Spectra RioBroker

The Next Phase in the Evolution of BlackPearl Based Solutions

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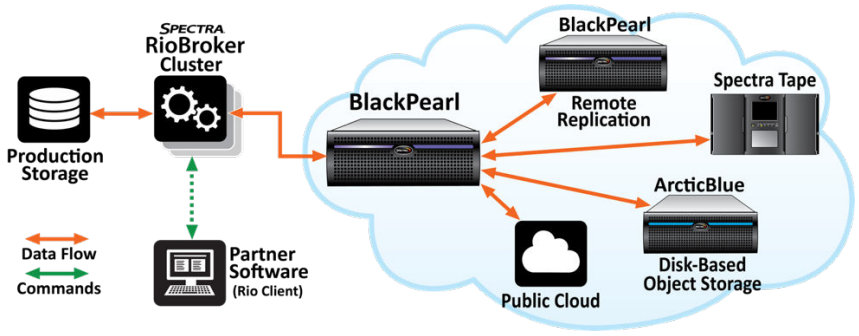
Introduction

Since its introduction nearly four years ago, BlackPearl Converged Storage System has become the standard in content lifecycle management; bringing efficiency and agility to a transforming market. BlackPearl's modern approach to content lifecycle management, includes a multi-tiered, policy-based, object storage platform that can easily adapt to support changing workflows and seamlessly support new storage mediums upon their entry into the market. More importantly, BlackPearl eliminates unnecessary and proprietary middleware systems, and has brought not only cost savings, but also the freedom to grow without the burdensome licensing charges that legacy systems demand of their customers.

The Evolution – Spectra RioBroker

The next evolution of BlackPearl has been driven by Spectra's broad, established customer base, which has provided Spectra extensive knowledge of workflows and scale-out needs, resulting in the tightly integrated virtual software platform called Spectra RioBroker. The advancement of BlackPearl via Spectra RioBroker offers a greatly simplified API, which reduces the level of effort required to integrate across a broad range of applications needed by customers and their evolving workflows. Spectra RioBroker also enables clustered* and scale-out access to BlackPearl offering higher and consistent performance across all applications and environments. It accommodates the needs set forth by the largest installations, which require a greater degree of high-availability, higher performance, and uptime. With the stability and viability of legacy systems increasingly in question, there is a great need to help organizations migrate off of their existing systems onto an open platform that is adaptable to current and future market changes. The new BlackPearl based solution powered by RioBroker, along with Spectra Migration Solution, now offers many tools to help ease and automate migration from legacy systems non-intrusively, while remaining in production.



Spectra RioBroker – Data Mover for BlackPearl

Spectra RioBroker, BlackPearl's newly released data mover operates as BlackPearl's front-end offering the following features and capabilities:

- Virtualizes BlackPearl with an immutable and greatly simplified RESTful API
- Functions as the data mover to and from BlackPearl for a consistent and higher performance that can scale to any level – effectively offloading the resource intensive data movement to a scalable cluster
- Clustered architecture* that:
    - Scales-out data transfer functions to/from one or multiple BlackPearls
    - Load balances by distributing heavy data transfer loads among cluster nodes
    - Offers high-availability with automatic failover of nodes
    - Offers an enterprise level database - protected by sharding and replication among nodes in the cluster
    - Provides search and restore functionality for any asset, anywhere within the entire system
- Along with Spectra Migration Solutions, provides tools and ability to automate migration of legacy systems non-intrusively
- Supports seamless upgrade of existing BlackPearl systems with Spectra RioBroker – auto ingest of data with no need to physically migrate

New Immutable and Simplified API

Spectra RioBroker provides BlackPearl with a much simpler API, minimizing the effort needed by BlackPearl's technology partners and customers to support, integrate, and certify. With such a wide range of software packages needed to support modern workflows, Spectra RioBroker accelerates the integration process and makes a wide range of solutions available to the end users. By de-coupling BlackPearl code changes from the application(s), Spectra RioBroker eliminates the need for re-certification as enhancements and increased capabilities to BlackPearl are released.

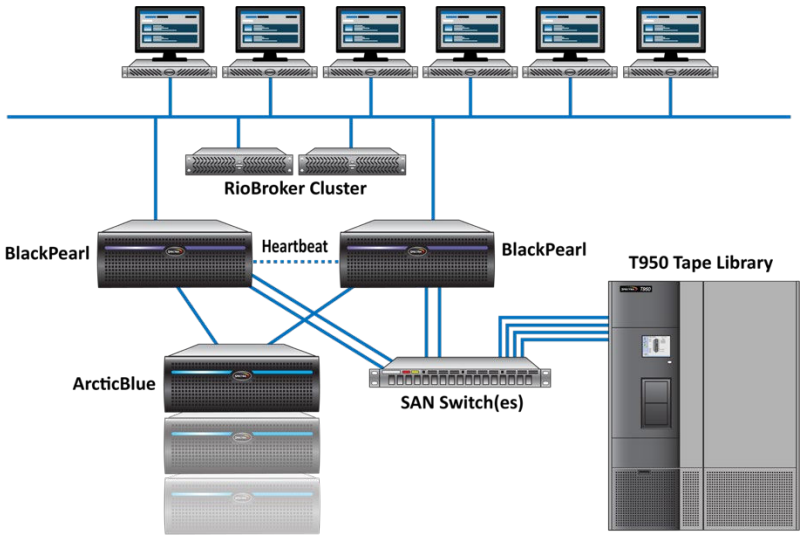
Clustered Data Transfers to and from BlackPearl*

A core focus of Spectra RioBroker is ensuring a predictable and optimized data transfer to and from BlackPearl, independent of a broad range of integrations with many partner applications. Offloading of data transfer jobs from the application to clustered Spectra RioBroker systems

brings greater performance and consistency to the platform. System bandwidth can be scaled by simply adding additional servers - expanding the Spectra RioBroker cluster. Further capacity can be achieved by adding multiple BlackPearls, essentially allowing scaling to any level required for the workflow. As these additional nodes are added, the primary Spectra RioBroker node will load-balance between all available nodes to achieve the most optimized data transfer function. Spectra RioBroker maintains its own job queue and status information and controls all aspects of archive and restore functionality on behalf of the application. In this manner, Spectra RioBroker presents a single namespace for search and restore across all media types within multiple BlackPearl systems - including nearline disk, tape and multiple physical locations of media.

High Availability

High availability is critical in many production environments. It is not acceptable to have downtime due to system failure of any type. Accordingly, Spectra RioBroker offers a set of features that make a BlackPearl solution well suited to any environment that requires resiliency and consistent uptime.



In Spectra RioBroker's multi-node cluster configuration, data mover nodes failover automatically to each other including database replication/sharding and job queue. Failover is seamless and allows redundancy without extra overhead. Furthermore, behind a cluster of Spectra RioBrokers, BlackPearl can also be set up as a hot-pair system, allowing automatic failover of the object storage controller. Normally, however, data replication to a second BlackPearl,

optionally at a second site, provides instant failover with a DNS switch and also can increase instantaneous bandwidth of restores for surge workflows.

Spectra RioBroker Metadata Database (Scaling, Protection, and Search and Restore)

Metadata from archive assets is managed and protected in the Spectra RioBroker cluster's database, which is scalable to fit the needs of any large and enterprise environment. The database is "sharded" and replicated across Spectra RioBroker's cluster nodes. The database integrity remains intact, even in the unlikely event of any nodes' failure; further replication of a failed node's database shard is automatically initiated to ensure database integrity in the rare event of additional failures. In special occasions that the end users may need to search and access assets directly (not through an asset management application), elastic search of Spectra RioBroker (metadata) database is available as well as the subsequent restore function to bring back needed assets. Search can be performed by broker/bucket, or, universally across all storage assets managed by Spectra RioBroker.

Time-Code Partial File Restore

Time-Code Partial File Recovery (TPFR) is a time-saving feature, essential to many environments. Spectra RioBroker offers partial file recovery independent of the application. Spectra RioBroker indexes all media files that are in transfer to an archive destination. Using this add-on feature, a client application can use time codes or byte-offsets to restore a partial file or sequences of a video.

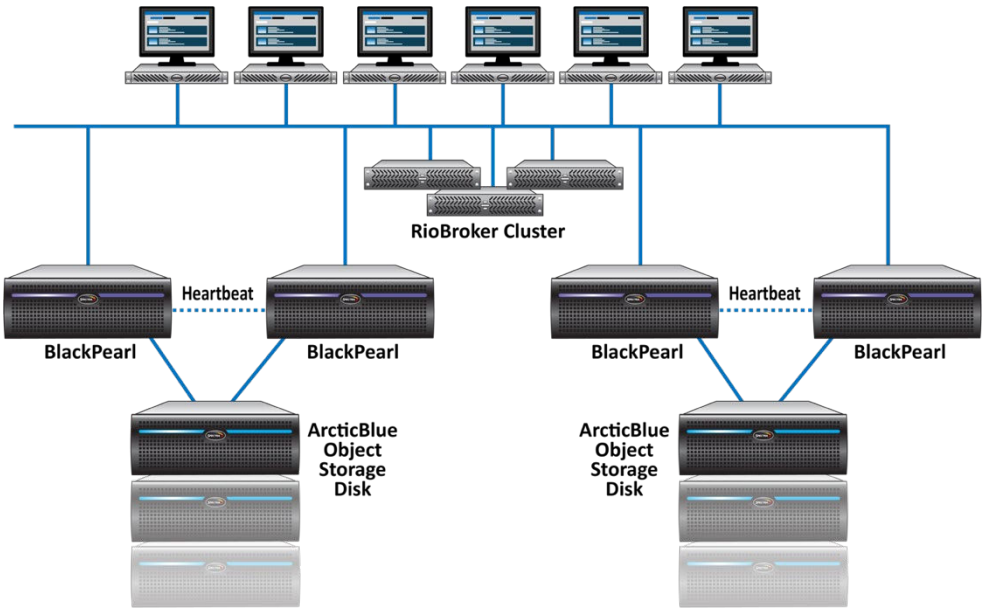
Support for File Transfer Protocol (FTP) and Future APIs

Spectra RioBroker decouples file transfer functions from both BlackPearl and the workflow application. Any file location mountable by the Spectra RioBroker server via CIFS, NFS, or FTP is a valid to/from move target for Spectra RioBroker. Likewise, any client that presents itself as CIFS/NFS, such as ISIS or Nexis disk, is also valid. Essentially, to archive a file, the workflow application issues a simple Archive command from URI (this file at this mountable location CIFS/NFS/FTP), to Spectra RioBroker (bucket on a BlackPearl)] and RioBroker takes care of the rest. Since the job queue is maintained within Spectra RioBroker, the application can issue thousands of archive or restore jobs and not have to manage any of the process.

Designed with the future in mind, the abstraction that Spectra RioBroker provides to BlackPearl, allows for support of any future file transfer protocols or capabilities that may bring additional values to our customers.

Support for Multiple BlackPearls and Spanning Namespace

Many environments require scaling of capacity or user space necessitating multiple BlackPearls. Spectra RioBroker supports data spanning across multiple BlackPearls while providing the option of a single namespace for search and restore that is addressable from a single Spectra RioBroker Cluster. With proper overall system configuration, it is now possible to create a consistent searchable namespace across multiple BlackPearls. While writes must be organized into specific buckets on specific BlackPearls, searches and restores can be global across all BlackPearls, under management by RioBroker.



RioBroker Complements Spectra Migration Solutions

Spectra RioBroker's migration tool kit commonly referred to as Spectra Migration Solutions, provides tools to migrate assets, including metadata, from legacy archives (including SGL FlashNet and Front Porch Digital Diva*) systems to a hybrid, open, and modern platform - BlackPearl. In many cases, physical migration (read then re-archive) of existing data is not

necessary as the combination of BlackPearl's custom ingest algorithms and Spectra RioBroker's ability to recognize and categorize data allow users to simply move legacy LTFS tapes into the BlackPearl system. In these cases, migrations can happen within a single day and user down time is nearly non-existent.

These tools and capabilities allow for non-disruptive, automated or semi-automated background migration of assets to BlackPearl while the overall system can remain operational and in production.

Migration often requires extensive considerations and frequently incorporates not only moving from older archive systems to BlackPearl/Spectra RioBroker but also often involves moving from older to newer tape generations, from one MAM system to another, and, frequently migrating from tape to disk or cloud. Spectra specializes in resolving these difficult technical challenges and offers extensive migration assistance for all scenarios.

Whether simply adding a new BlackPearl solution or supplementing a legacy environment to migrate from SGL or Front Porch Digital archive platform, Spectra RioBroker can be the single point of access to all assets for multiple applications.

Users can store and access new assets on their BlackPearl archive, and when the need to restore assets (that have not yet been migrated) from legacy archives, Spectra RioBroker can automatically and intelligently re-direct the restore request to the appropriate legacy archive to be served directly.

A great benefit of migrating from legacy systems to BlackPearl is the conversion of assets from proprietary-formatted tapes to open standard LTFS, which guarantees perpetual access to digital assets, regardless of the availability of the application. During or after migration, assets can be retroactively reconstituted on other storage mediums, including disk-based object storage and cloud, as well as be retroactively replicated to remote sites, all with a simple change of BlackPearl's bucket policies.

Spectra RioBroker Conclusion

Spectra RioBroker provides an easier means to integrate with BlackPearl, offering far greater and consistent performance across all applications and environments; the clusterability of the solution brings a greater degree of high availability to environments that require greater performance and uptime. With the stability and viability of legacy systems increasingly in question, there is an imminent need to help many users to migrate off their existing systems into an open platform that is adaptable to current and future market changes. The enhanced BlackPearl based solution now offers many tools to help ease and automate migration from legacy systems non-intrusively and while in production.

**Available in future releases of Spectra RioBroker.*

About Spectra Logic

Spectra Logic develops data storage solutions that solve the problem of short- and long- term digital preservation for business and technology professionals dealing with exponential data growth. Dedicated solely to storage innovation for 40 years, Spectra Logic's uncompromising product and customer focus is proven by the adoption of its solutions by industry leaders in multiple vertical markets globally. Spectra enables affordable, multi-decade data storage and access by creating new methods of managing information in all forms of storage—including archive, backup, cold storage, private cloud and public cloud. To learn more, visit www.SpectraLogic.com.

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