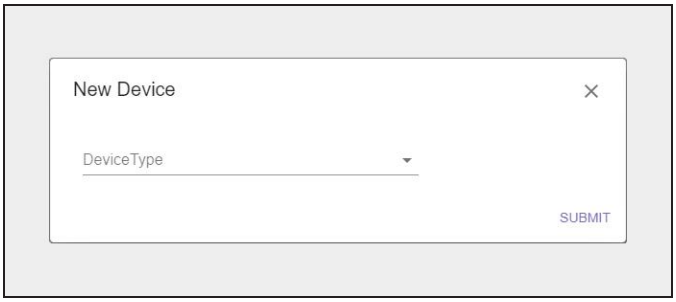

Figure 10 The New Device dialog box.

2. From the **Device Type** drop-down menu, select BlackPearl. The New Device dialog box refreshes to display the options for configuring a BlackPearl device.

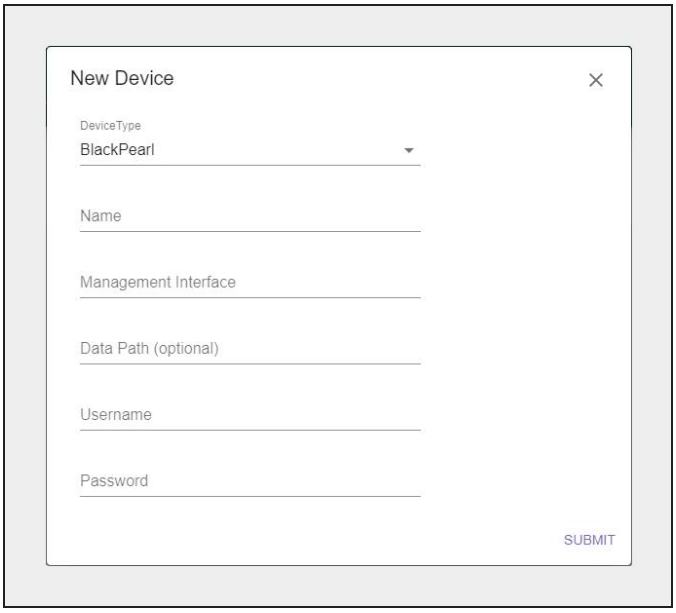

Figure 11 The New Device - BlackPearl dialog box.

3. Enter the desired **Name** for the BlackPearl device. Device names can only use upper and lowercase letters, numbers, the dash (-), and the underscore (_) characters.
4. Enter the **Management Interface** IP address of the desired BlackPearl target.
5. If you are connecting to a BlackPearl simulator for testing or development purposes, enter the **Data Path** IP address, of the desired BlackPearl target in the format `http://xxx.xxx.xxx.xxx:8080`. The simulator can only use **http** for the **Data Path**. Otherwise leave this field blank and RioBroker retrieves this IP address automatically.
6. Enter the **Username** and **Password** of a user configured on the BlackPearl target.

Note: Only users with Administrator or Monitor permission are allowed. Users with only Login privilege are not supported by the Spectra RioBroker application.

7. Click **Submit**. The Devices screen displays showing the newly created Spectra device.

Note: If the user credentials on the BlackPearl system are changed after creating a BlackPearl device, restart the RioBroker service using the Windows Services app.

Create a Diva Device

Use the instructions below to create a Diva device.

1. Click **New Device**. The New Device dialog box displays.

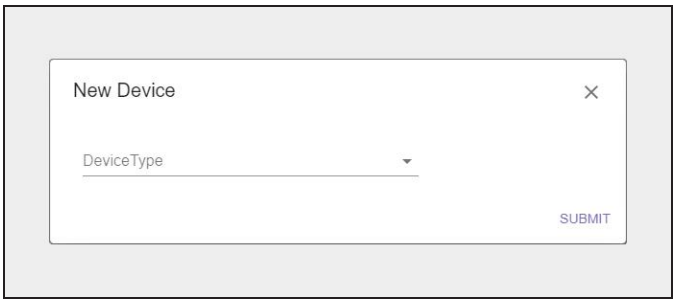

Figure 12 The New Device dialog box.

2. From the **Device Type** drop-down menu, select Diva. The New Device dialog box refreshes to display the options for configuring a Diva device.

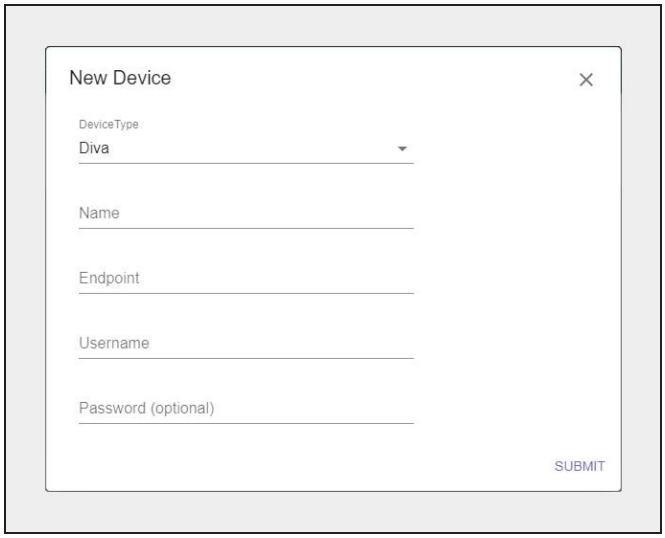

Figure 13 The New Device - Diva dialog box.

3. Enter the desired **Name** for the Diva device. Device names can only use upper and lowercase letters, numbers, the dash (-), and the underscore (_) characters.
4. Enter the **Endpoint** for the Diva device. The Endpoint is the API address of the Diva archive.

Note: The Diva archive must use API protocol 1.0 or 2.1.

5. Enter the **Username** of a user configured in the Diva application.
6. If desired, enter the **Password** of the user configured in Step 5.
7. Click **Submit**.

Create a FlashNet Device

Use the instructions below to create a FlashNet device.

1. Click **New Device**. The New Device dialog box displays.

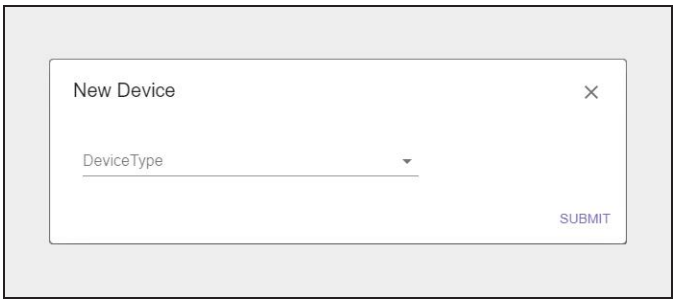

Figure 14 The New Device dialog box.

2. From the **Device Type** drop-down menu, select FlashNet. The New Device dialog box refreshes to display the options for configuring a FlashNet device.

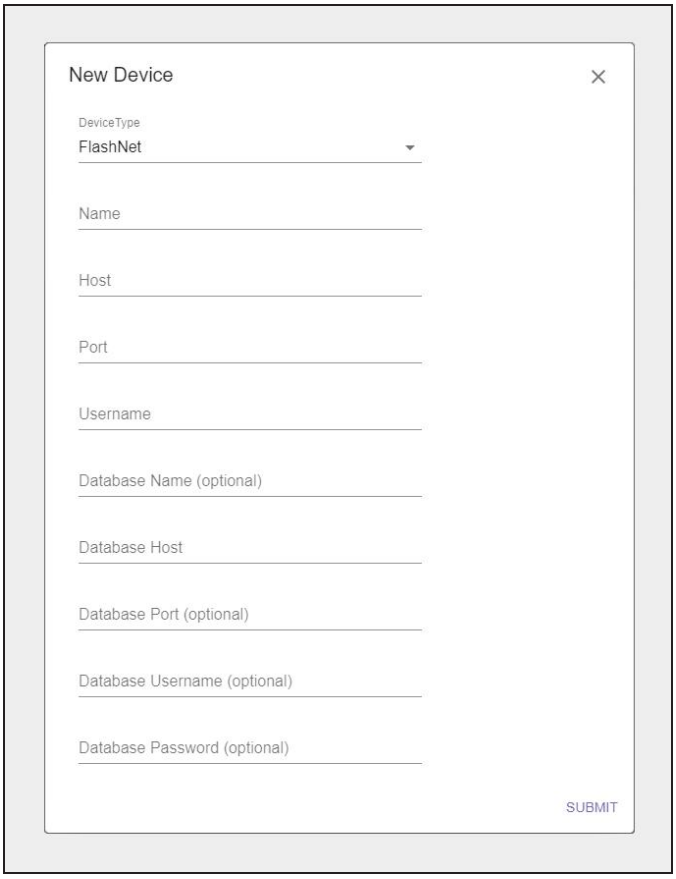

Figure 15 The New Device - FlashNet dialog box.

3. Enter the desired **Name** for the FlashNet device. Device names can only use upper and lowercase letters, numbers, the dash (-), and the underscore (_) characters.
4. Enter the **Host** IP address for the FlashNet application.
5. Enter the **Port** used to connect to the FlashNet application.

Note: The default port is 8199.

6. Enter the **Username** of a user configured in the FlashNet application.

7. If desired, enter the **Database Name**.
8. For **Database Host**, enter the IP address for the server for the FlashNet database.
9. If desired, enter the **Database Port** used to connect to the database host.

Note: The default port is 1433.

10. If desired, enter the **Database Username**, the username of a user configured in the FlashNet database.
11. If you entered a username in Step 10, enter the associated **Database Password**. Otherwise continue with Step 12.
12. Click **Submit**.

Create a Spectra Vail Device

Use the instructions below to create a Spectra Vail device.

Note: The multipart upload threshold for a Vail device is 5 GB. Objects 5 GB or less are archived as a single file. Objects larger than 5 GB are transferred in chunks of 1 GB each.

1. Click **New Device**. The New Device dialog box displays.

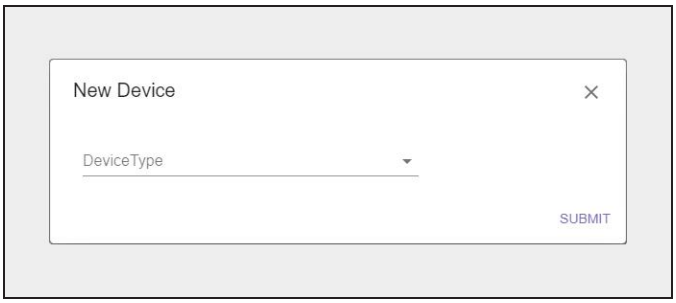

Figure 16 The New Device dialog box.

2. From the **Device Type** drop-down menu, select Spectra Vail. The New Device dialog box refreshes to display the options for configuring a Spectra Vail device.

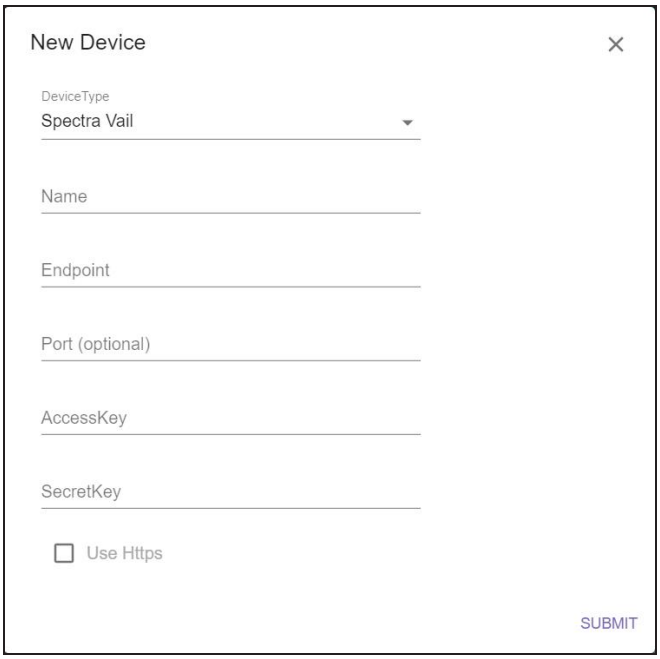

Figure 17 The New Device - Spectra Vail dialog box.

3. Enter the desired **Name** for the Spectra Vail device.
4. Enter the public IPv4 address or hostname for the Vail node as the **Endpoint** for the Spectra Vail device.

Note: You may need to contact the Vail sphere administrator for this information.

5. If necessary, enter the **Port** required to connect to the Spectra Vail device.
6. Enter the **AccessKey** and **SecretKey** of an IAM User who has access to Vail node. See the *Vail User Guide* for more information.
7. If desired, select **Use Https** to use a secure connection to connect to the Vail device.
8. Click **Submit**.

Create a Time Based Partial File Restore Device

Use the instructions below to create a Partial File Restore device.

Note: If a file in the PFR environment contains a space character ( ), that file fails to index, and cannot be restored using a time code. The file can only be restored using a byte-based RioBroker restore.

1. Click **New Device**. The New Device dialog box displays.

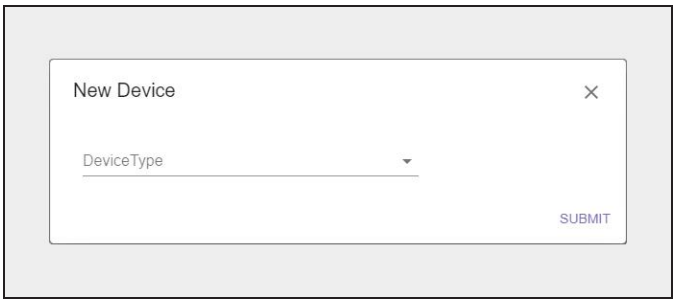

Figure 18 The New Device dialog box.

2. From the **Device Type** drop-down menu, select Time Based Partial File Restore. The New Device dialog box refreshes to display the options for configuring a Time Based Partial File Restore device.

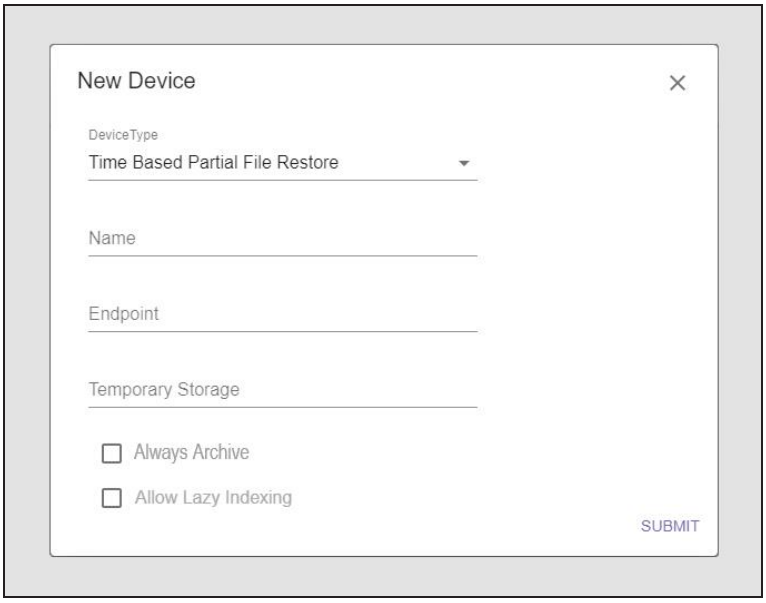

Figure 19 The New Device - Time Based Partial File Restore dialog box.

3. Enter the desired **Name** for the Time Based Partial File Restore device. Device names can only use upper and lowercase letters, numbers, the dash (-), and the underscore (_) characters.

Note: The name cannot include spaces.

4. Enter the **Endpoint**, the IP address of the desired Time Based Partial File Restore target, in the format: http(s)://<*IPv4 address*>:60792.

Note: 60792 is the port used by Time Based Partial File Restore.

5. Enter the **Temporary Storage** location of the desired Time Based Partial File Restore target.

6. If desired, select **Always Archive**. When this setting is enabled, if objects archived to a Marquis Media Asset Manager are not supported file formats, the files are still archived.

Notes:
- Unsupported media formats are not indexed and must be restored as a full file.
- Currently supported file formats are .MOV and .MXF.

7. If desired, select **Allow Lazy Indexing**. When enabled, the RioBroker application determines if a file format that was not supported when the file was archived, is now supported by a newer version of PFR software. When an unsupported media format file is restored, the RioBroker application submits the file to the PFR software to determine if it is now a supported file type.

- If the file is not supported, the full file is restored to the user.
- If the file format is supported, it is indexed and partial file restoration is enabled for both this restore, and all future restores of the file. Additionally, the RioBroker application does not perform the file format check on subsequent restores.

8. Click **Submit**. The Devices screen displays showing the newly created Time Based Partial File Restore device.

Create a Broker

Once you create a device in the RioBroker application, use the instructions below to create a data broker.

A broker is a logical construct that defines a specific archive environment which must include exactly one default archive agent on a BlackPearl system or Vail sphere. Each broker can also contain other read-only agents from which objects can be retrieved.

Any number of brokers can be defined within the Spectra RioBroker application to allow multi-bucket support for archives.

On the toolbar in the upper-right of the application window, click **Settings** (gear icon) > **Brokers**. The Brokers screen displays.

Figure 20 The Brokers screen.

1. Click **New Broker**. The Add Broker dialog box displays.

Figure 21 The Add Brokers dialog box.

2. Using the **Type** drop-down menu, select the type of broker you want to create.

- Create a BlackPearl Broker on the next page
- Create a Spectra Vail Broker on page 42

Create a BlackPearl Broker

Use the instructions below to create a BlackPearl broker.

1. Enter the desired **Broker Name** and **Agent Name**.

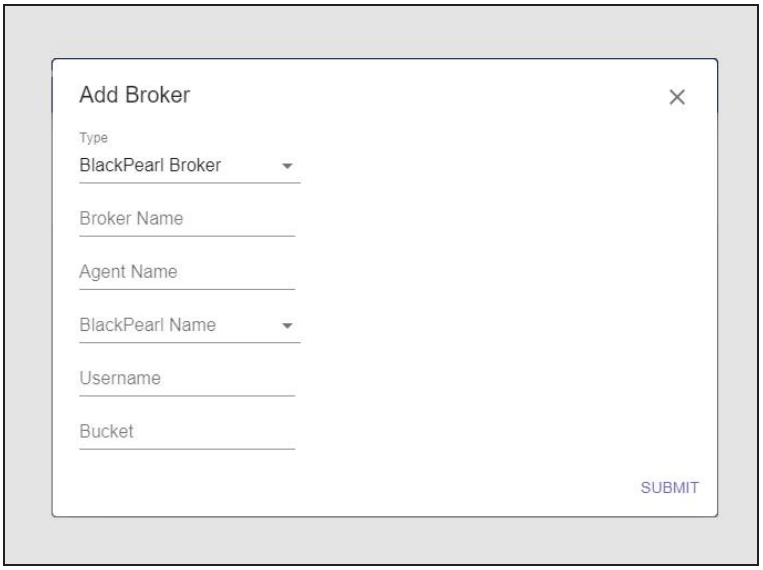

Figure 22 The Add Broker - BlackPearl dialog box.

Notes:
- The Broker and Agent name can be anything, but it is a best practice for both to use the same name as the associated BlackPearl bucket name.
- The Broker Name and Agent Name cannot exceed 128 characters each.
- The Broker Name can only use lowercase letters, numbers, the dash (-), and the underscore (_) characters.
- The period (.) character is no longer valid as of RioBroker 3.1.

2. Select the **BlackPearl Name** of the BlackPearl system configured as a BlackPearl device.
3. Enter the **Username** of an administrator user with full access to the bucket specified in Step 4.
4. Enter the name of a **Bucket** associated with the user specified in Step 3. Bucket names are case sensitive. Make sure that this bucket has the desired data placement and Advanced Bucket Management (ABM) policy. See the *Spectra BlackPearl Converged Storage System User Guide* for more information.

Notes:
- The bucket must already exist on the BlackPearl system.
- Bucket names are case sensitive.

5. Click **Submit**.

Create a Spectra Vail Broker

Use the instructions below to create a Spectra Vail broker.

1. Enter the desired **Broker Name** and **Agent Name**.

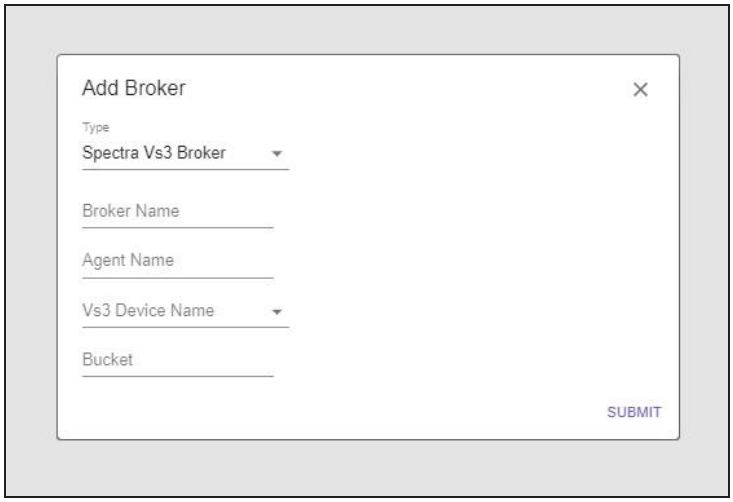

Figure 23 The Add Broker - Spectra Vail dialog box.

Notes:
- The Broker and Agent name can be anything, but it is a best practice for both to use the same name as the associated Vail device.
- The Broker Name and Agent Name cannot exceed 128 characters each.
- The Broker Name can only use lowercase letters, numbers, the dash (-), and the underscore (_) characters.

2. Using the **Vail Device Name** drop-down menu, select a Vail sphere configured as a Spectra Vail device.
3. Enter the name of a **Bucket** a bucket configured on the Vail sphere.

Notes:
- The bucket must already exist on the Vail sphere.
- Bucket names are case sensitive.

4. Click **Submit**.

Add Agents to an Existing Broker

After creating a broker with an archive agent, you can add one or more read agents to the broker. A BlackPearl agent, Vail agent, Diva agent, FlashNet agent, or an SGL LTFS agent can be added to a broker as a read agent.

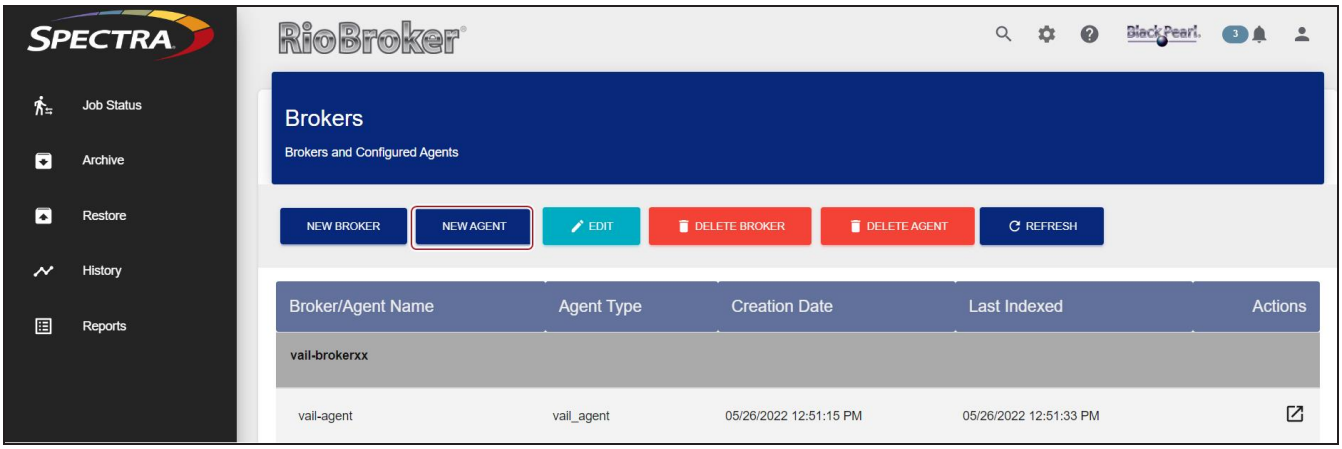

Figure 24 The Brokers screen.

Select the type of agent you want to add to a broker:

- Add a BlackPearl Agent below
- Add a Vail Agent on page 45
- Add a Diva Agent on page 46
- Add a FlashNet Agent on page 47
- Add an SGL LTFS Agent on page 48

Add a BlackPearl Agent

1. On the toolbar in the upper-right of the application window, click **Settings** (gear icon) > **Brokers**. The Brokers screen displays.
2. On the Brokers screen, click **New Agent** (see Figure 24 on page 43). The New Agent dialog box displays.

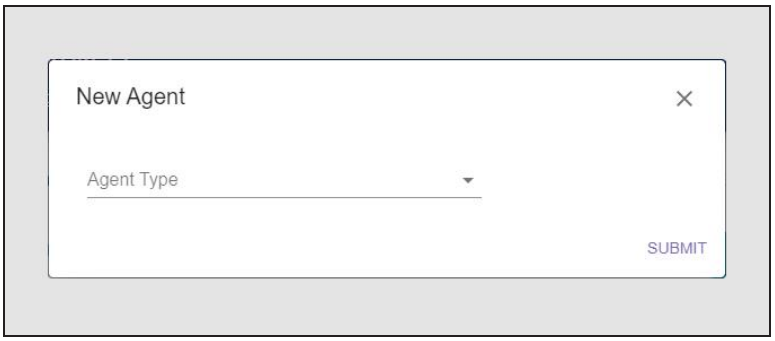

Figure 25 The New Agent dialog box.

3. Using the **Agent Type** drop-down menu, select **Add BlackPearl Agent**. The New Agent dialog box refreshes to display the fields for configuring a BlackPearl agent.

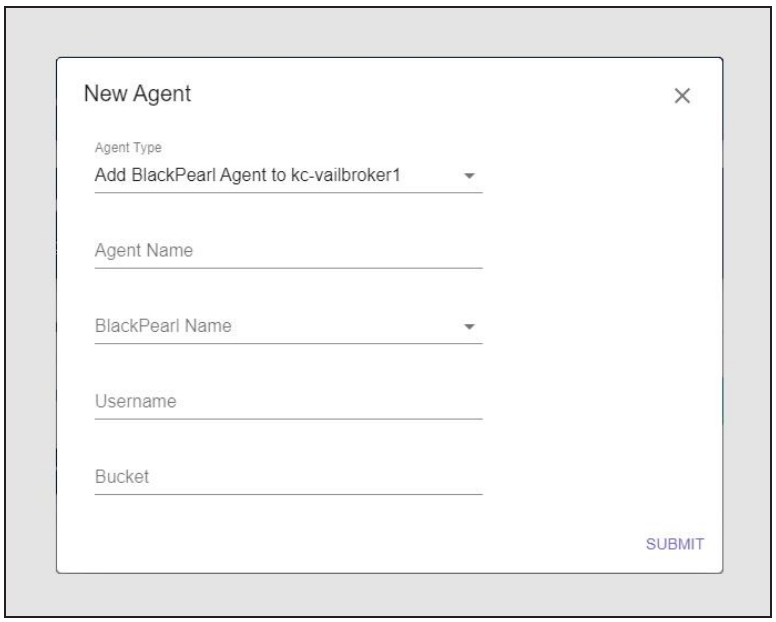

Figure 26 The New Agent - BlackPearl dialog box.

4. Enter the desired **Agent Name**.

Note: Agent names can only use lowercase letters, numbers, the dash (-), and the underscore (_) characters.

5. Using the drop-down menu, select the **BlackPearl Name** of a previously configured BlackPearl device.

6. Enter the **Username** of a user configured on the BlackPearl device selected in Step 5. This user can be any user that has full access to the associated bucket. It does not need to be the same user that was entered when the BlackPearl device was created (see Create a BlackPearl Device on page 32).

7. Enter the name of a **Bucket** associated with the user selected in Step 6. Bucket names are case sensitive.

Note: The bucket must already exist on the BlackPearl system when creating a device using the RioBroker user interface.

8. Click **Submit**.

Add a Vail Agent

A Vail agent allows for archive and restore operations to a bucket configured in a Vail sphere.

Note: The multipart upload threshold for a Vail agent is 5 GB.
Objects 5 GB or less are archived as a single file. Objects larger than 5 GB are transferred in chunks of 1 GB each.

1. On the toolbar in the upper-right of the application window, click **Settings** (gear icon) > **Brokers**. The Brokers screen displays.
2. On the Brokers screen, click **New Agent** (see Figure 25 on page 44). The New Agent dialog box displays.
3. Using the **Agent Type** drop-down menu, select **Add Vail Agent**. The New Agent dialog box refreshes to display the fields for configuring a Vail agent.

Figure 27 The New Agent - Vail dialog box.

4. Enter the desired **Agent Name**.

Note: Agent names can only use lowercase letters, numbers, the dash (-), and the underscore (_) characters.

5. Using the **Vail Device Name** drop-down menu, select a previously configured Vail device.
6. In the **Bucket** field, enter the name of a Vail bucket configured on the Vail device.
7. Click **Submit**.

Add a Diva Agent

1. On the toolbar in the upper-right of the application window, click **Settings** (gear icon) **> Brokers**. The Brokers screen displays.
2. On the Brokers screen, click **New Agent** (see Figure 25 on page 44). The New Agent dialog box displays.
3. Using the **Agent Type** drop-down menu, select **Add Diva Agent**. The New Agent dialog box refreshes to display the fields for configuring a Diva agent.

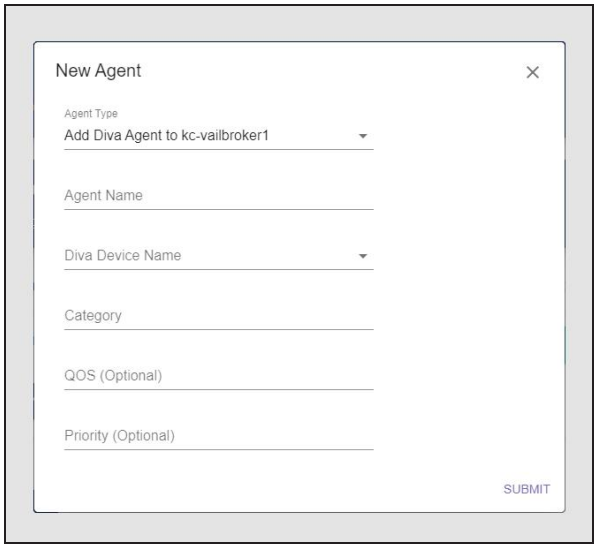

Figure 28 The New Agent - Diva dialog box.

4. Enter the desired **Agent Name**.

Note: Agent names can only use lowercase letters, numbers, the dash (-), and the underscore (_) characters.

5. Using the **Diva Device Name** drop-down menu, select a previously configured Diva device.
6. Enter the desired **Category** to be used by this agent. In Diva, a category and object pair is a unique logical construct. An object cannot exist multiple times in a category.

Note: You may use the asterisk (*) to allow multiple categories to use the agent. This allows you to use the same file name in multiple categories.

7. Enter the **QOS** (Quality Of Service) to be used by the agent. This is the QOS setting used when **Default** is specified in a request's Quality of Service field in the DIVA application.

Note: After the Diva agent is created, the QOS setting cannot be changed using the RioBroker application interface. If the QOS must be changed at a later date, contact Spectra Logic Technical Support for assistance (see Contacting Spectra Logic on page 3).

8. Enter the **Priority** for the Diva agent. This setting controls the priority level for the agent. The level can be in the range zero to 100, or the value **Default**. The value zero is the lowest priority and 100 is the highest priority.

Note: After the Diva agent is created, the Priority setting cannot be changed using the RioBroker application interface. If the QOS must be changed at a later date, contact Spectra Logic Technical Support for assistance (see Contacting Spectra Logic on page 3).

9. Click **Submit**.

Add a FlashNet Agent

1. On the toolbar in the upper-right of the application window, click **Settings** (gear icon) > **Brokers**. The Brokers screen displays.
2. On the Brokers screen, click **New Agent** (see Figure 24 on page 43). The New Agent dialog box displays.
3. Using the **Agent Type** drop-down menu, select **Add FlashNet Agent**. The Add FlashNet Agent dialog box displays.

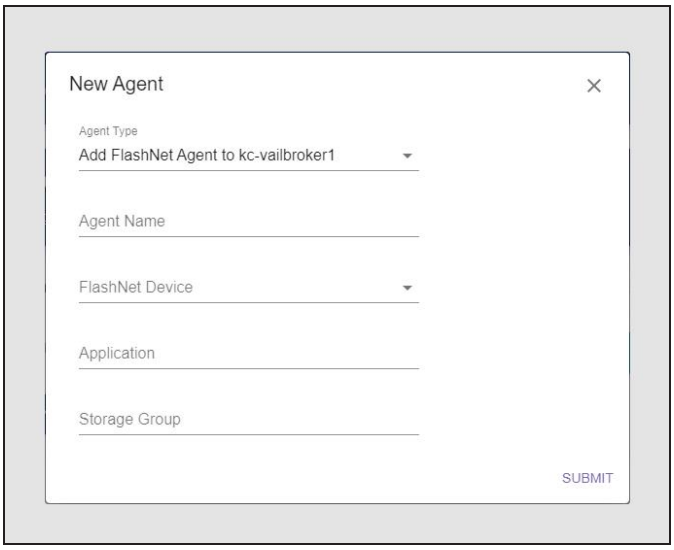

Figure 29 The Add FlashNet Agent dialog box.

4. Enter the desired **Agent Name**.

Notes:
- Agent names can only use upper and lowercase letters, numbers, the dash (-), and the underscore (_) characters.
- The Spectra RioBroker application changes any name entered to all lower case characters.

5. Using the **FlashNet Device** drop-down menu, select a previously created FlashNet device.
6. Enter the desired name for the FlashNet **Application**.

Note: The application name can be anything but it is a best practice to use the same name as the associated FlashNet service.

7. Enter the name of the desired **Storage Group** to use with this agent.

Note: If you do not specify a storage group, the FlashNet agent indexes data from all storage groups configured on the FlashNet system.

8. Click **Submit**.

Add an SGL LTFS Agent

1. On the toolbar in the upper-right of the application window, click **Settings** (gear icon) > **Brokers**. The Brokers screen displays.
2. On the Brokers screen, click **New Agent** (see Figure 24 on page 43). The New Agent dialog box displays.
3. Using the **Agent Type** drop-down menu, select **Add SGL LTFS Agent**. The Add SGL LTFS Agent dialog box displays.

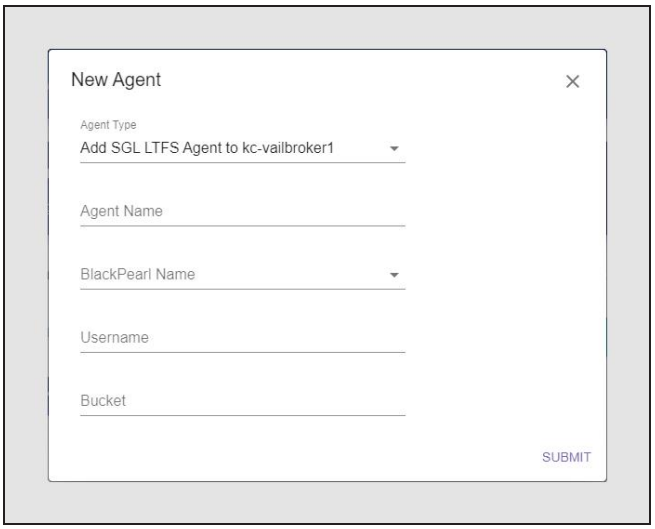

Figure 30 The Add SGL LTFS Agent dialog box.

4. Enter the desired **Agent Name**.

Notes:
- Agent names can only use upper and lowercase letters, numbers, the dash (-), and the underscore (_) characters.
- The Spectra RioBroker application changes any name entered to all lower case characters.

5. Using the drop-down menu, select the **BlackPearl Name** of a previously configured BlackPearl device.
6. Enter the **Username** of a user configured on the BlackPearl device selected in Step 5.

7. Enter the name of a **Bucket** associated with the user selected in Step 6. Bucket names are case sensitive.

Note: The bucket must already exist on the BlackPearl system when creating a device using the RioBroker user interface.

8. Click **Submit**.

Create an Endpoint

Endpoints can be pre-configured to replace URIs. On the toolbar in the upper-right of the application window, click **Settings** (gear icon) **> Endpoints**. The Endpoints screen displays.

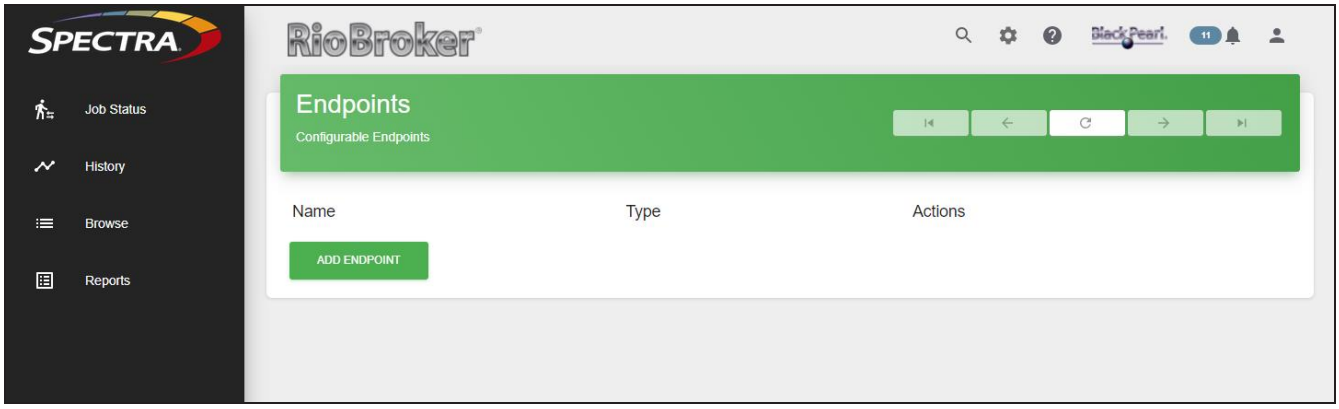

Figure 31 The Endpoints screen.

Choose the type of endpoint that you want to create:

- Create an FTP Endpoint
- Create an S3 Endpoint on page 52 - Amazon® S3 or Third Party S3
- Create a NAS Endpoint on page 53

Create an FTP Endpoint

1. Click **Add Endpoint**. The Add Endpoint dialog box displays with NAS selected as the type.
2. Using the **Type** drop-down menu, select **FTP**. The dialog box changes to show fields used to configure an FTP endpoint.

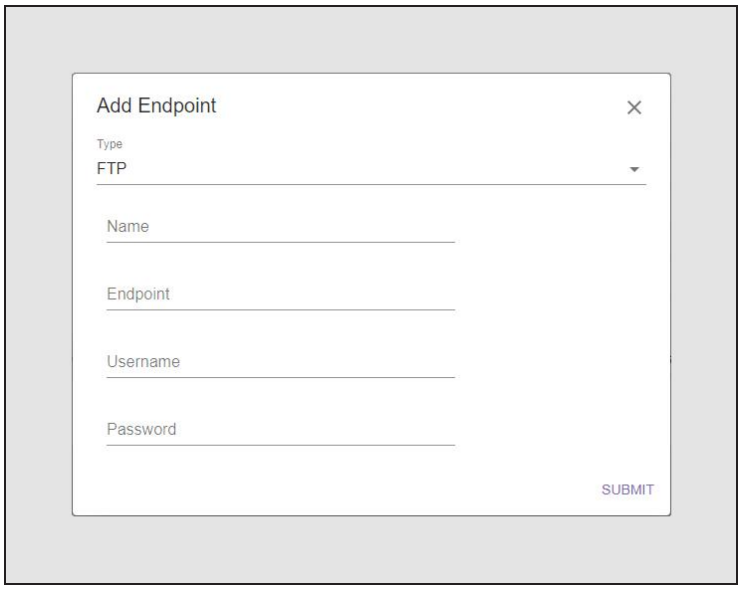

Figure 32 The Add Endpoint - FTP dialog box.

3. Enter the desired **Name** for the endpoint. Endpoint names can only use upper and lowercase letters, numbers, the dash (-), and the underscore (_) characters.
4. Enter the IP address or host name for the **Endpoint** with the prefix ftp (for example, ftp://*xxx.xxx.xxx.xxx*).
5. Enter the **Username** and **Password** of a user configured to use the FTP server.
6. Click **Submit**. The Endpoints screen displays showing the newly created endpoint.

Once the endpoint is created, use the following format for the endpoint URI when creating archive or restore commands using the API:

```
{
  "files": [
    {
      "name":"[filename]",
      "uri":"[endpoint://endpointname/filename]"
    }
  ]
}
```

where `endpointname` is the name you entered in Step 3.

Create an S3 Endpoint

1. Click **Add Endpoint**. The Add Endpoint dialog box displays with NAS selected as the type.
2. Using the **Type** drop-down menu, select **S3**. The dialog box changes to show fields used to configure an S3 endpoint.

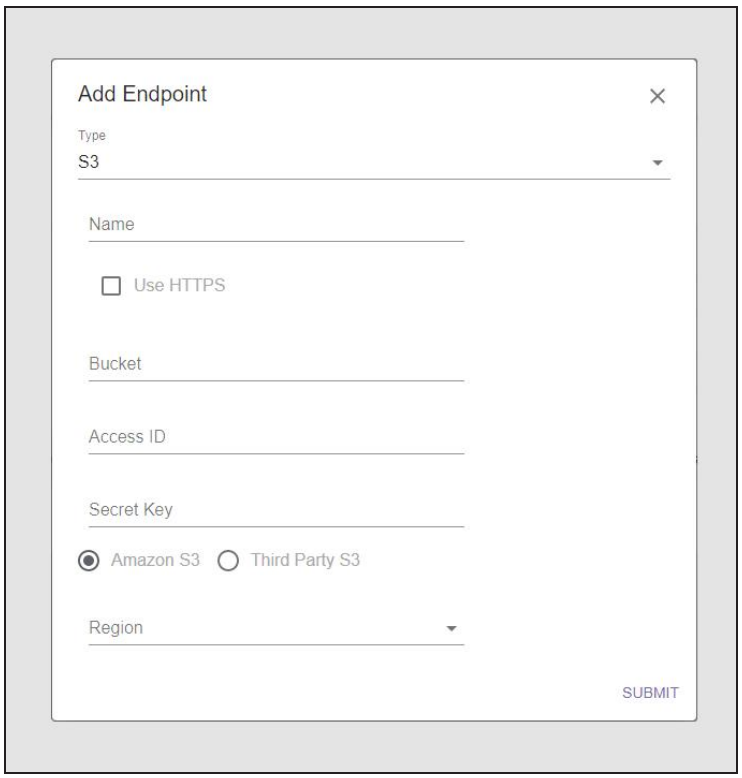

Figure 33 The Add Endpoint - S3 dialog box.

3. Enter the desired **Name** for the endpoint.
4. Select whether to use **HTTPS** when connecting to the endpoint. If you select this option, the RioBroker application uses port 443. Otherwise the application uses port 80.
5. Enter the name of a **Bucket** already on the endpoint. Do not include a folder or prefix name. Bucket names are case sensitive.
6. Enter the **Access ID** and **Secret Key** of a user with credentials for the S3 account and the bucket that will be used for data storage.
7. Select whether this is an **Amazon S3** endpoint or a **Third Party S3** endpoint.

- If you selected **Amazon S3**, use the drop-down list to select the **Region**.
- If you selected **Third Party S3**, enter the **Hostname** or IP address for the endpoint.

Notes:
- Do include a port number with the endpoint hostname or IP address.
- The RioBroker application uses virtual hosting by default (for example: https://*bucketname.hostname*.com). If you do not want to use the virtual hosting of bucket names, enter an IP address instead of an endpoint hostname.

8. Click **Submit**. The Endpoints screen displays showing the newly created endpoint.

Once the endpoint is created, use the following format for the endpoint URI when creating archive or restore commands using the API:

```
{
    "files": [
      {
         "name":"[filename]",
         "uri":"[endpoint://endpointname/filename]"
      }
    ]
}
```

where *endpointname* is the name you entered in Step 3 on page 52.

Create a NAS Endpoint

1. Click **Add Endpoint**. The Add Endpoint dialog box displays with NAS selected as the type.

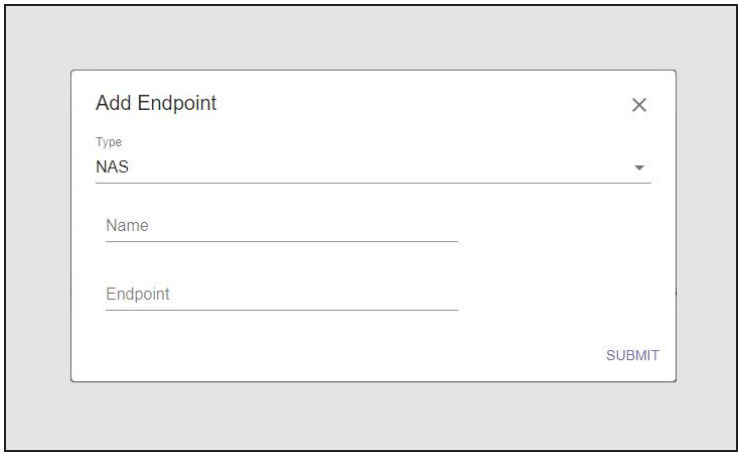

Figure 34 The Add Endpoint - NAS dialog box.

2. Enter the desired **Name** for the endpoint.
3. Enter the URI for the **Endpoint** in one of the following forms:

- file://*x.x.x.x/folder name* where *x.x.x.x* is the IPv4 address of the NAS endpoint, and *folder name* is the name of the volume configured on the NAS endpoint.

- file:///*x*:/*folder name* where *x*: is the local drive, and *folder name* is the name of the volume configured on the NAS endpoint

4. Click **Submit**. The Endpoints screen displays showing the newly created endpoint.
5. Once the endpoint is created, use the following format for the endpoint URI when creating archive or restore commands using the API:

   ```
   {"files": [{"name":"[filename]", "uri":"
   [endpoint://endpointname/filename]" }]}
   ```

   where *endpointname* is the name you entered in Step 2.

Create a Linux Endpoint

The RioBroker service can use any mounted file system path for archive or restore operations povided the user has the correct privileges.

URIs can be specified as paths or defined as endpoints. In a cluster environment, endpoints are required to provide the same path across multiple machines.

1. If not previously installed, install `nfs-utils`.
2. Enter the following on your Linux server:

   ```
   $ mkdir /mnt/myNFS1
   ```

   ```
   $ mount -t nfs HostIP:/export/test_data/nfs1 /mnt/myNFS1
   ```

3. Using the RioBroker user interface, click **Add Endpoint**. The Add Endpoint dialog box displays with NAS selected as the type.
4. Enter the desired **Name** for the endpoint.
5. Enter the following for the **Endpoint**:

   ```
   file://mnt/myNFS1
   ```

6. Click **Submit**.
7. To share data with Windows OS, create a CIFS share. To create a CIFS share, use the following steps. Otherwise, continue from Step 10 on page 54 to finish configuring the endpoint.
8. If not previously installed, install `gifs-utils`.
9. Enter the following on your Linux server:

   ```
   $ mkdir /mnt/myCIFS1
   ```

   ```
   $ mount -t cifs -o username=user //HostIP/MyCifsVolume/MyCifsShare1
   /mnt/myCIFS1
   ```

10. Using the RioBroker user interface, click **Add Endpoint**. The Add Endpoint dialog box displays with NAS selected as the type.
11. Enter the desired **Name** for the endpoint.

12. Enter the following for the **Endpoint**:

    `file://mnt/myCIFS1`

13. Click **Submit**.

Test the Installation

To test the installation, you need to download Postman or a similar tool. Postman is a generic restful client with a free version available for Windows OS and macOS. Postman is used for sending commands through the Spectra RioBroker application.

Postman can be downloaded from *https://www.getpostman.com/downloads/*.

You can view all API commands on the computer where Rio Broker is installed from https://localhost:5050/api/viewer/index.html.

Use the instructions in this section to test your installation.

Test Setup

1. Start Postman. The main screen displays.

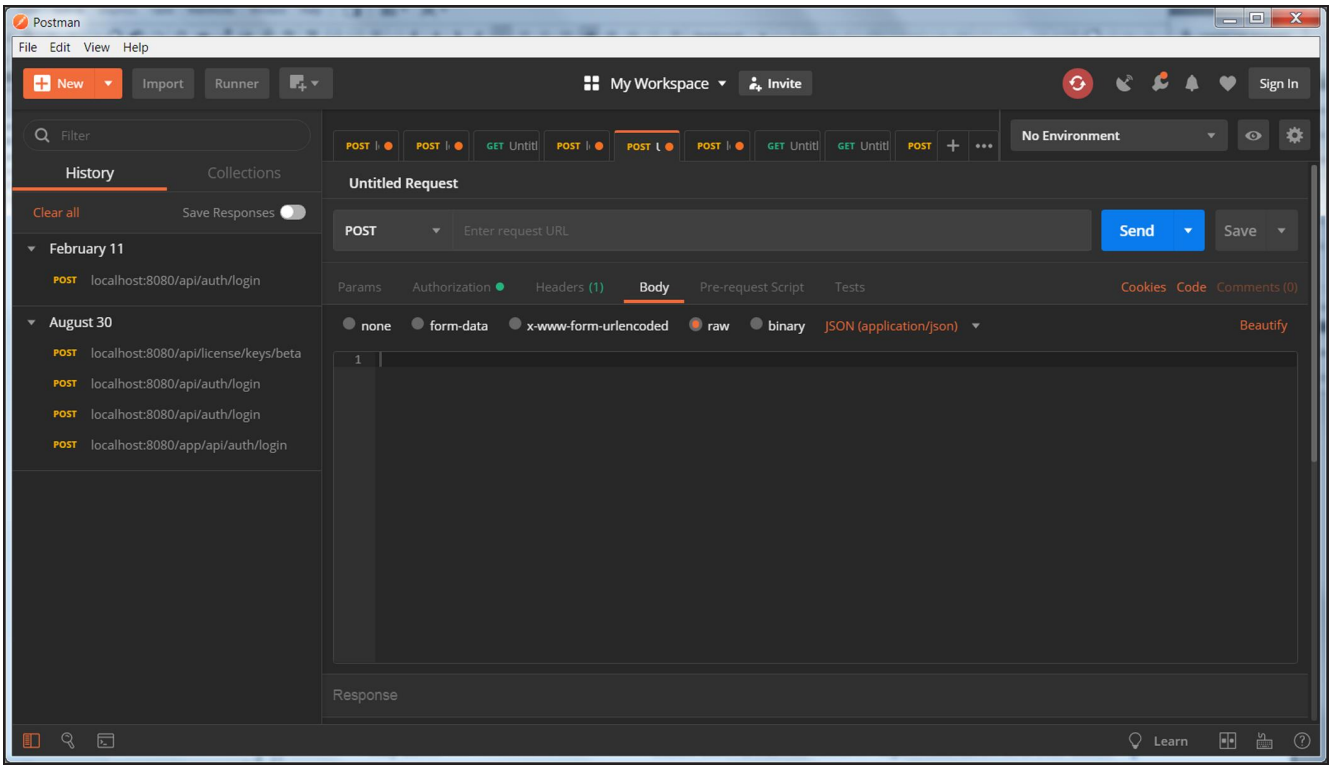

Figure 35 The Postman main screen.

2. Navigate to **File > Settings**. The settings screen displays.

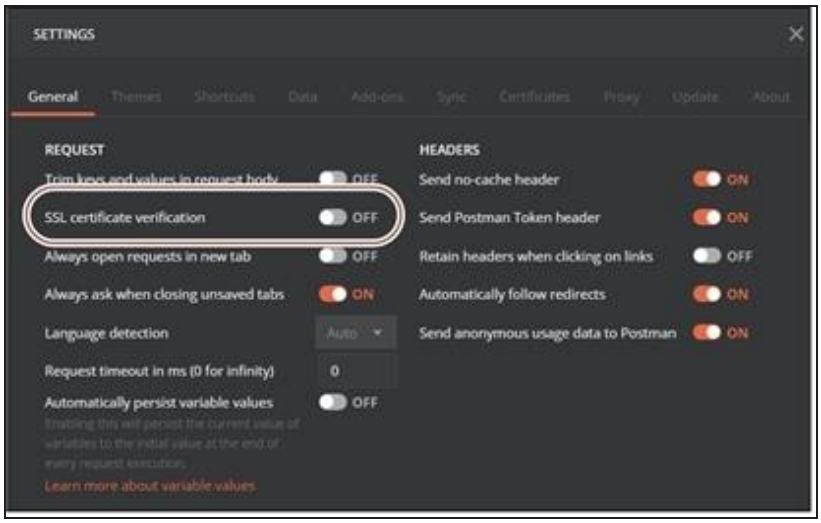

Figure 36 The Postman Settings screen.

3. Turn off **SSL certificate verification** and close the Settings dialog box.
4. If necessary, on the main screen select the Body tab. Verify that **raw** and **JSON (application/json)** are selected. See Figure 35 on page 56.

Note: These settings are used for all communications with RioBroker.

5. Use the following steps to obtain an authorization token. Authorization tokens expire in one hour, but can be generated as often as needed during testing.

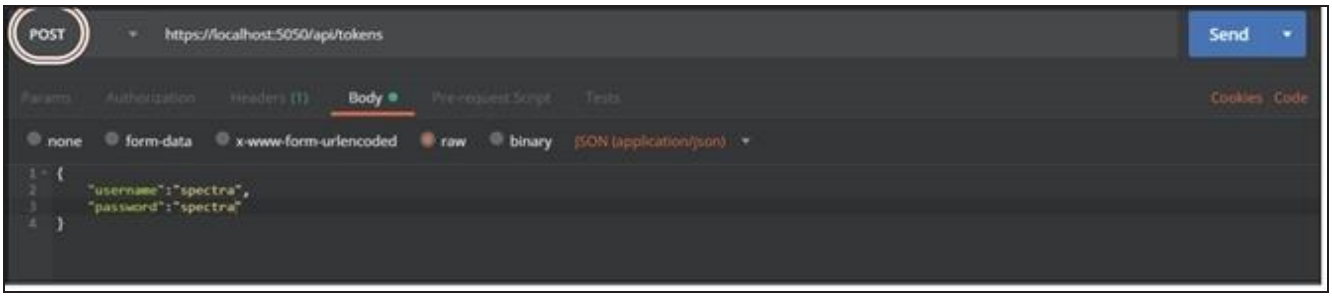

Figure 37 Request an authorization token using Postman.

   a. If necessary, select **POST** from the drop-down menu next to the Request URL field.
   b. Enter the command `https://localhost:5050/api/tokens` in the Request URL field.
   c. In the Body area, enter:

```
{
  "username":"spectra",
  "password":"spectra"
}
```

   d. Click **Send**. The response displays in the response pane. Copy the token.

Figure 38 The response from the token request.

e. In the workspace, select the **Authorization** tab.

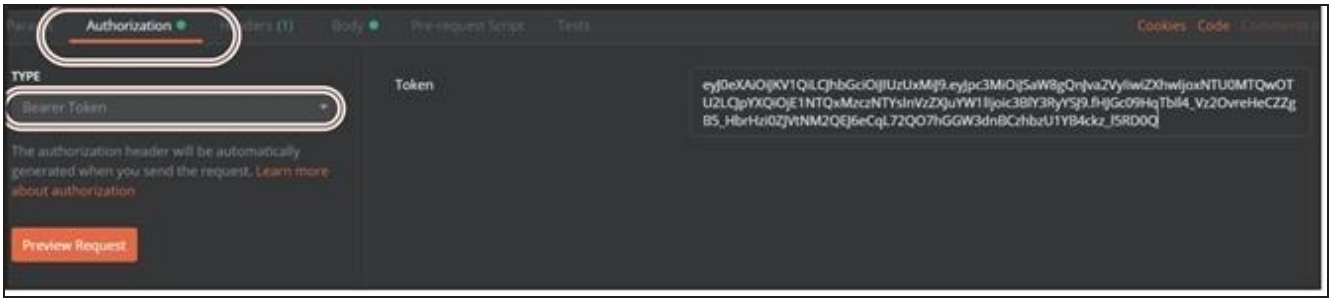

Figure 39 Enter the token.

f. Very that **Type** is set to Bearer Token and paste the token in the Token field.

Note: Each new tab in Postman needs to have the token pasted into the authorization field.

Test with a Small Text File

Use a small text file to test communication to the RioBroker application.

1. Create a small text file to use for testing.
2. Use the following steps to archive the small text file to the BlackPearl system using the Spectra RioBroker application.

Note: The following example uses a file named Testing1.txt located on the desktop.

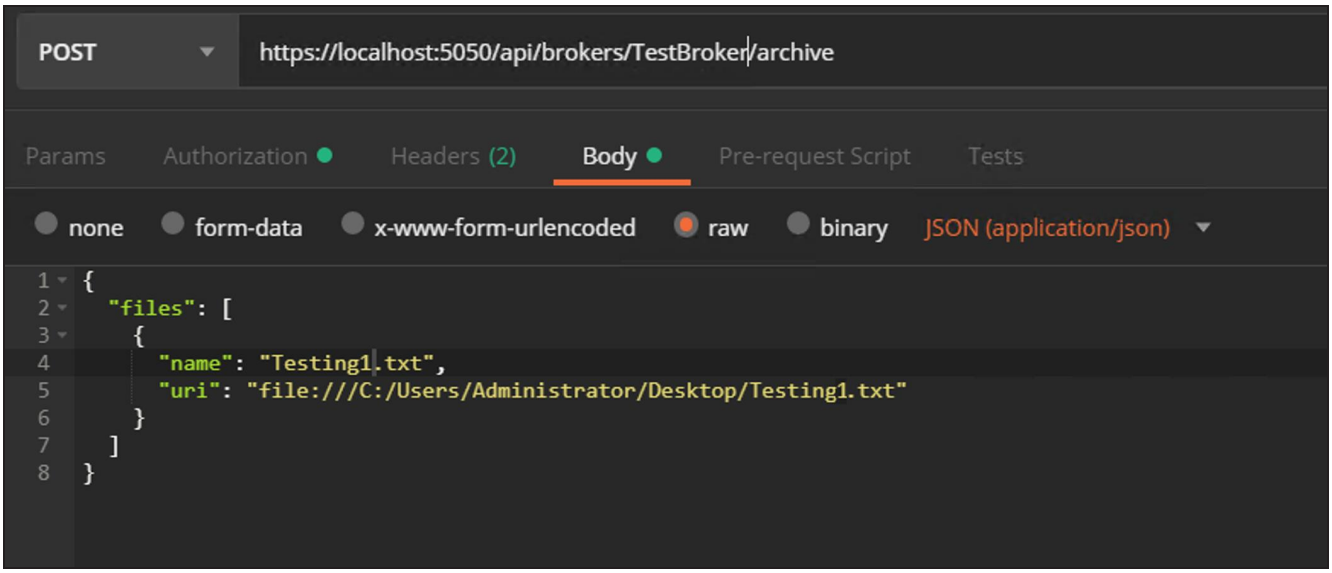

Figure 40 An archive request example.

a. If necessary, select **POST** from the drop-down menu next to the Request URL field.

b. Enter the command `https://localhost:5050/api/brokers/{brokername}/archive` in the Request URL field. Use the broker name configured in Step 1 on page 41.

c. The archive command requires the file name and URI. In the Body area, enter:

```
{
  "files": [
    {
      "name":"[file name]",
      "uri":"[full file uri]"
    }
  ]
}
```

d. Click **Send**. The response displays in the response pane.

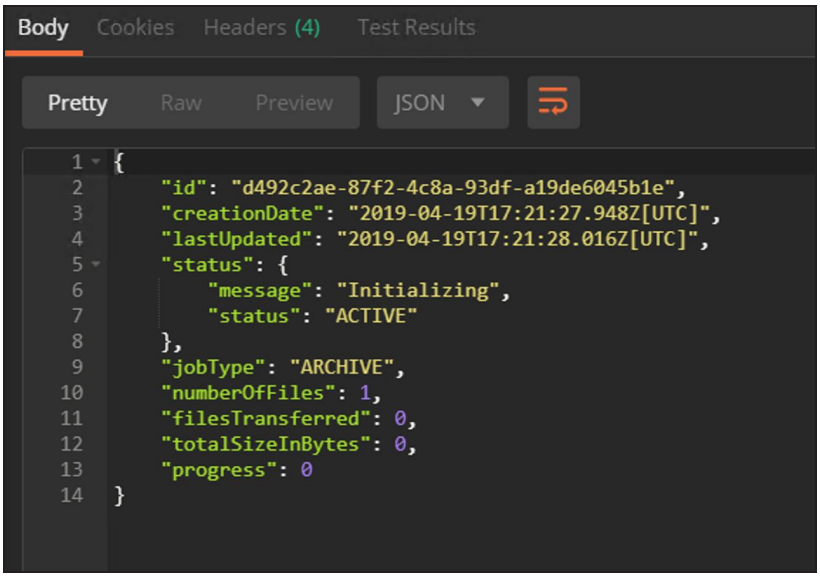

Figure 41 The response from the archive request.

3. Confirm that the test file was successfully archived using either the Spectra RioBroker user interface or Postman.

- Using the Spectra RioBroker user interface, select **Job Status** in the taskbar, and use the **Status** drop-down menu to select **Completed** jobs. If the archive was successful, the job displays here. If the job is not listed, use the **Status** drop-down menu to select **Failed** jobs. If the job is listed here, select the failed job to see additional information about why the job failed.
- More information about why a job failed can be found in the Spectra RioBroker logs. See Logs on page 111 for more information.
- Using Postman,

    i. Open a new tab and select **GET** from the drop-down menu next to the Request URL field (see Figure 40 on page 59).

    ii. Enter the command `https://localhost:5050/api/jobs/{jobId}` in the Request URL field. For jobId, use the ID from the archive request response.

    iii. Click **Send**. The response will list the Job ID, creation date, last updated date, and the status of the job.

4. Use the following steps to restore the small text file.

    a. If necessary, select **POST** from the drop-down menu next to the Request URL field.

    b. Enter the command `https://localhost:5050/api/brokers/{brokername}/restore` in the Request URL field. Use the broker name configured in Step 1 on page 41.

    c. In the Body area, enter:

```
{
  "files": [
    {
      "name":"[file name]",
      "uri":"[full file uri]"
    }
  ]
}
```

The file URI must be directed to a different location than the test file's original location. Or, if restoring to the original location, the file name must be changed.

d. Click **Send**. The response displays in the response pane.

Test Performance

To test Spectra RioBroker performance, you must first use the Dummy File Creator application to generate the files used in the testing the write/read speed of the RioBroker application. Download the Dummy File Creator from *http://www.mynikko.com/dummy/.*

1. Utilizing the Dummy File Creator, create 100 1 GB files.
   - **a.** If necessary, create a directory on the host system where you want to generate the test files.
   - **b.** In the directory created in Step a, create a new text file.
   - **c.** Using a text file editor, enter:
   - the directory name created in Step a.
   - the desired file name.
   - the binary value for 1 GB (`1073741824`).
   - and include the character zero after the file size value.

   Use a new line for each file. Refer to the example below.

```
C:\Media\Test_Files\1.txt      1073741824    0
C:\Media\Test_Files\2.txt      1073741824    0
C:\Media\Test_Files\3.txt      1073741824    0
C:\Media\Test_Files\4.txt      1073741824    0
C:\Media\Test_Files\5.txt      1073741824    0
...
C:\Media\Test_Files\100.txt    1073741824    0
```

d. Using the Widows Start menu, or the icon on the desktop, launch the Dummy File Creator application.

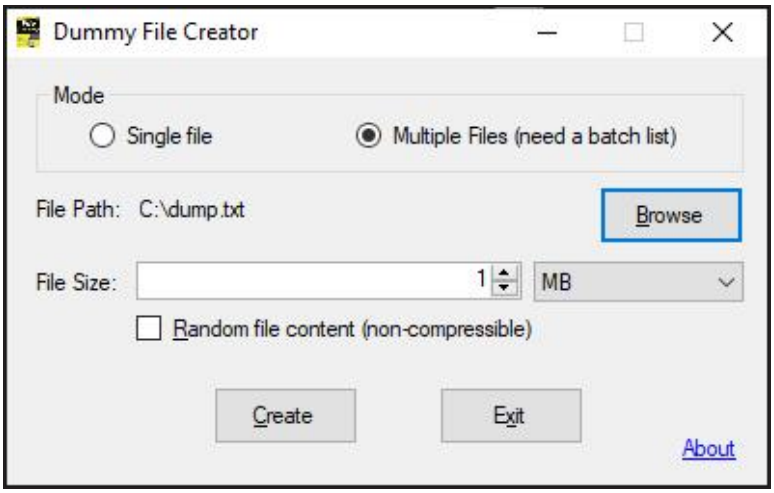

Figure 42 The Dummy File Creator dialog box.

e. Select **Multiple Files**.

f. **Browse** to the location of the text file created in Step a.

g. Click **Create**. The Dummy File Creator creates 100, 1 GB files.

2. Use the following steps to archive the files to the BlackPearl system using the Spectra RioBroker application.

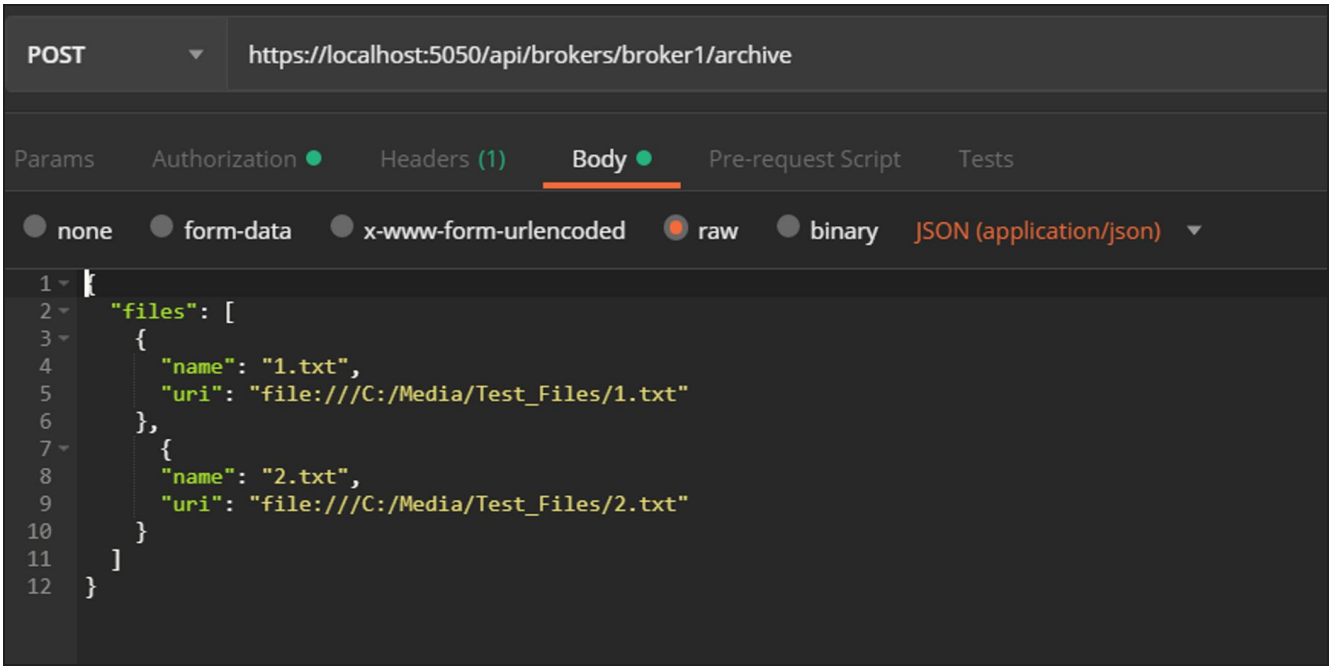

Figure 43 A multiple file archive request example (only two files displayed).

a. If necessary, select **POST** from the drop-down menu next to the Request URL field.

b. Enter the command `https://localhost:5050/api/brokers/{brokername}/archive` in the Request URL field. Use the broker name configured in Step 1 on page 41.

c. In the Body area, enter the following:

```
{
  "files": [
    {
      "name":"[file name]",
      "uri":"[full file uri]"
    }
  ]
}
```

If you used the example file names given in Step 1 on page 61, you can copy and paste the following:

```
{
  "files": [
{"name": "1.txt",
    "uri": "file:///C:/Media/Test_Files/1.txt"},
{"name": "2.txt",
    "uri": "file:///C:/Media/Test_Files/2.txt"},
{"name": "3.txt",
    "uri": "file:///C:/Media/Test_Files/3.txt"},
{"name": "4.txt",
    "uri": "file:///C:/Media/Test_Files/4.txt"},
{"name": "5.txt",
    "uri": "file:///C:/Media/Test_Files/5.txt"},
{"name": "6.txt",
    "uri": "file:///C:/Media/Test_Files/6.txt"},
{"name": "7.txt",
    "uri": "file:///C:/Media/Test_Files/7.txt"},
{"name": "8.txt",
    "uri": "file:///C:/Media/Test_Files/8.txt"},
```

{"name": "9.txt",
"uri": "file:///C:/Media/Test_Files/9.txt"},
{"name": "10.txt",
"uri": "file:///C:/Media/Test_Files/10.txt"},
{"name": "11.txt",
"uri": "file:///C:/Media/Test_Files/11.txt"},
{"name": "12.txt",
"uri": "file:///C:/Media/Test_Files/12.txt"},
{"name": "13.txt",
"uri": "file:///C:/Media/Test_Files/13.txt"},
{"name": "14.txt",
"uri": "file:///C:/Media/Test_Files/14.txt"},
{"name": "15.txt",
"uri": "file:///C:/Media/Test_Files/15.txt"},
{"name": "16.txt",
"uri": "file:///C:/Media/Test_Files/16.txt"},
{"name": "17.txt",
"uri": "file:///C:/Media/Test_Files/17.txt"},
{"name": "18.txt",
"uri": "file:///C:/Media/Test_Files/18.txt"},
{"name": "19.txt",
"uri": "file:///C:/Media/Test_Files/19.txt"},
{"name": "20.txt",
"uri": "file:///C:/Media/Test_Files/20.txt"},
{"name": "21.txt",
"uri": "file:///C:/Media/Test_Files/21.txt"},
{"name": "22.txt",
"uri": "file:///C:/Media/Test_Files/22.txt"},
{"name": "23.txt",
"uri": "file:///C:/Media/Test_Files/23.txt"},
{"name": "24.txt",

"uri": "file:///C:/Media/Test_Files/24.txt"},
{"name": "25.txt",
"uri": "file:///C:/Media/Test_Files/25.txt"},
{"name": "26.txt",
"uri": "file:///C:/Media/Test_Files/26.txt"},
{"name": "27.txt",
"uri": "file:///C:/Media/Test_Files/27.txt"},
{"name": "28.txt",
"uri": "file:///C:/Media/Test_Files/28.txt"},
{"name": "29.txt",
"uri": "file:///C:/Media/Test_Files/29.txt"},
{"name": "30.txt",
"uri": "file:///C:/Media/Test_Files/30.txt"},
{"name": "31.txt",
"uri": "file:///C:/Media/Test_Files/31.txt"},
{"name": "32.txt",
"uri": "file:///C:/Media/Test_Files/32.txt"},
{"name": "33.txt",
"uri": "file:///C:/Media/Test_Files/33.txt"},
{"name": "34.txt",
"uri": "file:///C:/Media/Test_Files/34.txt"},
{"name": "35.txt",
"uri": "file:///C:/Media/Test_Files/35.txt"},
{"name": "36.txt",
"uri": "file:///C:/Media/Test_Files/36.txt"},
{"name": "37.txt",
"uri": "file:///C:/Media/Test_Files/37.txt"},
{"name": "38.txt",
"uri": "file:///C:/Media/Test_Files/38.txt"},
{"name": "39.txt",
"uri": "file:///C:/Media/Test_Files/39.txt"},

{"name": "40.txt",
"uri": "file:///C:/Media/Test_Files/40.txt"},
{"name": "41.txt",
"uri": "file:///C:/Media/Test_Files/41.txt"},
{"name": "42.txt",
"uri": "file:///C:/Media/Test_Files/42.txt"},
{"name": "43.txt",
"uri": "file:///C:/Media/Test_Files/43.txt"},
{"name": "44.txt",
"uri": "file:///C:/Media/Test_Files/44.txt"},
{"name": "45.txt",
"uri": "file:///C:/Media/Test_Files/45.txt"},
{"name": "46.txt",
"uri": "file:///C:/Media/Test_Files/46.txt"},
{"name": "47.txt",
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{"name": "100.txt",
"uri": "file:///C:/Media/Test_Files/100.txt"}
]
}

   d. Click **Send**. The response displays in the response pane.

3. Confirm that the test files were successfully archived using either the Spectra RioBroker user interface or Postman.

- Using the Spectra RioBroker user interface, select **Job Status** in the taskbar, and use the **Status** drop-down menu to select **Completed** jobs. If the archive was successful, the job displays here. If the job is not listed, use the **Status** drop-down menu to select **Failed** jobs. If the job is listed here, select the failed job to see additional information about why the job failed.
- More information about why a job failed can be found in the Spectra RioBroker logs. See Logs on page 111 for more information.
- Using Postman,

   i. Select **GET** from the drop-down menu next to the Request URL field.

   ii. Enter the command `https://localhost:5050/api/jobs/{jobId}` in the Request URL field. For jobId, use the ID from the archive request response.

   iii. Click **Send**. The response will list the Job ID, creation date, last updated date, and the status of the job.

4. Move the dummy files to a different directory. This allows you to use the body text from Step c on page 63 for the restore command.

5. Use the following steps to restore the files.

   a. If necessary, select **POST** from the drop-down menu next to the Request URL field.

   b. Enter the command `https://localhost:5050/api/brokers/{brokername}/restore` in the Request URL field. Use the broker name configured in Step 1 on page 41.

   c. In the Body area, enter the same text used for Step c on page 63.

   d. Click **Send**. The response displays in the response pane.

6. Log into the BlackPearl system and download a Statistic Log Set to view the read/write performance statistics. See 'Log Sets' in the *BlackPearl Converged Storage System User Guide* for instructions.

7. Delete all temporary files and directories used for testing.

Chapter 4 - Use and Manage the Spectra RioBroker Application

This chapter describes features that help you use and manage the Spectra RioBroker application.

Manage Jobs

The Jobs screen provides the current status of all jobs processed by the application, as well as the ability to cancel an in-progress job, and to restart a canceled job.

Note: Job names are set using a RioBroker client application, or entered when using the RioBroker API.

View Job Status

If desired, you can use the Spectra RioBroker application to view the job status of active, completed, and canceled jobs. From the Jobs screen you can change a job priority, cancel a job, and view detailed information about job, and files in the job.

Note: In a multi-cluster configuration, all jobs display with the master cluster node as the owner of the file.

1. On the task bar, click **Job Status**. The Jobs screen displays.

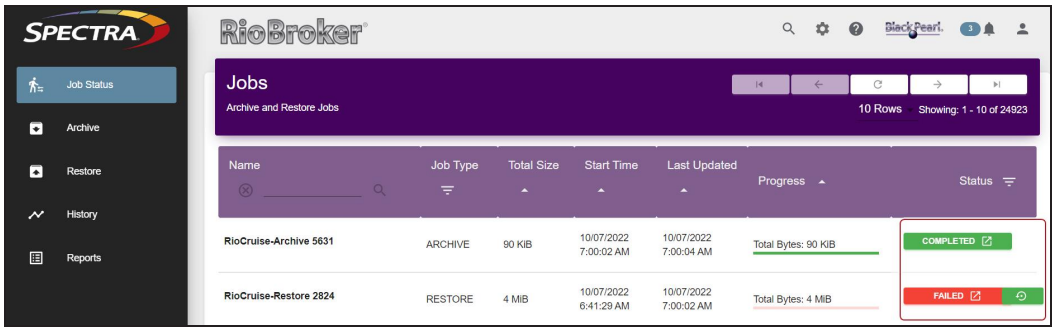

Figure 44 The Jobs screen.

2. Click **Status**, and then click **Completed**, **Canceled**, **Active,** or **Failed** to view the status of jobs in each category.

View Active Job Transfer Information

The RioBroker Jobs screen also displays the amount of data transferred and percentage complete for each active job, and can display the current data transfer speed.

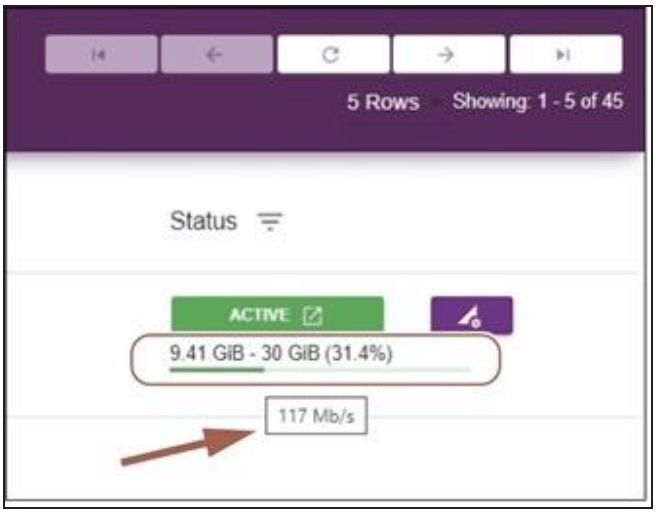

Figure 45 Active job transfer information.

- The amount of data processed by the in-progress job displays below the green Active graphic.
- **Mouse-over** the Active graphic to display the current data transfer speed for the job.

Change Job Priority

If desired, you can change the priority of an in-progress job.

1. On the task bar, click **Job Status**. The Jobs screen displays.

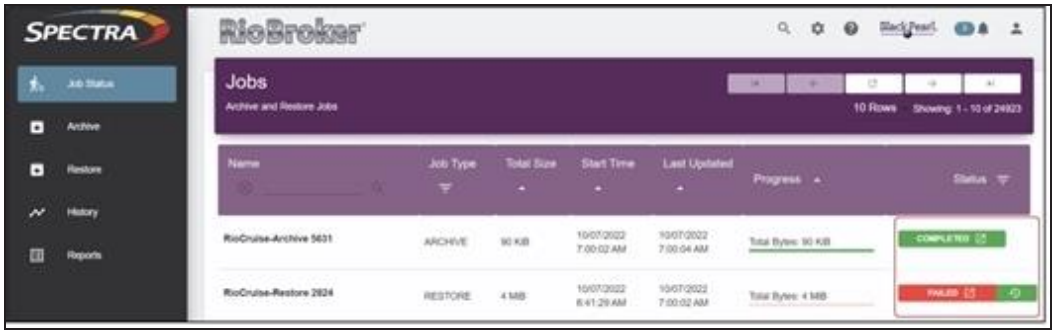

Figure 46 The Jobs screen.

2. If necessary, use the **Status** drop-down menu and select **Active**.
3. Click the **Job Manager** icon (purple rectangle with a **triangle** and **gear**) next to the job for which you want to change the priority. The Job Manager screen displays.

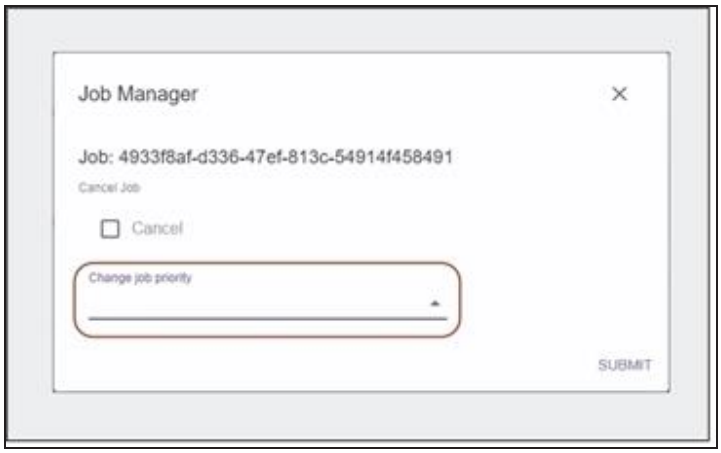

Figure 47 The Job Manager screen.

4. Use the **Change job priority** drop-down menu to select the new job priority. The job priority options are **Urgent**, **High**, **Normal**, and **Low**.

Note: Spectra Logic does not recommend setting jobs to **Urgent**.

5. Click **Submit**.

Cancel an Active Job

If desired, you can cancel an active job using the Spectra RioBroker application.

1. On the task bar, click **Job Status**. The Jobs screen displays.

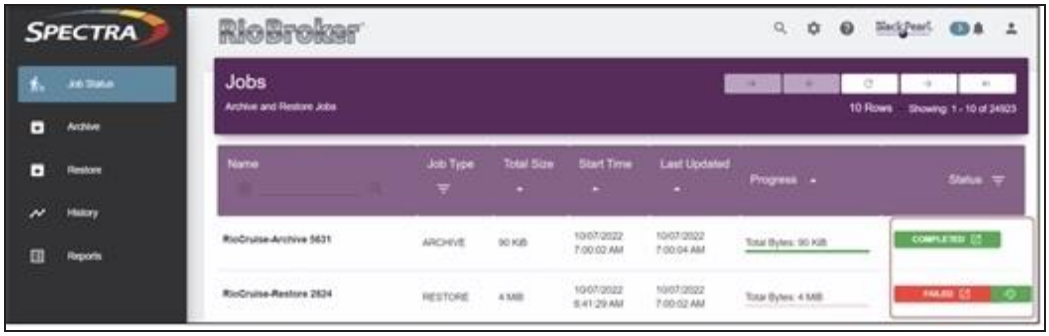

Figure 48 The Jobs screen.

2. If necessary, use the **Status** drop-down menu and select **Active**.
3. Click the **Job Manager** icon (purple rectangle with a **triangle** and **gear**) next to the job you want to cancel. The Job Manager screen displays.

Figure 49 The Job Manager screen.

4. Select **Cancel** and click **Submit** to cancel the job.

Restart a Job

If a job failed or was manually canceled, you can use the RioBroker application to restart the job.

1. On the task bar, click **Job Status**. The Jobs screen displays.

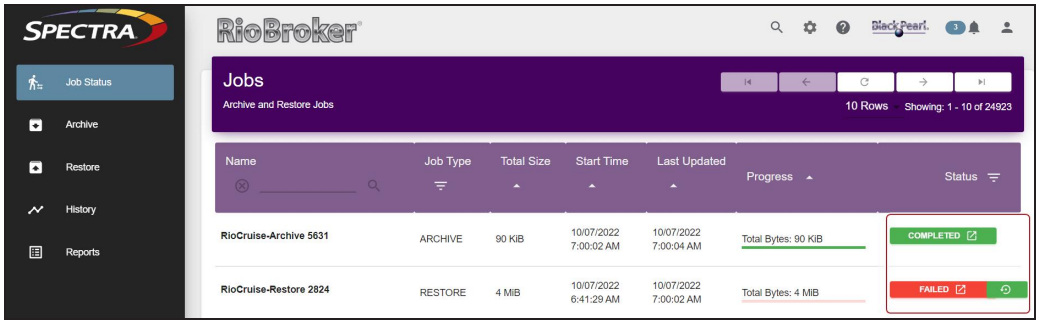

Figure 50 The Jobs screen.

2. If necessary, use the **Status** drop-down menu and select **Failed** or **Canceled**.
3. Click the **Restart** icon (green rectangle with circular arrow) next to the job you want to restart. A confirmation screen displays.
4. Click **Submit** to confirm restarting the job.

View Detailed Job Information

1. For more information, click the button that displays the job status (**Completed**, **Active**, **Canceled**, **Failed**) on the row of a job for which you want to view detailed status.

Note: You can also click the **Name** of the job to display the job details.

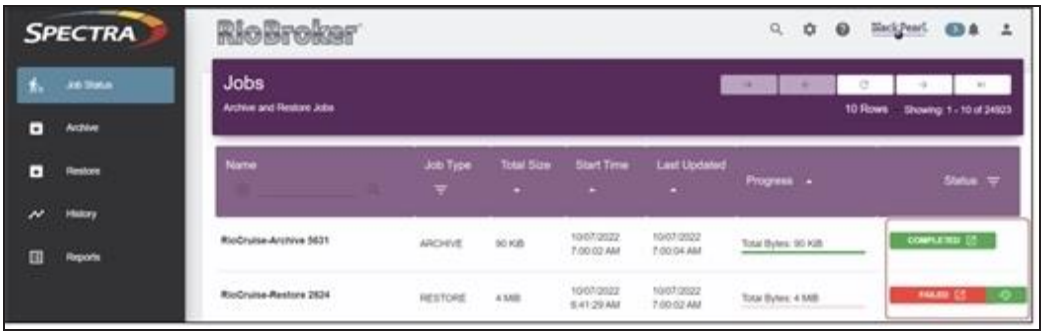

Figure 51 The Jobs screen.

2. Click the **Job** or **Files** tab to view information about the job or the files included in the job.

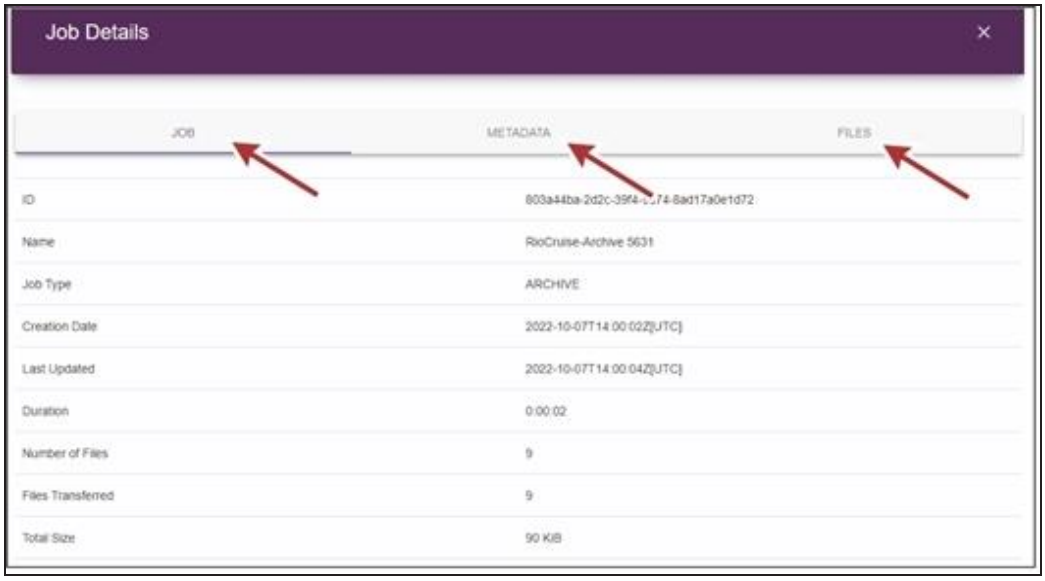

Figure 52 The Job Details screen.

Browse and Restore Objects

If desired, you can browse objects archived by the RioBroker application, as well as restore files returned by a search.

Note: The Browse screen does not allow you to download a report of the objects found during a search. Use Object Search and Reports on page 85 if you need to generate a report of searched objects.

1. On the task bar, select **Restore**. The Browse / Restore screen displays.

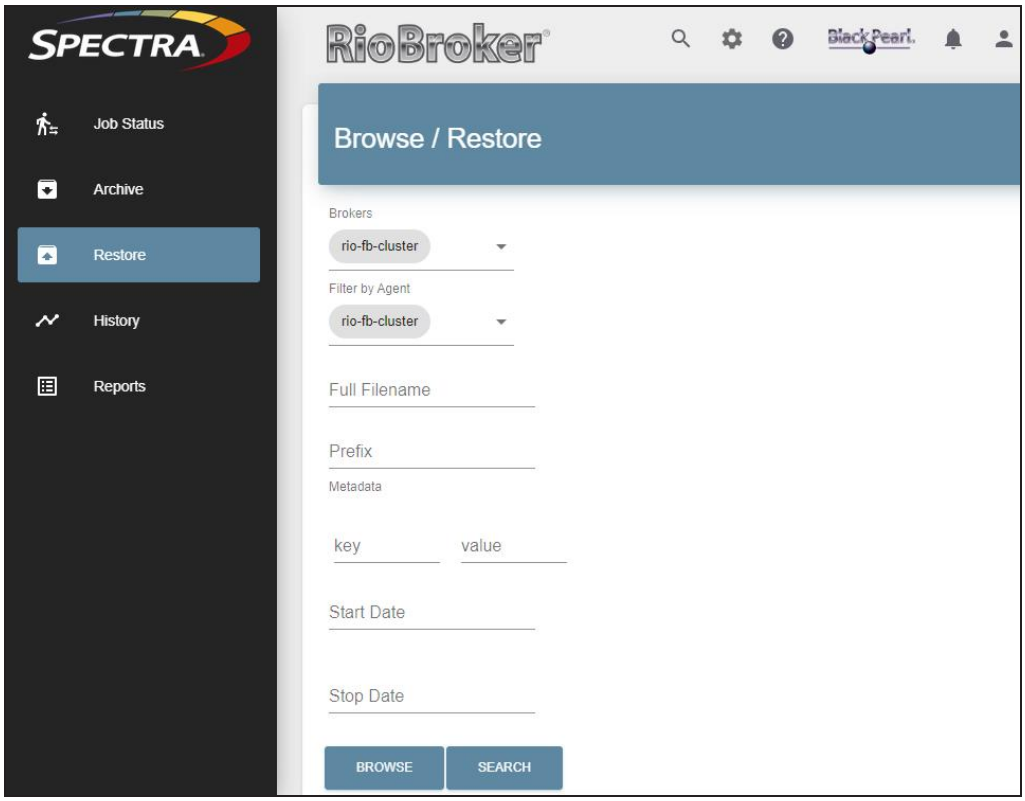

Figure 53 The Browse / Restore screen.

2. Using the **Broker** drop-down menu, select the broker for which you want to view objects. The Browse screen changes to display the objects processed by that broker.

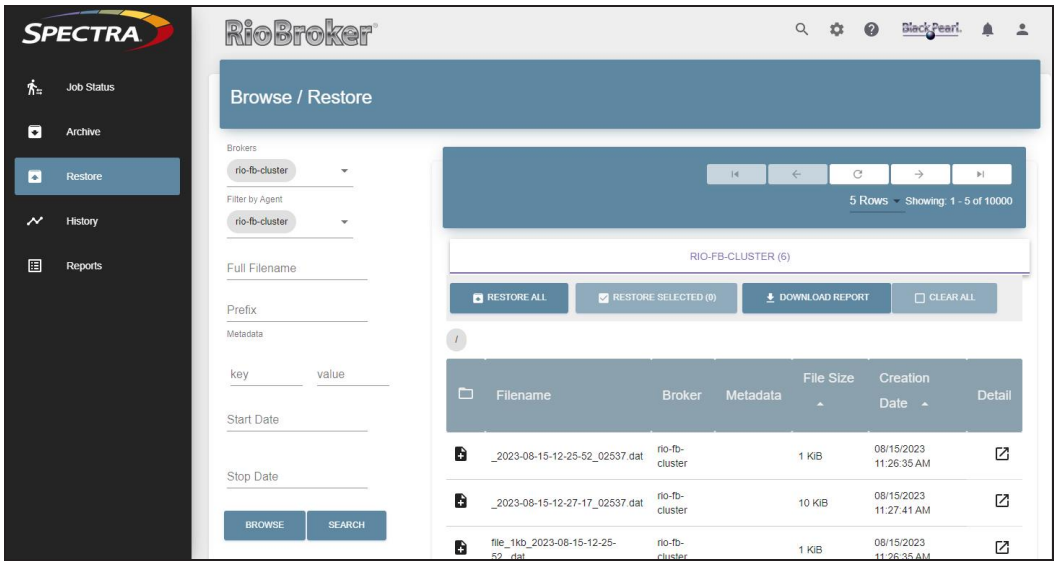

Figure 54 The Browse / Restore screen populated with objects from the selected broker.

3. To narrow your search, do any of the following:.

- To locate objects by starting prefix, enter the filename **Prefix**. The prefix name is case sensitive.
- To locate files by metadata, enter the **Metadata** information.

Note: The RioBroker application accepts an asterisk (*), or a question mark (?) as wild cards.

- Click **Start Date** to display a calendar allowing you to select a start date for the object browser.

Note: Click **X** to clear the start date.

- Click **Stop Date** to display a calendar allowing you to select a stop date for the object browser.

Notes:
- The current date is automatically selected as the stop date.
- Click **X** to clear the start date.

4. Click **Search** or **Browse** to update the list displayed on the object browser screen.

- **Browse** returns results in a directory hierarchy format.
- **Search** returns results in a flat file format.
- Use the **Previous**, **Next**, **Beginning**, and **End** buttons to navigate the object list.
- Use the **Refresh** button to update the list of object.
- Use the **Rows** drop-down menu to set how many object are displayed at one time.

Restore a Single Object

The RioBroker application provides a feature to restore a single object..

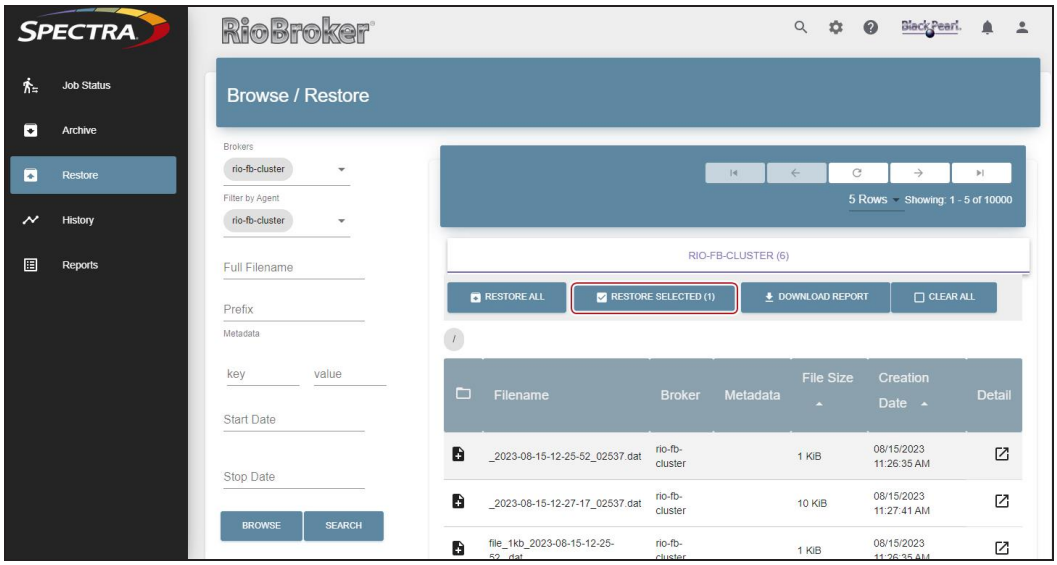

Figure 55 The Restore Selected button.

1. Select the object you want to restore and click the **Restore Selected** button. The Restore dialog box displays.

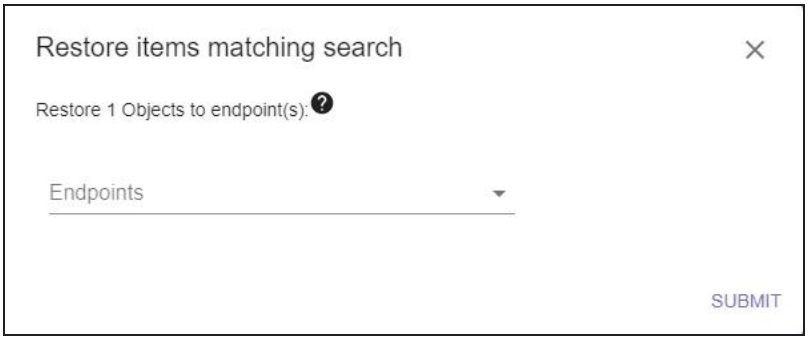

Figure 56 The Restore dialog box for restoring a single file.

2. Using the **Endpoints** drop-down menu, select one or more endpoint(s) where you want to restore the object.
3. Click **Submit**.

Restore Multiple Objects

The RioBroker application allows you to download multiple objects returned by a search.

1. After a search completes, select each object you want to restore.

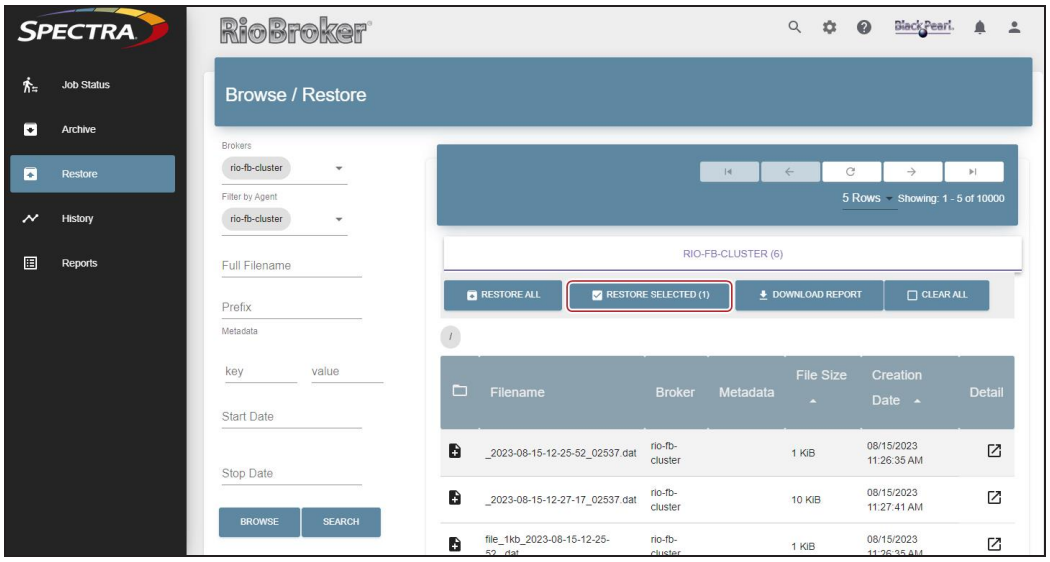

Figure 57 The Restore Selected button.

2. Click **Restore Selected**. The Restore dialog box displays.

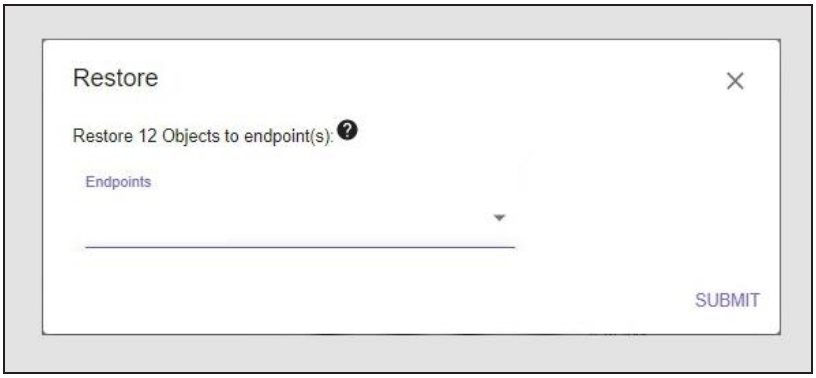

Figure 58 The Restore dialog box for restoring multiple files.

3. Using the **Endpoints** drop-down menu, select one or more endpoint(s) where you want to restore the objects.
4. Click **Submit**.

Restore All Objects

The RioBroker application provides a “one-click” feature to restore all objects found during a search.

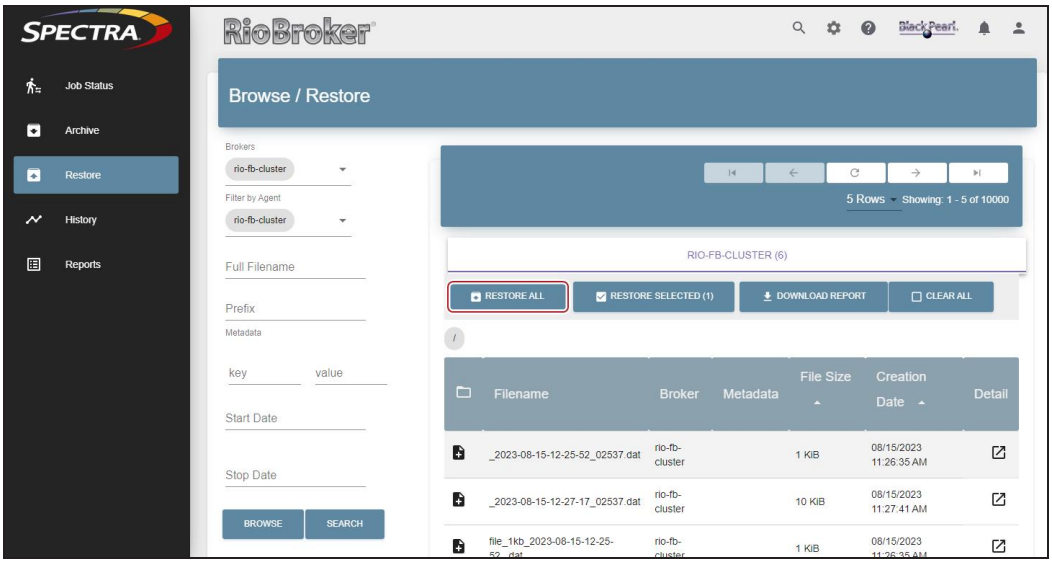

Figure 59 The Restore All button.

1. After a search completes, click **Restore All**. The Restore dialog box displays.

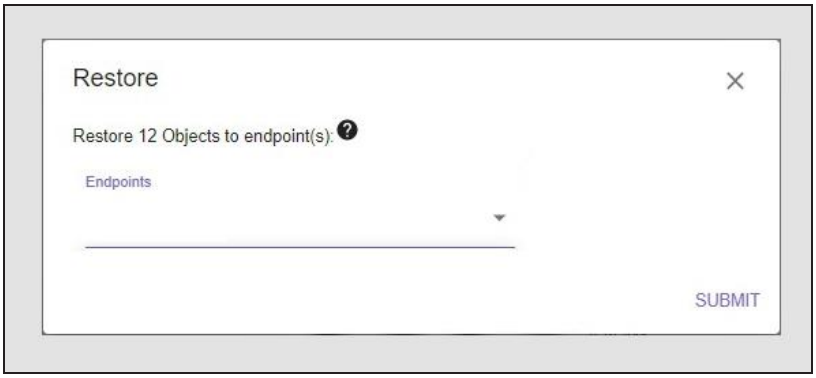

Figure 60 The Restore dialog box for restoring all files.

2. Using the **Endpoints** drop-down menu, select one ore more endpoint(s) where you want to restore the objects.
3. Click **Submit**.

View Object Details

After configuring the parameters for browsing the broker objects, click the View Details button on the row of the object for which you want to display detailed information.

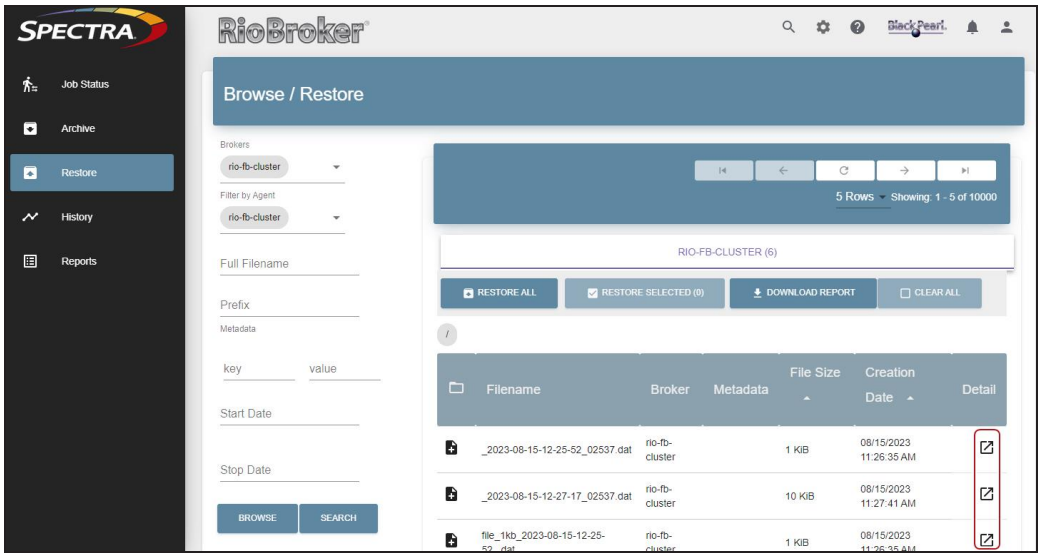

Figure 61 The Browse / Restore screen View Details button.

The details window for the object displays.

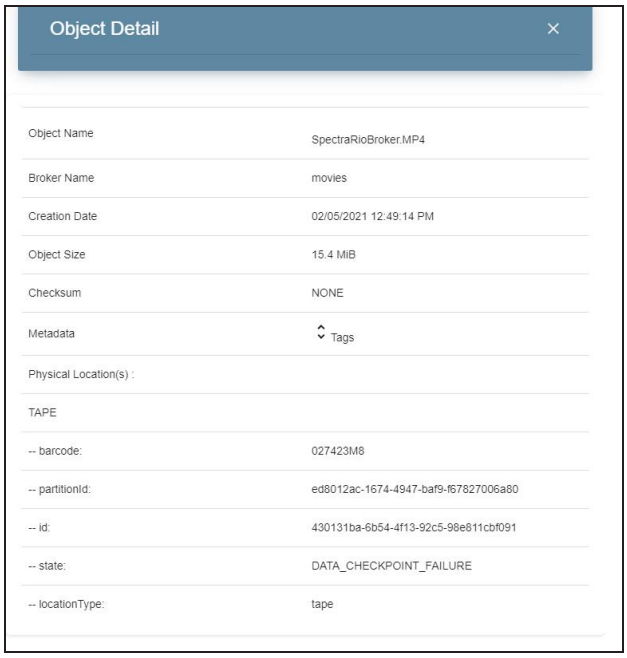

Figure 62 The Object Details screen.

Use the table below for information on the details displayed for a selected object.

Category	Description
Object Name	The filename of the object.
Broker Name	The broker used to control the placement of the object.
Creation Date	The file creation date and time.

Category	Description
Object Size	The size of the object.
Checksum	The checksum, if any, used to verify the file during archives and restores.
Metadata	The metadata assigned to the file. Click the **double-arrow** icon (see Figure 63 on page 84) to expand the list of metadata information.

Information about the physical location(s) of the object is also included in the Objects Detail screen.

If the object is written to tape media, the following fields display.

Category	Description
Barcode	The barcode of the tape cartridge where the object physically resides.
PartitionID	The partition ID of the tape partition in the library.
ID	The instance ID.
State	The current state of the tape cartridge where the object physically resides.
Location Type	Tape or disk storage.

Note: If the object exists on multiple tape cartridges, information about each tape cartridge displays.

View Object Metadata

After configuring the parameters for browsing the broker objects, click the **double-arrow** button on the row of the object for which you want to display metadata.

Figure 63 The double-arrow button.

The screen refreshes to show the metadata tags for the object.

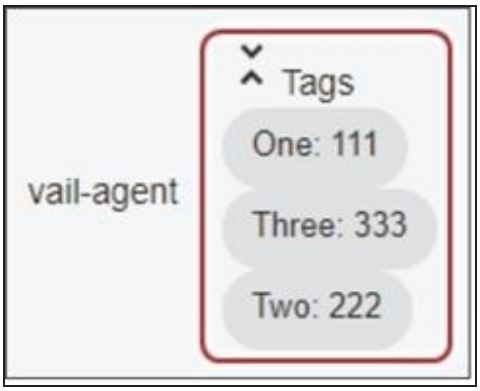

Figure 64 The Browse screen showing metadata for an object.

Click the **double-arrow** button again to stop displaying metadata for the object.

Object Search and Reports

If desired, you can search for files processed by the Spectra RioBroker application instead of searching for them in a BlackPearl system or your MAM or PAM application. After the search completes, you can download a report of the file of the file(s) returned by the search.

Note: If a broker has two agents each assigned to a different bucket, if there are duplicate file names in each bucket, when listing the objects for the broker, duplicate file names only appear in one of the buckets, typically whichever bucket was last used as a write target.

Search for Objects

Use the instructions below to search for files.

1. On the toolbar, click **Search** (magnifying glass icon). The Object Search dialog box displays.

Figure 65 The toolbar.

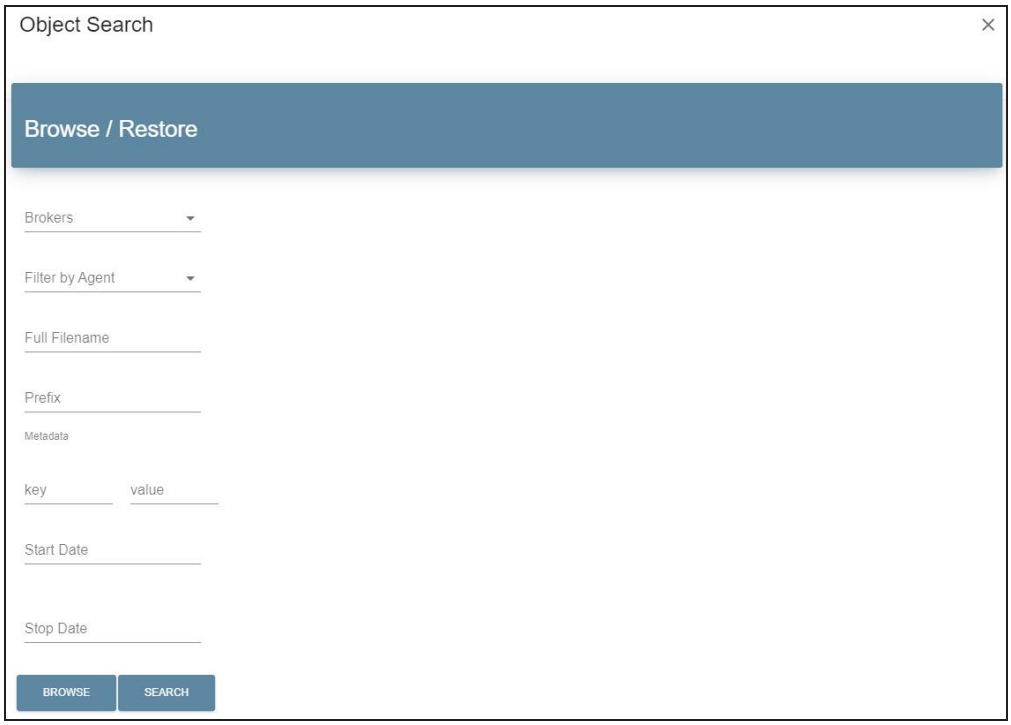

Figure 66 The Object Search dialog box.

2. Using the **Brokers** drop-down menu, select one or more brokers to search.

Note: To search all brokers, select **Search All Brokers**.

3. To narrow your search, do one of the following:

- To locate a specific file, enter the **Full Filename** of the file.
- To locate files by starting prefix, enter the **Filename Prefix**.
- To locate files by metadata, enter the **Metadata** information. The Metadata search value can either be a string to match a value, or a key/name pair.

Note: The RioBroker application accepts an asterisk (*), or a question mark (?) as wild cards.

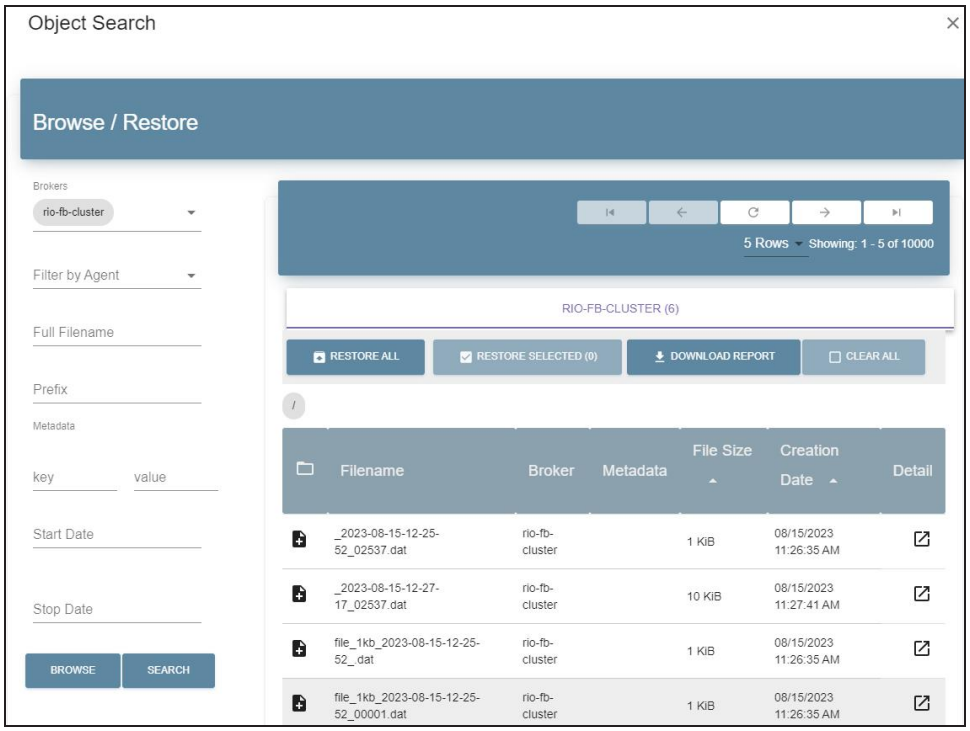

Figure 67 The Object Search dialog box with search results.

4. Click **Search** to view flat files or **Browse** to view the directory hierarchy. The results display.

- Use the **Previous**, **Next**, **Beginning**, and **End** buttons to navigate the object list.
- Use the **Refresh** button to update the list of objects.
- Use the **Rows** drop-down menu to set how many objects are displayed at one time.

Download Object Reports

After you have performed an object search, you can download a report of the objects in CSV or JSON format.

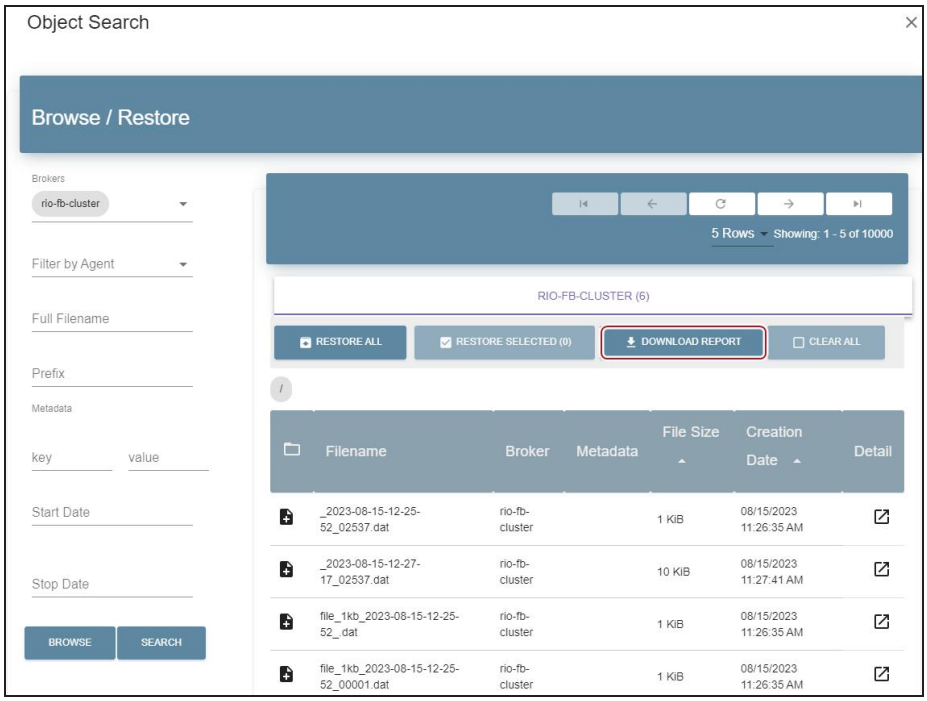

Figure 68 The Download Report button.

1. In the Search dialog box, click **Download Report**. The Reports screen displays.

Figure 69 The Reports screen.

2. Click **Save CSV** or **Save JSON** to download the report in the specified format.

Restore a Single Object

The RioBroker application provides a “one-click” feature to restore a single object. When restoring a single object, you are allowed to change the file name of the object when it is restored.

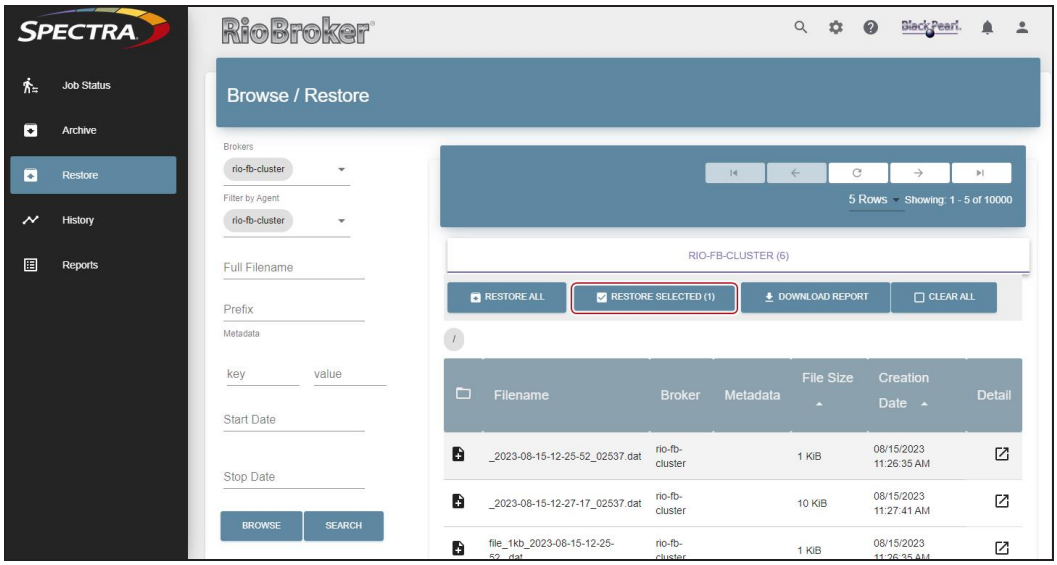

Figure 70 The Restore button.

1. Click the **Restore** button (blue oval with upwards arrow) on the row of an object you want to restore. The Restore dialog box displays.

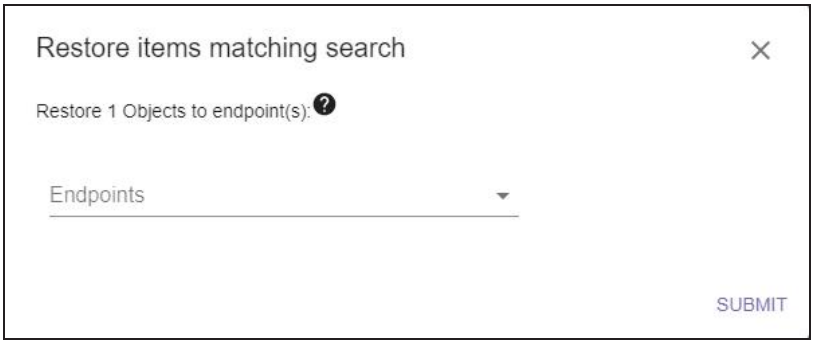

Figure 71 The Restore dialog box for restoring a single file.

2. Using the **Endpoints** drop-down menu, select one or more endpoint(s) where you want to restore the object.
3. If desired, change the **Target Name**. The Target Name field is populated with the object file name used by the RioBroker application. If desired, you may change the name before restoring the file. When the file is restored, it is given the name entered in the Target Name field.
4. Click **Submit**.

Manage Brokers

Use the instructions in this section to edit broker agent indexing, view agent details, edit broker agent bucket protection, and delete an agent or broker.

Edit Broker Agent

After creating an agent in a broker, if desired, you can force the agent to be re-indexed with the indexing options, and, if applicable, you can toggle the BlackPearl Bucket Protection Flag option.

Note: If a file in the PFR environment contains a space character ( ), that file fails to index, and cannot be restored using a time-code restore. The file can only be restored using byte-based RioBroker restore

1. On the toolbar in the upper-right of the application window, click **Settings** (gear icon) > **Brokers**. The Brokers screen displays.
2. On the Brokers screen, select the agent you want to re-index and click the **Edit** icon (blue oval with a pen).

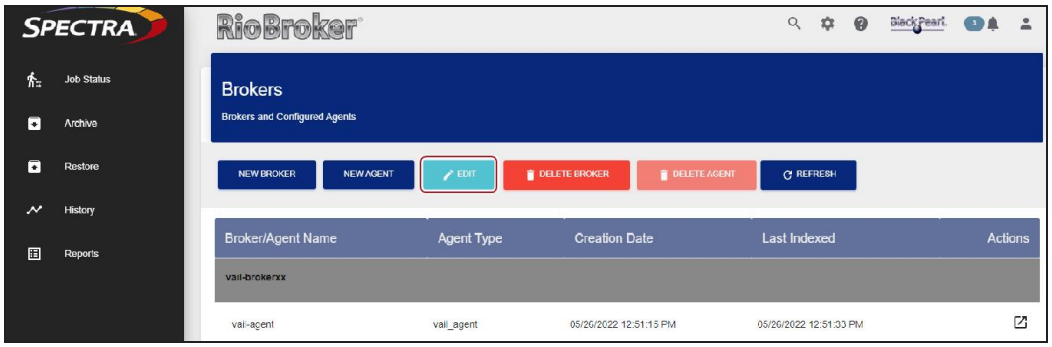

Figure 72 The Brokers screen.

The Edit *agent name* dialog box displays.

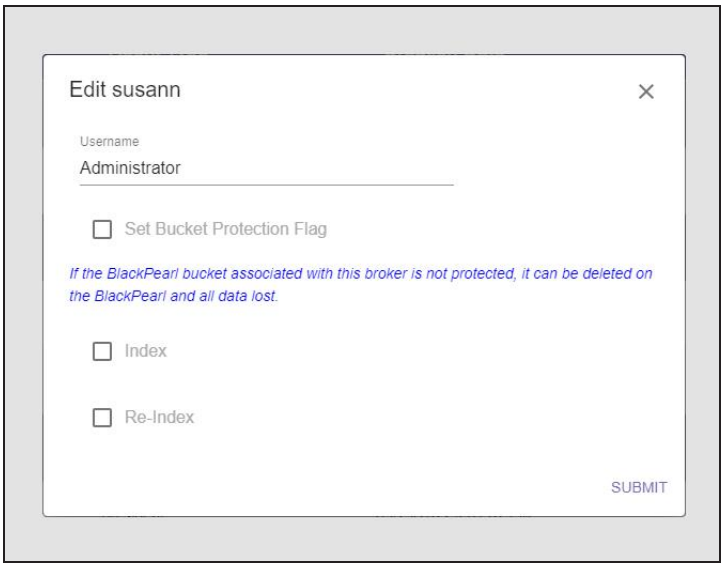

Figure 73 The Edit *agent name* dialog box.

3. Select the desired settings.

Setting	Description
Set Bucket Protection Flag	Flag the bucket associated with the agent in the Spectra RioBroker application. This option prevents users from editing the associated BlackPearl bucket. BlackPearl systems running version 5.6 or later support bucket protection and default the bucket protection flag to active.
Index	Index the bucket associated with the agent in the Spectra RioBroker application. This option does not add file information into the application when the file creation timestamp is older than the last Spectra RioBroker index operation timestamp.
Re-Index	Index the bucket associated with the agent in the Spectra RioBroker application. All files are added into the application regardless of the object timestamp. All objects in the bucket are updated in the Spectra RioBroker application.

4. Click **Submit**. The agent is edited.

Note: During the re-indexing, files in the agent show as “Indexing” on the Jobs status screen.

View Broker Agent Information

After creating an agent in a broker, you can view information about the agent, such as the agent target device, username, bucket name, agent creation date, and last index date.

1. On the toolbar in the upper-right of the application window, click **Settings** (gear icon) > **Brokers**. The Brokers screen displays.
2. On the Brokers screen, click the **Details** button (grey oval with diagonal arrow) on the row of the agent for which you want to view information. The Agent Details screen displays.

Note: You can also click the **Agent Name** to display agent details.

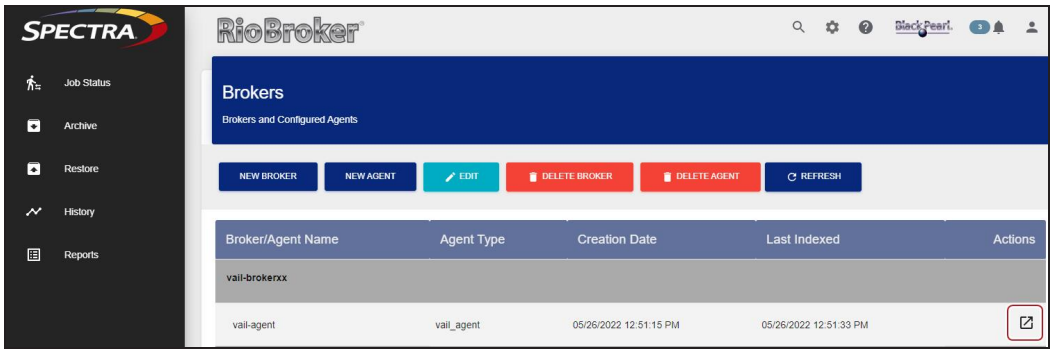

Figure 74 The Brokers screen.

Delete a Broker Agent

If desired, you can delete a previously configured broker agent.

Note: No files are deleted when deleting a broker agent, but metadata used by the Spectra RioBroker application associated with archived files is deleted.

1. On the toolbar in the upper-right of the application window, click **Settings** (gear icon) > **Brokers**. The Brokers screen displays.
2. On the Brokers screen, select the agent you want to delete and click **Edit**.
3. Deselect the **Set Bucket Protection Flag** check box if configured and click **Submit**.

Note: When deleting brokers and broker agents, you must remove the bucket protection flag. Failing to remove the protection flag results in the BlackPearl bucket being inaccessible and requires the user to create a new broker or broker agent on the bucket to remove the protection flag.

4. With the agent still selected, click the **Delete Agent** button. A confirmation window displays.

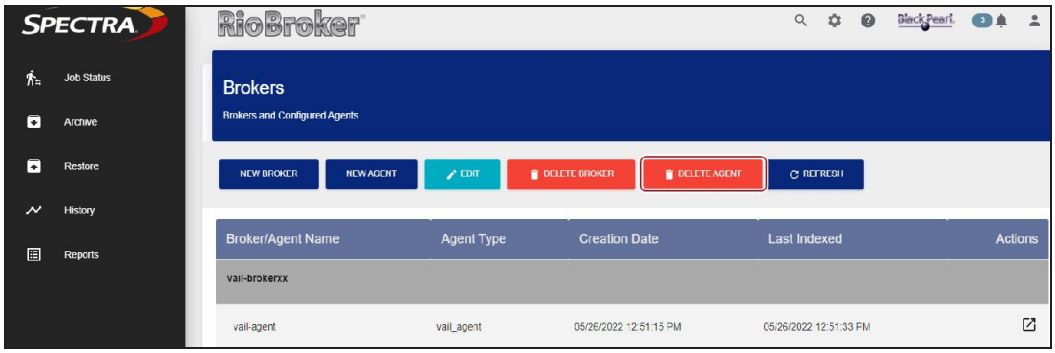

Figure 75 The Brokers screen.

5. Click **Submit** to delete the broker agent.

Delete a Broker

If desired, you can delete an existing broker.

Note: No files are deleted when deleting a broker, but metadata used by the Spectra RioBroker application associated with archived files is deleted.

1. On the toolbar in the upper-right of the application window, click **Settings** (gear icon) > **Brokers**. The Brokers screen displays.
2. On the Brokers screen, select the write-agent (the first listed agent) and click **Edit**.
3. Clear the **Set Bucket Protections Flag** check box if selected and click **Submit**.

Note: When deleting brokers and broker agents, you must remove the bucket protection flag. Failing to remove the protection flag results in the BlackPearl bucket being inaccessible and requires the user to create a new broker or broker agent on the bucket to remove the protection flag.

4. With the broker still selected, click **Delete This Broker**. The Delete Broker window displays.

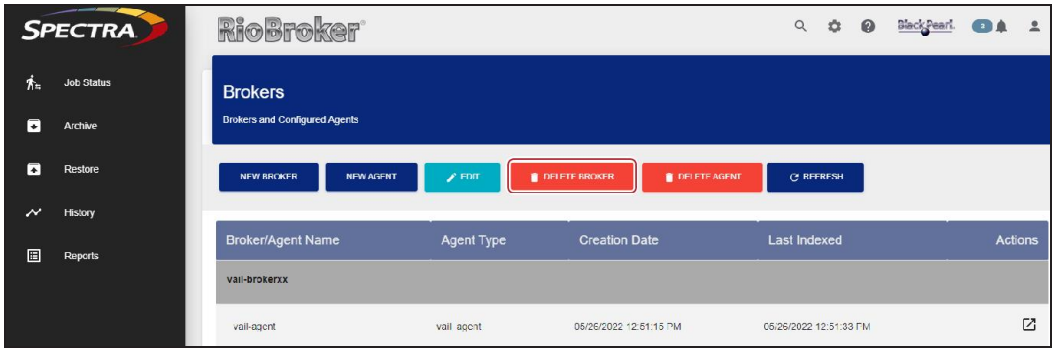

Figure 76 The Brokers screen.

5. On the Delete Broker screen, if the broker has any existing agents, select the **Force** check box. Otherwise, continue to Step 6.

6. Click **Submit**.

Delete a Cluster, Device, or Endpoint

If desired, you can delete previously created clusters, cluster members, devices, brokers, agents, or endpoints using the instructions in this section.

Select the item you want to delete:

- Delete a Cluster
- Delete a Cluster Member below
- Delete a Device on the next page
- Delete an Endpoint on the next page

Delete a Cluster

Use the instructions in this section to delete a cluster.

CAUTION Deleting a cluster also deletes any previously configured devices and brokers in the Spectra RioBroker application.

1. On the toolbar in the upper-right of the application window, click **Settings** (gear icon) > **Cluster**. The Cluster screen displays.
2. On the Cluster screen, click **Delete This Cluster**. A confirmation window displays.

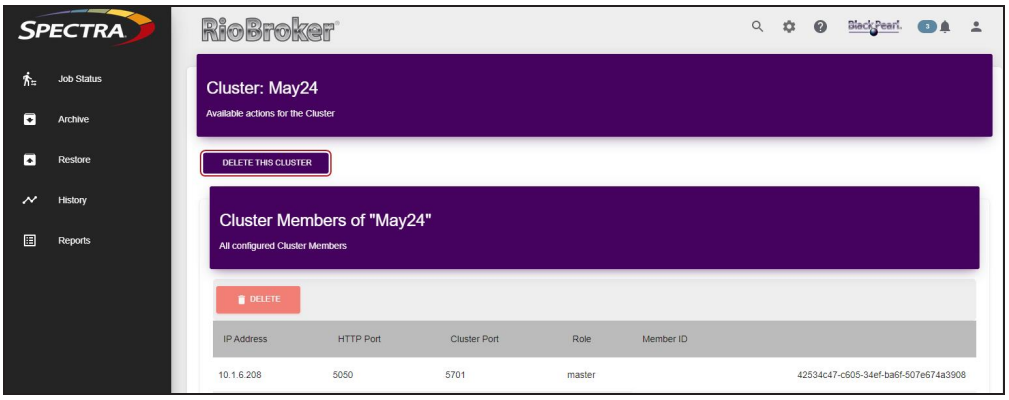

Figure 77 The Cluster screen.

3. Click **Submit** to delete the cluster. After the cluster is deleted, the Cluster Welcome screen displays.

Delete a Cluster Member

Use the instructions in this section to delete a cluster member.

1. On the toolbar in the upper-right of the application window, click **Settings** (gear icon) > **Cluster**. The Cluster screen displays.
2. On the Cluster screen, click the **Delete** button (red oval with trash can icon) on the row of the cluster member you want to delete. A confirmation window displays.

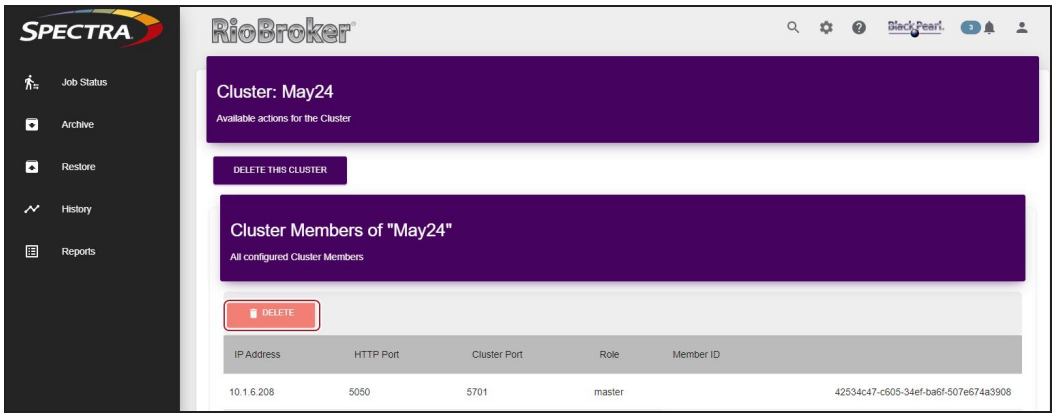

Figure 78 The Cluster screen.

3. Click **Submit** to delete the cluster member.

Delete a Device

1. On the toolbar in the upper-right of the application window, click **Settings** (gear icon) > **Devices**. The Devices screen displays.
2. On the Devices screen, click the **Delete** icon (red oval with a trash can) next to the device you want to delete. A confirmation window displays.

Figure 79 The Devices screen.

3. Click **Submit** to confirm the deletion.

Delete an Endpoint

1. On the toolbar in the upper-right of the application window, click **Settings** (gear icon) > **Endpoints**. The Endpoints screen displays.
2. On the Endpoints screen, click the **Delete** icon (red oval with a trash can) next to the endpoint you want to delete. The Delete confirmation screen displays.

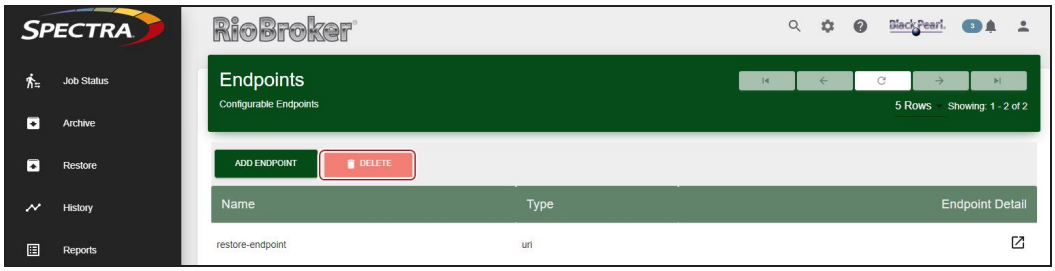

Figure 80 The Endpoints screen.

3. Click **Submit** to confirm the deletion.

Archive Files

The RioBroker application supports archiving files using the RioBroker user interface. Use the instructions in this section to create a new archive job.

Figure 81 The New Archive Job screen.

1. On the task bar, click **Archive**. The New Archive Job screen displays.
2. Enter a **Job Name**.
3. Using the **From Endpoint** drop-down menu, select the source endpoint for the job. The New Archive Job screen refreshes to show the files located on the endpoint.
4. Using the **Archive Type** drop-down menu, select either **Select Files for Archive** or **Archive All Files on Endpoint**. Use one of the below methods to select individual files:

- Select the checkbox to the right of the file or folder name.
- Highlight the row of the file or folder and click **Archive Selected**.

Notes:
- To view the files inside a folder, select the folder name and click **Open**.
- To remove a file from the archive list, select the row of the file or folder and click **Remove Selected**.
- To clear all currently highlighted files or folders click **Clear Selection**.

5. If desired, when selecting individual files, you can change the object name, index options, and metadata. If you are archiving all files, continue to Step 6 on page 99.
   a. Select the row of the file and click **Metadata**. The Object Options screen displays.

Figure 82 The Object Options screen.

b. If desired, enter a name to **Rename object on target**.

c. If desired, select **Index Media** to perform an index operation after the files are archived on the target.

d. If desired, click the **+** button and add one or more metadata **Tags**.

Note: Add additional metadata tags by clicking the **+** button. Remove tags by clicking the **-** button.

e. Click **Submit** to return to the New Archive Job Options screen.

6. Using the **To Broker** drop-down menu, select the target broker for the archive job.

7. If desired, further refine your search results by specifying an object **Prefix** or **Job Metadata**.

8. After finalizing your selections, press the **Submit Jobs** button. The Archive Objects screen appears.

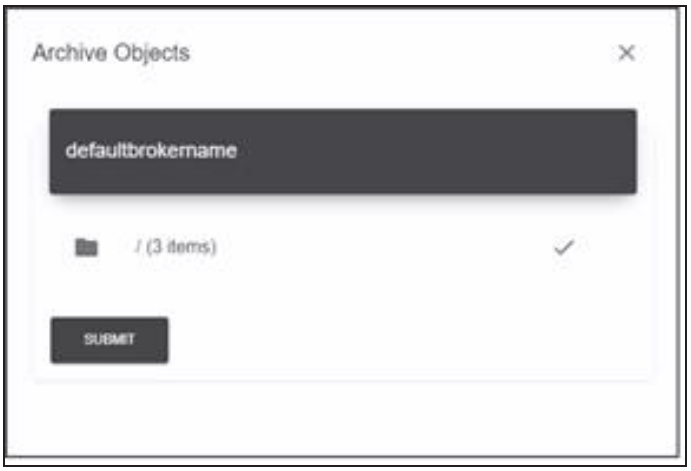

Figure 83 The Archive Objects screen.

Log Out of Existing Session

Use the toolbar on the upper-right of the Spectra RioBroker application interface to log out of the interface and return to the login screen.

1. On the toolbar, click the **User** icon (person) at the far right of the toolbar.

Figure 84 The toolbar.

2. Click **Logout**. The Login screen displays.
3. Confirm your selections and click **Submit**.

Manual Database Backup and Restore

Use the instructions in this section to manually backup and restore RioBroker databases.

Database Backup

This section covers the steps to manually backup a database.

1. In the RioBroker application interface, click **Settings** (gear icon) **> Settings**. The Setting screen displays.
2. Record the information on the Settings screen.
3. Create a dedicated Broker and BlackPearl Bucket for the backup files. See Create a BlackPearl Broker on page 41 for information.
4. Launch the Windows Command Line Interface console.
5. Navigate to C:\Program Files\Spectra Logic Corporation\SpectraRioBroker\server\resources\RioCli\<*rio_version*>\bin

Note: You may need to navigate to a different system path if you did not install the RioBroker application in the default location.

6. Enter the command to backup to either a broker (a on page 101 or endpoint b on page 101)
   a. Enter the following command to backup to a broker:

      ```
      riocli.bat backup --broker db-backup-broker
      ```

      where *db-backup-broker* is the dedicated broker to archive database backup objects to a BlackPearl bucket.

   b. Enter the following command to backup to an endpoint:

      ```
      riocli.bat backup --broker db-backup-endpoint
      ```

      where *db-backup-endpoint* is the dedicated endpoint to archive database backup objects to a BlackPearl bucket.

This command creates a ZIP folder named **RioBrokerBackup_*YYYY_MM_DD_HH_MI_SS*.zip**. The ZIP file contains arangodump, config, and data folders. Once the file is created, the RioCLI creates an archive job using the specified broker.

Database Restore or Transfer

Use one of the methods below to restore or transfer the RioBroker application database.

- Restore Database to an Existing RioBroker Installation below
- Transfer Database to a New Installation on the next page

Restore Database to an Existing RioBroker Installation

This section describes the process to manually restore a database to an existing installation of the RioBroker application. Manual database restoration uses the restore utility from the ArangoDB application.

1. Locate the desired database backup ZIP file on the Broker used during the database backup process.
2. Unpack the desired recent Rio Broker backup ZIP file on the local filesystem (for example, C:\Temp\RioBrokerBackup).
3. Stop the Spectra RioBroker Server service using the Windows Service Application.
   a. Launch the Services application.
   b. Locate the Spectra RioBroker Server service.
   c. Right-click the row of the service and select **Stop**.
4. Launch the Windows command line interface as an Administrator.
5. Enter the following command to restore the database in the following format:
   ```
   "C:\Program Files\Spectra Logic Corporation\SpectraRioBroker\server\resources\ArangoDb\ArangoDB3-3.8.4_win64\usr\bin\arangorestore.exe" --input-directory C:/Temp/RioBrokerBackup/arangodump --import-data true --all-databases true
   ```

   Note: You may need to change the system paths for the application install directory and the directory containing the database backup file.

6. Enter the two commands below to copy the RioBroker application files in the following format:
   ```
   copy "C:\Temp\RioBrokerBackup\config\cluster.json" "C:\ProgramData\Spectra Logic Corporation\SpectraRioBroker\config\cluster.json"

   copy "C:\Temp\RioBrokerBackup\data\keys.keytool" "C:\ProgramData\Spectra Logic Corporation\SpectraRioBroker\data\keys.keytool"
   ```
7. Start the Spectra RioBroker Server service using the Windows Service Application.
   a. If necessary, launch the Services application.
   b. Locate the Spectra RioBroker Server service.
   c. Right-click the row of the service and select **Start**.

8. Open a web browser and log in to the RioBroker application user interface (See Log into the Spectra RioBroker Application on page 29).
9. Click **Settings** (gear icon) **> Settings**. The Settings screen displays.
10. Using the information you recorded during the Database Backup, confirm the information displayed is correct.

Transfer Database to a New Installation

This section describes the process to manually transfer a database to a new RioBroker installation. Manual database transfer uses the restore utility from the ArangoDB application.

1. If necessary, use the instructions inInstall The RioBroker Application for Windows on page 25 to install a new instance of the RioBroker application.
2. Locate the desired database backup ZIP file on the Broker used during the database backup process.
3. Unpack the desired recent Rio Broker backup ZIP file on the local filesystem (for example, C:\Temp\RioBrokerBackup).
4. Stop the Spectra RioBroker Server service using the Windows Service Application.
   a. Launch the Services application.
   b. Locate the Spectra RioBroker Server service.
   c. Right-click the row of the service and select **Stop**.
5. Launch the Windows command line interface as an Administrator.
6. Enter the following command to restore the database in the following format:
   ```
   "C:\Program Files\Spectra Logic Corporation\SpectraRioBroker\server\resources\ArangoDb\ArangoDB3-3.8.4_win64\usr\bin\arangorestore.exe" --input-directory C:/Temp/RioBrokerBackup/arangodump --import-data true --all-databases true
   ```

Note: You may need to change the system paths for the application install directory and the directory containing the database backup file.

7. Enter the two commands below to copy the RioBroker application files in the following format:
   ```
   copy "C:\Temp\RioBrokerBackup\config\cluster.json" "C:\ProgramData\Spectra Logic Corporation\SpectraRioBroker\config\cluster.json"

   copy "C:\Temp\RioBrokerBackup\data\keys.keytool" "C:\ProgramData\Spectra Logic Corporation\SpectraRioBroker\data\keys.keytool"
   ```

8. Start the Spectra RioBroker Server service using the Windows Service Application.
   a. If necessary, launch the Services application.
   b. Locate the Spectra RioBroker Server service.
   c. Right-click the row of the service and select **Start**.
9. Open a web browser and log in to the RioBroker application user interface (See Log into the Spectra RioBroker Application on page 29).
10. Click **Settings** (gear icon) **> Settings**. The Settings screen displays.
11. Using the information you recorded during the Database Backup, confirm the information displayed is correct.

Chapter 5 - Spectra RioBroker Application Information and Reports

This chapter describes features that provide information and statistics for the RioBroker application, as well as messaging, logs, and reports.

View BlackPearl Statistics

The RioBroker user interface displays information about an associated BlackPearl system on the BlackPearl screen. This screen displays all configured buckets, tape media and tape drive information, and a list of all active DS3 jobs. Details screens display more information about a selected bucket, tape cartridge, tape drive, or DS3 job.

1. On the toolbar, click **BlackPearl** icon. The BlackPearl statistics screen displays.
2. Use the navigation arrows to browse through each category, and to refresh the current lists.

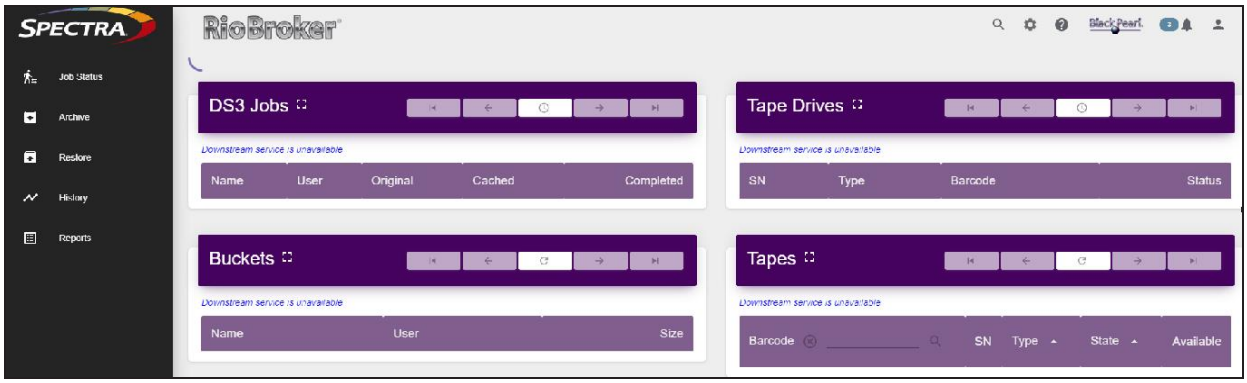

Figure 85 The Rio Broker Statistics - BlackPearl screen.

View Bucket Details

The Bucket details screen displays the bucket name, the BlackPearl user that owns the bucket, the data policy assigned to the bucket, and the size of all objects in the bucket.

1. On the toolbar, click **BlackPearl** icon. The BlackPearl statistics screen displays.
2. To view details for a bucket, click the bucket name on the BlackPearl screen.

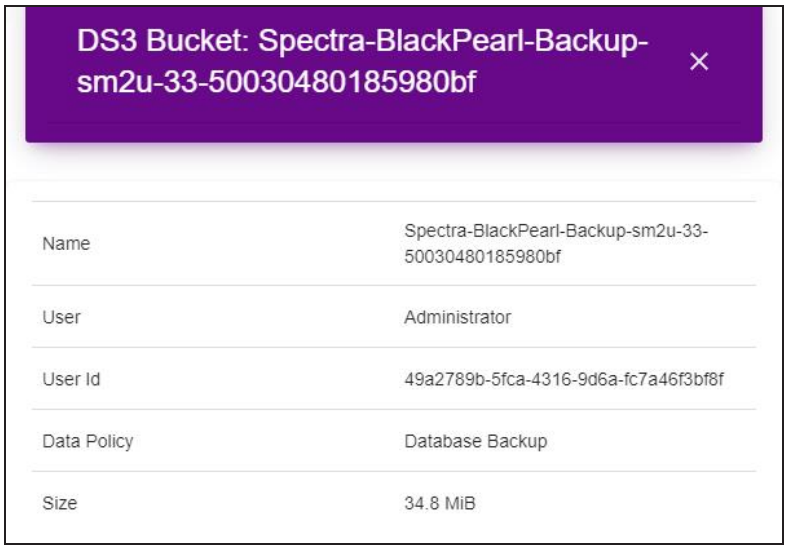

Figure 86 The Bucket details screen.

View Tape Cartridge Details

The Tape Cartridge details displays the tape's barcode, serial number, the media type and generation, the bucket ID, tape ID, and the available and total space on the tape cartridge.

1. On the toolbar, click **BlackPearl** icon. The BlackPearl statistics screen displays.
2. To view details for a tape cartridge, click the tape barcode on the BlackPearl screen.

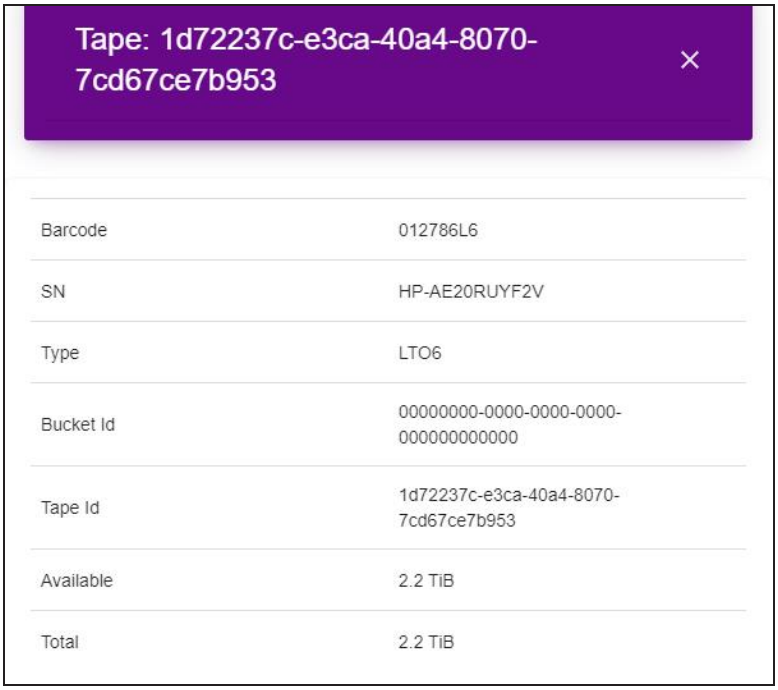

Figure 87 The Tape Cartridge details screen.

View Tape Drive Details

The Tape Drive details screen displays the drive serial number (SN), the type and generation of the drive, the barcode of the tape cartridge loaded in the drive, the status of the tape drive, and any error code the drive generates.

1. On the toolbar, click **BlackPearl** icon. The BlackPearl statistics screen displays.
2. To view details for a tape drive, click the tape drive serial number (SN) on the BlackPearl screen.

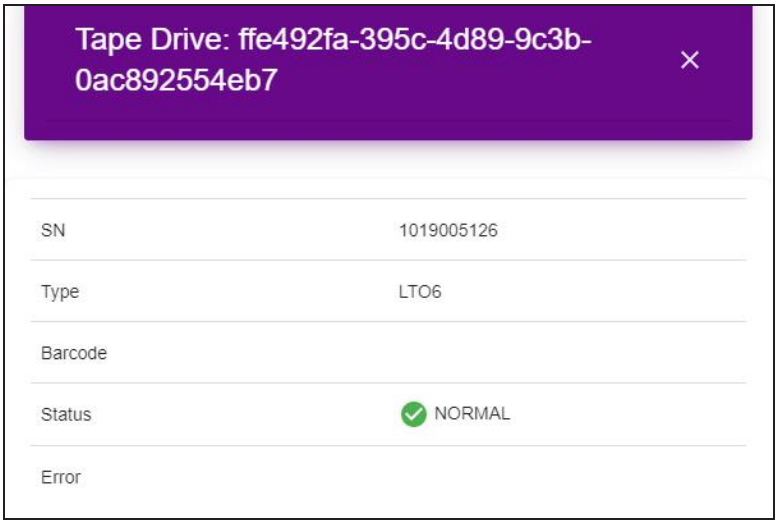

Figure 88 The Tape Drive details screen.

View Active DS3 Job Details

The DS3 job details the name of an active job, the BlackPearl user, the job priority, and the original job size, the amount of job data in the BlackPearl cache, and the amount of data that has completed transfer to tape.

1. On the toolbar, click **BlackPearl** icon. The BlackPearl statistics screen displays.
2. To view details for a DS3 job, click the job name on the BlackPearl screen.

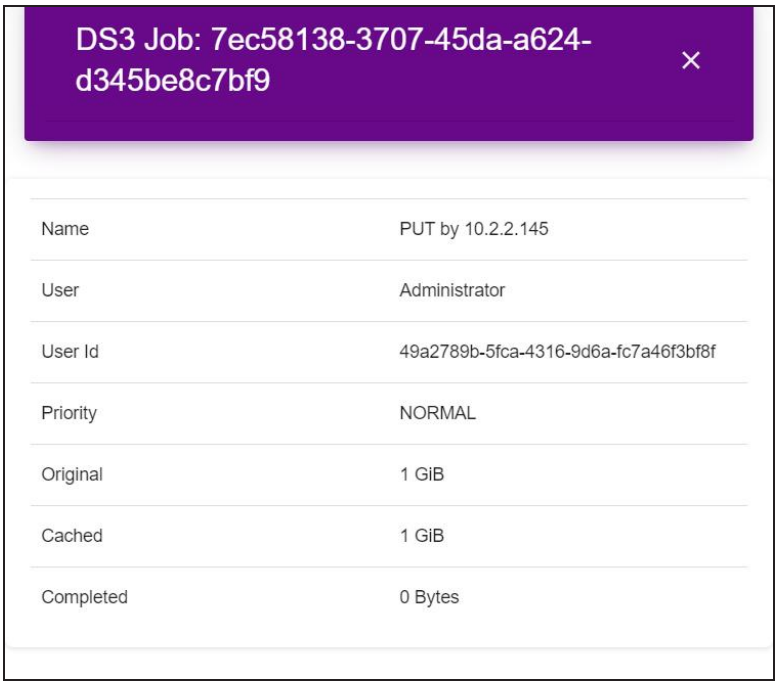

Figure 89 The Active DS3 Job details screen.

History

The History screen allows you to view past data activity based on bytes transferred, number of files transferred, or number of jobs processed.

To access the History screen, on the task bar, select **History**.

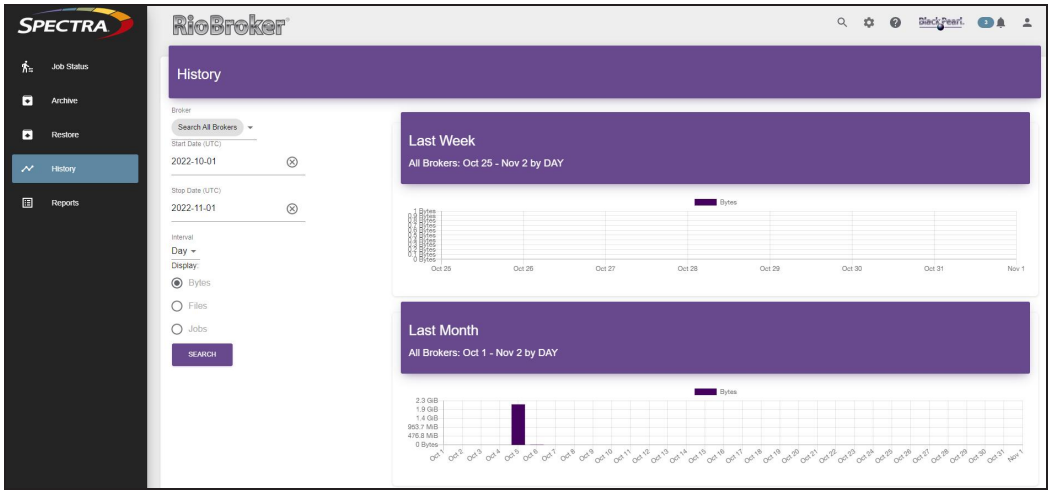

Figure 90 The History screen.

The History screen always shows the previous month and previous week.

- To add a custom graph, use the **Broker**, **Start Date** and **Stop Date**, and **Interval** menus.
- Changing the **Legend** (Bytes, Files, Jobs) updates all graphs on the History screen.
- **Mouse-over** graph bars for exact amounts.

Logs

The Spectra RioBroker application automatically creates error logs and writes event information into log files for troubleshooting purposes. A log set, which gathers the current log of each type, can be generated manually.

Note: The current log file is not cleared when a log set is created. IfS one log set is created and then a second log set is created before the log file reaches 10 MB in size and is cleared, the two log sets will have overlapping information.

To access the Logs screen, click **Settings** (gear icon) **> Logs**.

Figure 91 The Logs screen.

Create a Log Set

1. Click **Create A New Log Set**. The Create a new Log Set dialog box displays.

Figure 92 The Create a new Log Set dialog box.

2. Click **Submit**. A new log set is collected immediately.

Download a Log Set

To download a log set, click the download icon (blue oval with a downward arrow) next to the log set that you want to download. The log set begins downloading to your host computer.

Delete a Log Set

To delete a log set, click the Delete icon (red oval with a trash can) next to the log set that you want to delete. Click **Delete** to confirm the deletion.

REPORTS

The RioBroker application provides custom object search reports which allow users to see how and where files were moved. The application also provides reports on aspects of the application including configured devices, brokers, endpoints, as well as job information, messages, and system information.

Object search reports are downloadable in Comma Separated Value (CSV) format. Settings reports are available in both CSV and JSON (Java Script Object Notification) formats.

Object Search Reports

Use the following instructions to generate an object search report.

1. Click **Settings** (gear icon) **> Reports**. The Reports screen displays.

Figure 93 The Reports screen.

2. Use the **Job Type** drop-down menu to select **Archive**, **Restore**, or both.
3. Use the **Brokers** drop-down menu to select one or more Brokers.
4. Select a **Start Date** and an **End Date**.

Note: If you do not select an End Date, the system uses the current day for the end date.

5. Click **Download Report**. The report is downloaded to your host computer.

Settings Reports

Use the instructions below to view and save Settings reports.

1. Click **Settings** (gear icon) **> Reports**. The Reports screen displays.

Figure 94 The Reports screen.

2. Click the row of the system report you want to view.

The table below lists each Setting report and what information is contained in each report.

Report	Description
System	Displays information about the RioBroker application software, the host system, memory usage, and application uptime.
Cluster Members	Displays the cluster role (master or node), cluster port, HTTP port, IP address, and member ID for each cluster.
Devices	Displays information for Spectra devices, FlashNet devices, and TBPFR devices configured in the application. **Spectra devices** - displays the system name, user name, and IP addresses for the data and management paths for each configured BlackPearl system. **FlashNet devices** - displays the name, host, port, username, and database port for each configured FlashNet system. **TBPFR devices** - displays the name, endpoint address, temporary storage address, and maximum number of concurrent operations for each TBPFR device.
Broker	For each configured broker the report includes information about broker agents including the agent name, agent type, creation date, last index date, read/write status, and information about devices used by the agent.
Endpoints	Displays the endpoint name, type, URL, and login credentials.
Jobs	Displays information about each job processed by the application including job name, ID, type, status, progress, total files in the job, total files processed, total bytes processed, and the last update time.
Messages	Displays the message subject, details, severity, creation date, and if the message is read or unread.

Notes:

- For each report, you can **Refresh** the currently displayed information, as well as **Download** the report in a CSV or JSON format.
- For the Jobs report, if the system has processed more than 1,000 jobs, use the **Next** and **Prev** buttons to navigate through the list.

MESSAGES

The Messages screen contains messages generated by the RioBroker application.

On the toolbar, click **View Messages** (bell icon). The Messages screen displays.

Note: If there are unread messages, a blue oval appears next to the bell icon displaying the number of unread messages.

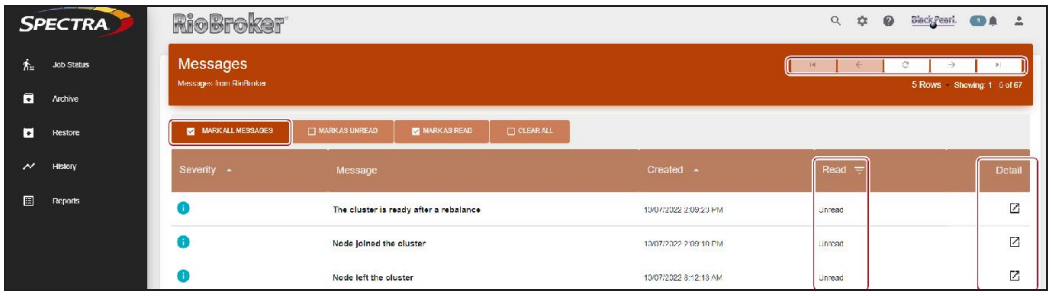

Figure 95 The Messages screen.

- Select the **Read** check box on a message row to mark that message as read. Click **Mark All Messages** to mark all messages as read.
- Click the **Detail** icon on the row of a message for which you want to view more detail.
- Use the **<** and **>** arrows, **Prev**, and **Next** buttons to navigate the message list.
- Use the **Rows** drop-down menu to set how many messages are displayed at one time.
- Use the **Refresh** button (circle with an arrow) to refresh the Notifications screen.

  Note: If you use your browser to refresh the Notifications screen, the number of rows displayed returns to the default of five.

System Screen

The System screen contains information related to the Spectra RioBroker application software and the host computer on which the application is installed.

On the toolbar, click **Settings** (gear icon) and select **System**. The System information screen displays.

Figure 96 The System screen.

Click **API Docs** to open the Swagger API documentation in a new web browser tab.

Note: This link only displays if you are using a browser on the same host system where RioBroker is installed. To access API documentation on a remote connection, see Related Publications on page 17.

Chapter 6 - Technical Support

Spectra Logic Technical Support provides a worldwide service and maintenance structure, refined over many years to provide timely, professional service.

Accessing the Technical Support Portal

The Spectra Logic Technical Support portal provides access to the Knowledge Base, the current version of BlueVision software for the library, drive firmware, drive device drivers, and additional service and support tools. You can also open or update a support incident.

Create an Account

Access to User Guides and compatibility matrices does not require you to create an account. You must create a user account and log in to access Release Notes or repair documents, to download the latest version of BlueVision software, or to open a support incident.

1. Access the Technical Support portal login page at *support.spectralogic.com*.
2. On the home page, click **Register Now**.

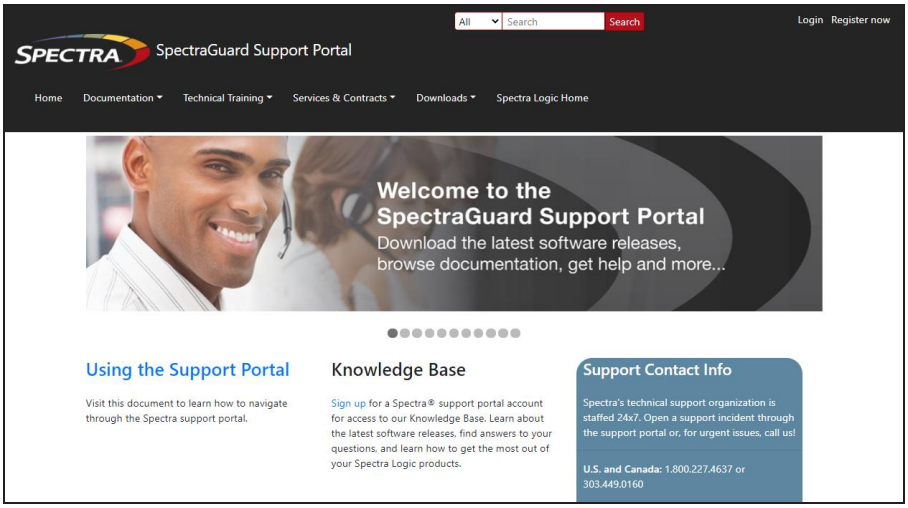

Figure 97 The Spectra Logic Technical Support portal home page.

3. Enter your registration information. Your account is automatically associated with the serial numbers of all Spectra Logic products owned by your site.

- If you have an invitation, follow the link and enter the invitation code.

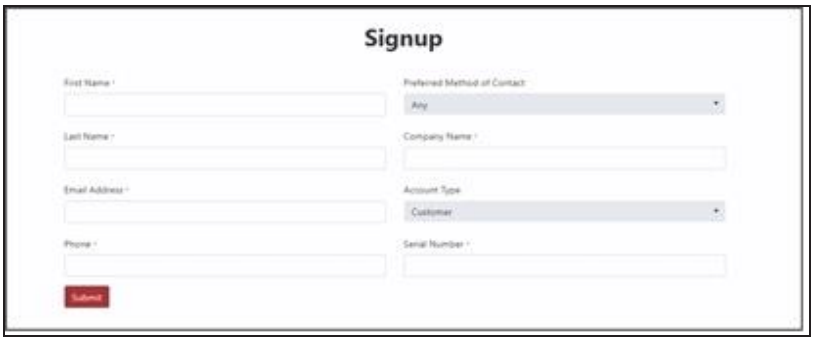

Figure 98 The Signup screen.

- If you do not have an invitation, enter the requested information to create your account. When you are finished, click **Submit**.

When the account is approved, you receive an email with an initial password. Use your email address and the password provided in the email to log in to your account. After you log in, you can change your password if desired.

Log Into the Portal

Use your email address and password to log into the Technical Support Portal.

Opening a Support Ticket

You can open a support incident using the Spectra Logic Technical Support portal or telephone.

- Use the following instructions to open a support incident through the portal, or skip to Contact Spectra Logic Technical Support by Phone on page 124.

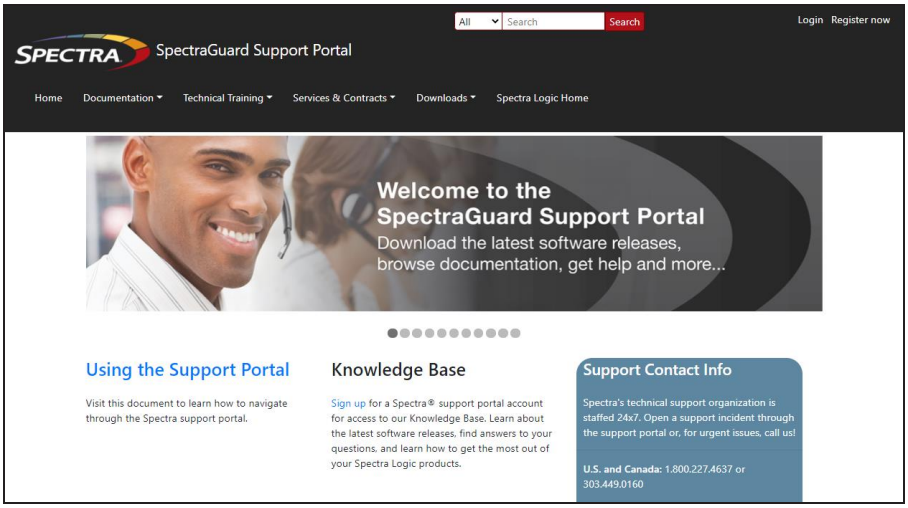

Figure 99 The Spectra Logic Technical Support portal home page.

1. Make notes about the problem, including what happened just before the problem occurred.
2. Gather the following information:
   - Your Spectra Logic customer number
   - Company name, contact name, phone number, and email address
   - Type of host system being used
   - Type and version of host operating system being used
   - Type and version of host storage management software being used
3. If necessary, log in to the Support Portal by clicking **Login**, enter your **email address** and **password**, and click **Log in**.

   Note: See Accessing the Technical Support Portal on page 118 if you have not previously created an account on the Technical Support portal.

4. Submit a support incident.
   - Use the following instructions to search for help before submitting a ticket, or skip to Submit an Incident Directly on page 122.

     i. From any page, select **Incident>Incidents & Inventory**.

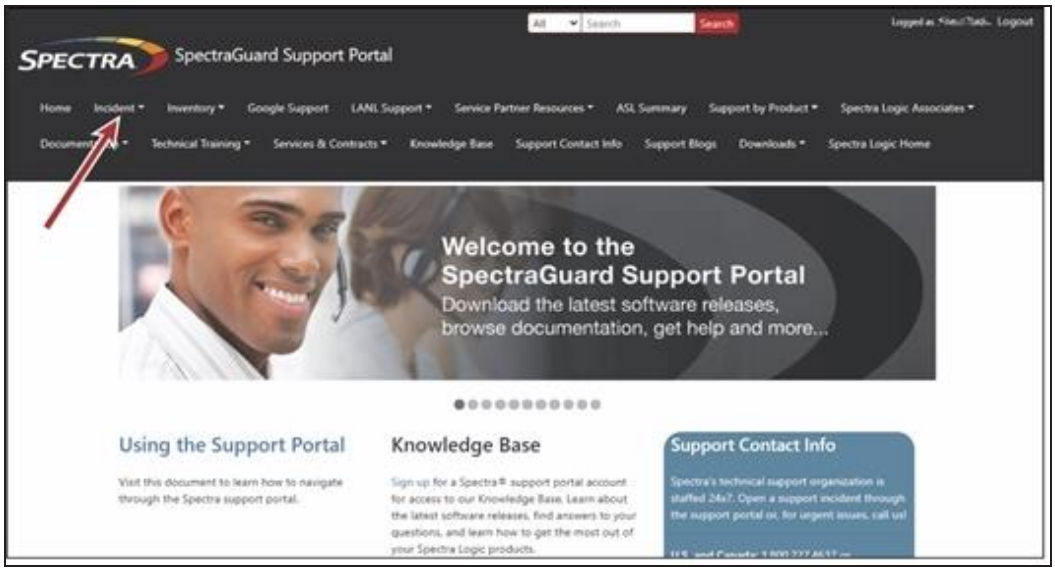

Figure 100 Select **Incidents>Incidents & Inventory**.

ii. Select **Open or View Incidents**.

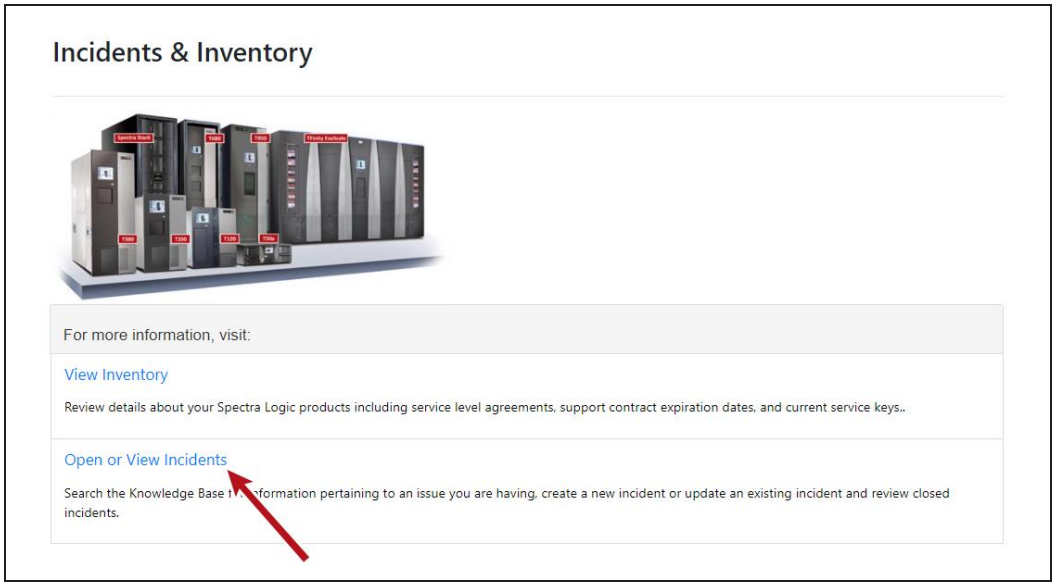

Figure 101 Select **Open or View Incidents**.

iii. In the Search dialog box, enter a term or phrase about your problem (**1**) and click **Search** (**2**).

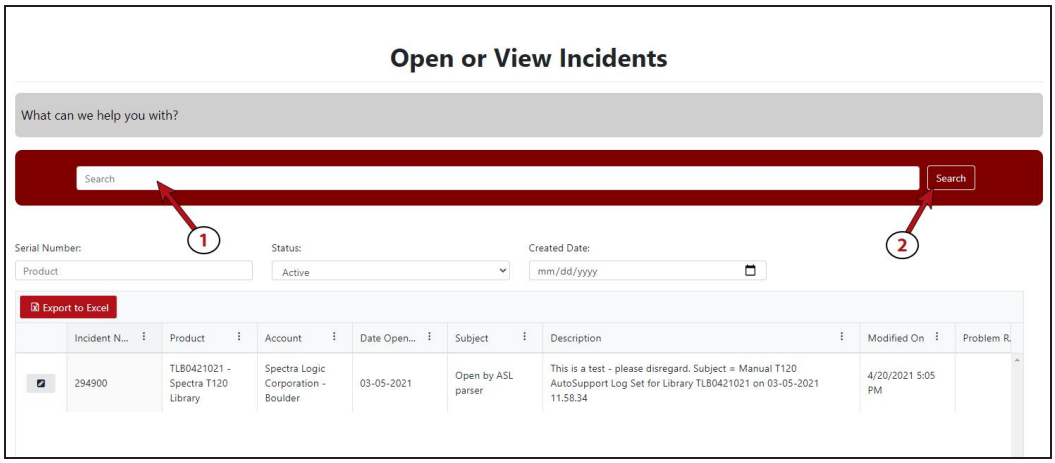

Figure 102 Enter a search phrase and click **Search**.

iv. If the search does not provide an answer, click **Open a New Incident**.

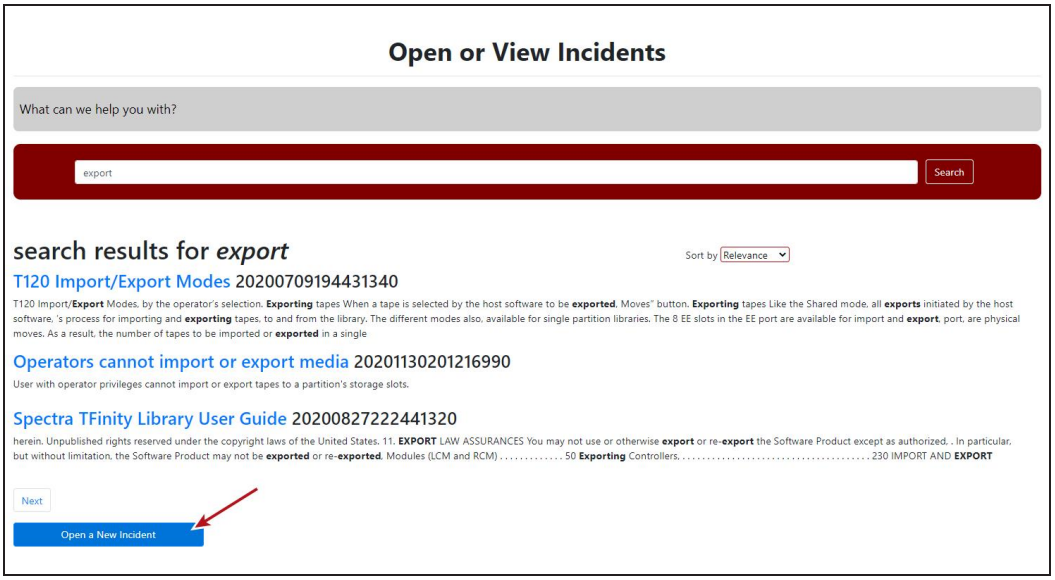

Figure 103 Click **Open a New Incident**.

v. Continue with Step 5 on page 123.

- Submit an Incident Directly

  i. From any page, select **Inventory>My Inventory**.

  ii. Locate the row of the product for which you want to submit an incident and click **Create Incident**.

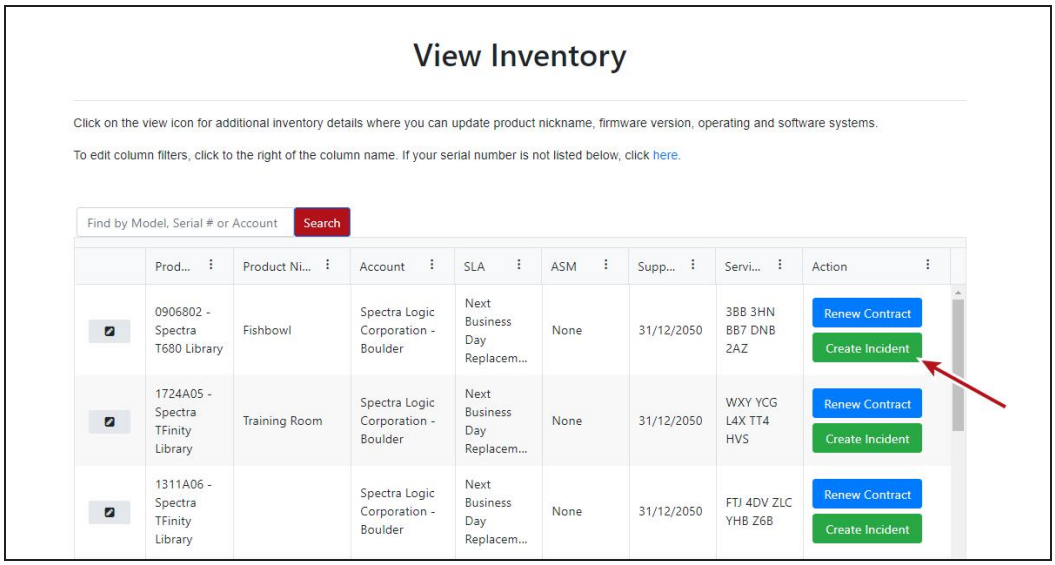

Figure 104 Click **Create Incident**.

iii. Continue with Step 5 on page 123.

5. On the Create Incident page, enter the requested information providing as much detail as possible. When you are finished, click **Submit**.

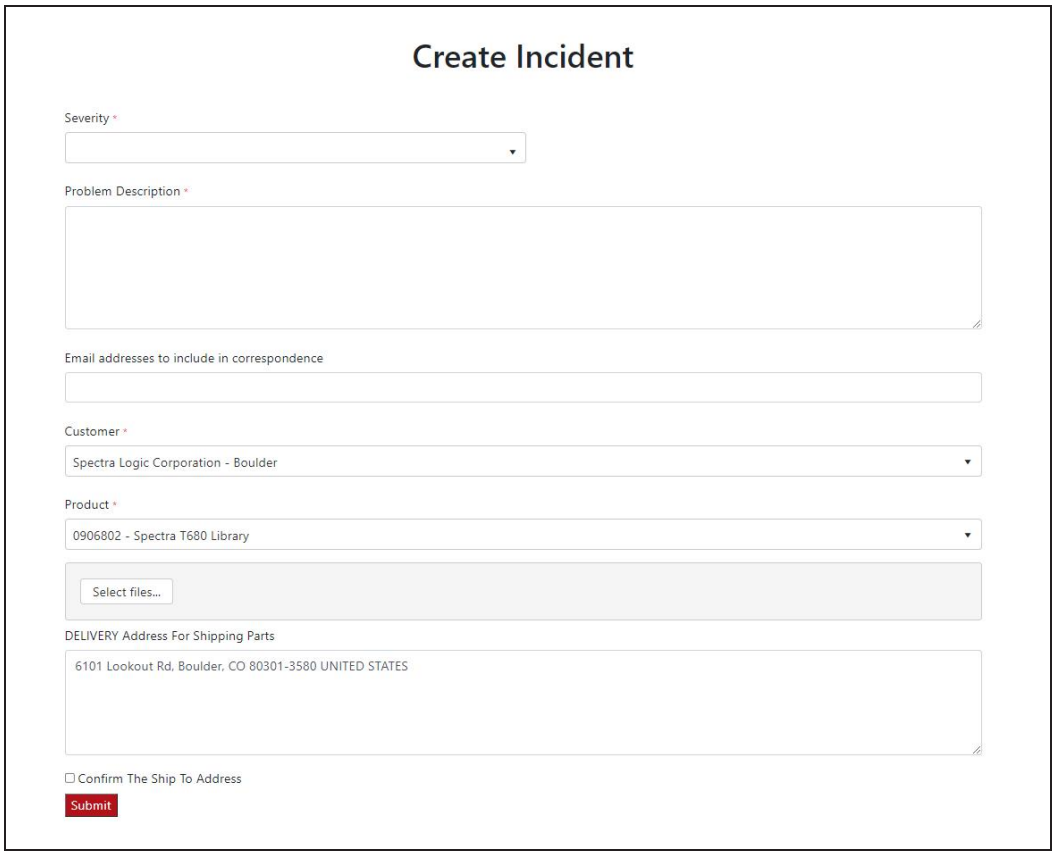

Figure 105 Enter information about your incident and click **Submit**.

Note: If the serial number of the affected library is not listed, contact Technical Support (see Contacting Spectra Logic on page 7).

- Contact Spectra Logic Technical Support by Phone
- To contact Spectra Logic Technical Support by telephone, see Contacting Spectra Logic on page 7.