SOLUTION BRIEF

Simplify Higher Education Container Operations with Portworx

The easiest and most complete data management platform for Kubernetes-based applications.

With the increased pace of digital transformation, educational institutions must streamline and accelerate technologies to deploy integrated cloud, hybrid, and multicloud architectures and upgrade the legacy applications that they rely on. Higher education IT leaders aiming to modernize with Kubernetes, containers, and microservices must keep one point in mind: the storage equation has changed. The Kubernetes platform gives IT development teams the tools to modernize their applications, using containers and microservices to gain speed, agility, and scale.

Containerizing applications offers educational institutions the best path to flexible, rapid new service deployments that can help modernize legacy applications, develop new applications to take advantage of cloud services, rapidly scale applications, drive digital services, and use compute resources efficiently. This enables IT teams to truly modernize their applications to support improved operations, research, and instruction; enhanced collaboration; and better student, faculty, researcher, and staff services. The challenge is that many higher education IT departments are not ready for the transition to containers. Fortunately, Pure Storage® can help.

Simplifying Container Deployments for Educational Institutions

Portworx® by Pure Storage dramatically simplifies the deployment of containerized applications on Kubernetes by taking care of many critical storage operations for you. Essential enterprise data operations, such as backup, disaster recovery, security, and capacity management, are provided on a Kubernetes-native platform. Portworx operates across multiple clouds and with any physical storage infrastructure, though Pure Storage users gain unique benefits. The Portworx solution is comprised of function-specific modules, outlined below.

Simplified Container Deployments

Portworx dramatically simplifies the move to containerized applications by handling critical storage management tasks.

Application-centric Operation

Integrates with key applications and services, such as Kafka, Elasticsearch, Cassandra, MongoDB, PostgreSQL, and MySQL.

Keep Your Data Safe

Simplify data protection and speed recovery with a full suite of data protection functions like encryption, backup, and restore.

Scalable Persistent Storage for Kubernetes

PX-Store provides core persistent storage for containers. It manages numerous vital storage tasks for you, including:

- Container-optimized volumes with elastic scaling for no application downtime

- High availability across nodes, racks, and availability zones so applications can failover in seconds, keeping your institution's operations online

- Storage-aware class-of-service (COS) and application-aware I/O tuning, helping to ensure your most critical workloads meet their required service levels

PX-Store works in multiple cloud environments, including Azure, Google Cloud, IBM Cloud, Amazon Web Services, and more, as well as on-premises and in hybrid/multicloud environments.
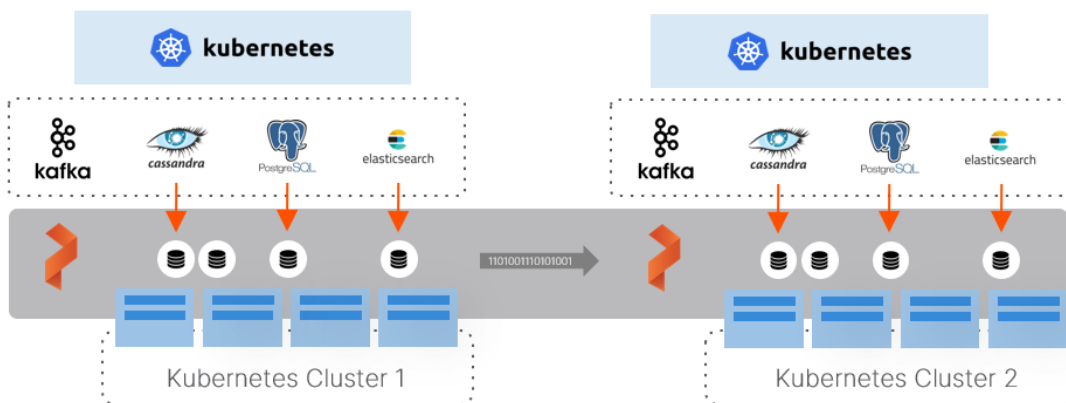
Figure 1: One key feature of Portworx is simplifying disaster recovery. PX-DR continuously sends the incremental changes from Kubernetes Cluster 1 applications and Portworx data to the remote location. Kubernetes Cluster 2 has every controller ready to spin up Pods in the event of a disaster at Site 1.

Multicloud Data Mobility at Your Fingertips

PX-Migrate lets you easily move entire applications across clusters, racks, and clouds. This is exceptionally helpful for meeting fluctuating compute needs. PX-Migrate provides:

- Multicloud/multi-cluster application migrations that allow you to optimize workloads and infrastructure costs

- Snapshot-based backup to any cloud

- Application-consistent snapshots with support for popular data services, such as Cassandra, Elastic, MongoDB, PostgreSQL, MariaDB, Kafka, MySQL, and more

Automated Capacity Management to Avoid Overprovisioning

PX-Autopilot for capacity management allows you to avoid over-provisioning storage capacity in the cloud, delivering savings on your cloud storage bill. PX-Autopilot includes:

- Automatic resizing of individual container volumes or entire storage pools

- A rules-based engine with customization capabilities to optimize apps based on performance requirements

- Google Persistent Disk (PC), Azure Block Storage, and Amazon Elastic Block Storage integration

With PX-Autopilot, container capacity management is easy and automated.

Easily Backup and Restore Containerized Applications

PX-Backup protects the entire application, including data, application configuration, and Kubernetes objects. By delivering the same reliability and data-protection that educational institutions have come to expect from traditional backup solutions, PX-Backup gives you the agility benefits of Kubernetes without sacrificing data protection and control.

PX-Backup delivers:

- Point and click recovery for both stateless and stateful Kubernetes applications

- Application-aware protection for complex distributed applications

- Role-based access control (RBAC) for easy staff task assignments

PX-Backup includes out-of-the-box integration with many popular services, such as Kafka, Elasticsearch, Cassandra, MongoDB, PostgreSQL, MySQL, and many more. It can be deployed separately from the full Portworx solution.

Disaster Recovery for Mission-critical Workloads

PX-DR enhances the data protection included in PX-Store with zero RPO disaster recovery for data centers in a metropolitan area, as well as continuous backups across the WAN. PX-DR provides:

- Multi-site synchronous replication across a metro area

- Multi-site asynchronous replication for DR over long distances

- DR policies configured at the container-granular level

- Application-aware protection for complex distributed applications

Disaster recovery is not simply a point-in-time copy of data, especially when it is used for mission-critical educational applications. Ensuring that you can recover your databases, message streams, machine learning, and data pipelines quickly is crucial for true disaster recovery. PX-DR makes recovering applications as easy as redeploying your pods.

Container Data Security without Compromise

Data security for educational institutions has never been more critical. PX-Secure provides the encryption and access controls needed to protect your data. PX-Secure includes:

- Cluster-wide encryption

- Container-granular or storage-class based BYOK encryption

- Role-based access control for authorization, authentication, and ownership

- Integration with Active Directory and LDAP

Direct Integration with Pure Storage Arrays

As 100% software, Portworx runs on any infrastructure. By using Portworx in conjunction with Pure FlashArray™ and Pure FlashBlade®, you benefit from Kubernetes-native storage and data management, as well as Pure's industry-leading performance. Portworx CSI for FlashArray and FlashBlade offers a free version that lets you test out Portworx or run it for small

production applications. It supports unlimited nodes and unlimited storage per cluster, and you can easily upgrade to the full Portworx Enterprise solution. Portworx also integrates with Pure1® cloud management, providing a consolidated view of all Portworx clusters for monitoring essential metrics, including cluster health, configuration, and support-case management.

Delivering Database-as-a-service for Educational Institutions

For the ultimate in container service simplicity, Portworx Data Services lets databases and other stateful services be deployed and managed on any Kubernetes cluster with a single click, giving higher education IT organizations the advantages of a managed database offering without vendor lock-in.

DevOps engineers can deploy a managed, production-grade data service on Kubernetes from the industry's broadest catalog of options for SQL, NoSQL, search, streaming, and more. Portworx Data Services fully automates Day-2 operations, including monitoring, backups, HA, DR, migration, auto-scaling, and security.

For educational institutions struggling with digital transformation and the move to containerized workloads, Portworx Data Services represents a game-changing new approach.

Additional Resources

- Try out Portworx for free.
- Discover the most complete Kubernetes data services platform.
- Learn how Portworx can help with containerized database deployments.
- Discover how Pure deivers smarter education solutions.