WHITE PAPER:

REINVENTING STORAGE FOR CONTAINERS

EXECUTIVE SUMMARY

Containers are one of the most rapidly adopted datacenter technologies in history, with more than 2.5 billion Docker downloads since 2013. But while containers have transformed application deployment, data storage and IT infrastructure management have not kept pace.

To address this problem, Portworx has developed the industry's first data storage solution that is purpose-built for containers, delivering blazing bare-metal performance combined with enterprise-class storage features. With Portworx, IT operations can finally match the agility of application developers.

CONTAINER TECHNOLOGY IS TRANSFORMING DATACENTERS

"Goldman Sachs will shift 90% of the company's computing to containers."

THE WALL STREET JOURNAL

Containers allow more applications to run on a single operating system instance, and they offer numerous benefits stemming from their lightweight characteristics: They require little memory, they launch quickly, and their efficiency means that datacenters require less hardware and less physical space. The open-source Docker container technology has been embraced by enterprises worldwide for its speed, agility, and scalability.

Still, containers have not been adopted as a primary infrastructure technology. Concerns around data management and storage restrict enterprises to using containers mainly in public clouds or for stateless portions of apps.

One major reason is that containers are optimized for stateless applications such as websites. Until now, there has been no robust, easy-to-manage way to store stateful data, such as databases, in container environments. Enterprises can not afford to put their stateful data storage at risk, so they have been unable to deploy containers for all of their enterprise applications.

To advance to next-generation datacenter architectures that are able to take full advantage of container technology, datacenters need to replace their fat, proprietary infrastructures with a thin container infrastructure that includes modern data storage technology.

THE CONTAINER MARKET NEEDS NEW STORAGE APPROACHES

Application developers can use containers to scale quickly in response to constantly changing application requirements. But when the containerized applications are deployed to the datacenter, they encounter silos of unresponsive storage that negate containers' speed and agility benefits.

Containers do not offer an elegant way to manage persistent storage. If a server dies, containers on that server lose their data..

Within the enterprise, the CTOs, VPs of IT, DevOps managers, and storage administrators are pressured to make containers operate efficiently from an IT operations perspective. Working on the front lines of container-driven datacenter transformation, they struggle with slow, unresponsive, and hard-to-scale legacy IT infrastructure.

HOW CONTAINER-DEFINED STORAGE CAN HELP

Portworx provides the industry's first storage solution purpose-built for containers. Unlike legacy storage, Portworx container-defined storage spins up quickly and scales elastically based on application requirements.

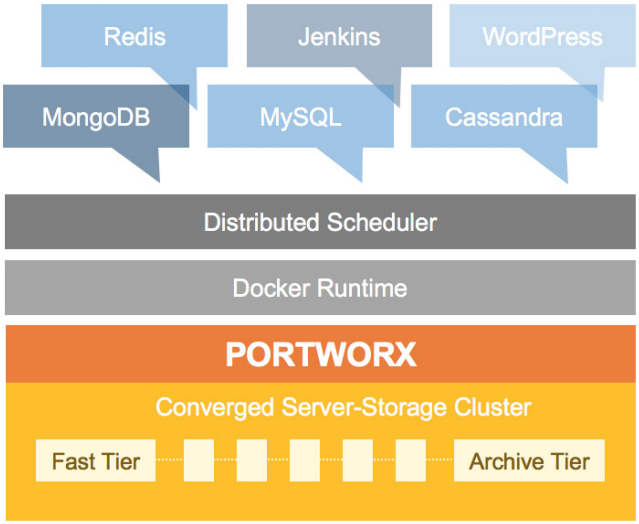
"Portworx is addressing one the most pervasive issues in container technology: persistent storage that is multi-cloud ready. The company has given DevOps enterprise-class scalability, features, and hardware protection for their containerized applications."

HENRY BALTAZAR
RESEARCH DIRECTOR
451 RESEARCH

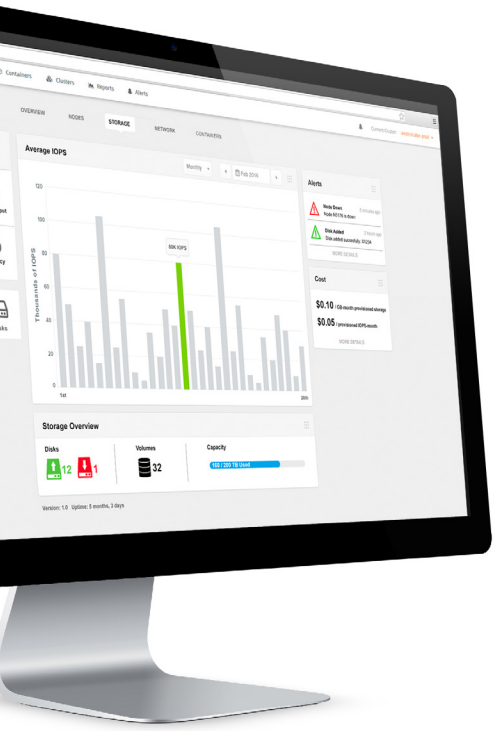
As a result, organizations are able to:

- Manage their applications at container speed—in seconds, not days.
- Run storage at bare-metal speed.
- Slash storage and virtual machine costs by 70%.
- Provision and schedule storage automatically to respond to container bursts.
- Manage storage features on a per-container basis.
- Enable containers to take advantage of enterprise-class storage features such as snapshots and replication.

Like containers themselves, Portworx container-defined storage is radically simple. Using a fundamentally distributed approach, Portworx turns commodity x86 hardware into a converged storage node that can be rapidly scaled across a cluster of nodes, then automatically provisioned with any Docker-ready scheduler.



Portworx Unifies Commodity Servers into a Converged Storage Cluster



Portworx PX-Enterprise

THE PORTWORX PRODUCT LINE

Portworx currently offers its container-defined storage in two products:

- **Portworx PX-Developer** is free, easy-to-deploy scale-out storage for developers and DevOps. Its features include scale-out block storage deployed as a container, distributed file access, container-granular controls, clustered availability on up to three servers, and RESTful API and command-line interface.
- **Portworx PX-Enterprise** is full-featured container-defined storage for enterprises and IT Ops. In addition to all the features of PX-Developer, it adds unified storage with a global file namespace, multi-cluster visibility and management, predictive capacity management, and an intuitive GUI with role-based access.

Portworx PX-Developer and PX-Enterprise offer these benefits:

Purpose-Built for Containers

- Storage deployed as a container
- Data persistence for containerized apps
- Per-container storage management
- Multi-cloud ready

Enterprise-Class Features

- Container-granular snapshots and replication
- Multi-cluster visibility and management
- Predictive capacity management
- Global file namespace

Container Speed

- Deployment in seconds, not days
- Blazing bare-metal performance
- Scaling and bursts to hundreds of containers

Radical Efficiency

- Runs on commodity hardware
- Easy to deploy and manage
- 70% lower cost than SANs

CONTAINER-DEFINED STORAGE IN ACTION

Use cases for Portworx container-defined storage include:

- **Big Data:** For applications such as Hadoop and Spark, Portworx provides elastic scale-out/scale-in and the ability to quickly repurpose servers.
- **Content Management:** For applications such as WordPress and Drupal, Portworx enables scale-out file workloads and container-granular backups.
- **Database:** For Cassandra, Postgres, and other non-relational and object-relational database management systems, Portworx delivers middleware upgradeability and lower licensing costs.
- **Technical Computing:** For applications such as fluid dynamics and genomics, Portworx provides easy collaboration on datasets and apps, as well as lower cost for PBs of storage.
- **Video Processing:** For rendering, transcoding, and other video processing functions, Portworx offers fan-out processing of bulk data and reduces costs for PBs of storage.

MEET THE TEAM BEHIND CONTAINER-DEFINED STORAGE

The core Portworx team includes:

Murli Thirumale, Co-Founder and CEO

Murli Thirumale provides strategic vision and day-to-day leadership for Portworx. He previously was a storage executive with Dell, joining when Dell acquired Ocarina Networks, where he was CEO and co-founder. Earlier, Murli was Group VP and GM of the Citrix Advanced Solutions Group when it acquired technology from Net6, where he was CEO and co-founder; was EVP and GM of Symmetricom; and spent 15 years at Hewlett-Packard in various product management roles. Murli has a B.Tech. in electronics engineering from the Indian Institute of Technology, BHU, in Varanasi and an MBA from Northwestern University's Kellogg School of Management.

Goutham (Gou) Rao, Co-Founder and CTO

Gou Rao leads technology, market, and solution execution strategy for Portworx. Previously, he was CTO and Executive Director of Dell's Data Protection division, joining through the acquisition of Ocarina Networks, where he was co-founder, CTO, and Chief Architect. Before that, he was CTO of Citrix Systems' Advanced Solutions Group; CTO and co-founder of Net6, which was acquired by Citrix; and a key architect for Intel's x86 and IA64 Operating Systems Group and for Lockheed Martin. Gou, who holds 40+ patents, earned a B.Eng. degree

from Bangalore University and an MS in computer science from the University of Pennsylvania.

Eric Han, Senior Director of Product Management

Eric Han, Portworx Senior Director of Product Management, leads the product development team. Previously, he was Product Manager for the Google Container Engine and Kubernetes, Google Cloud's first release in container technologies. He spent a decade at Microsoft, culminating as a Senior Product Manager and Senior Program Manager for desktop virtualization. He served as a Fellow and Board of Trustees member for the World Affairs Council. Eric received BSEE and MS Engineering degrees from the University of Illinois at Urbana-Champaign and an MBA in marketing and entrepreneurship from The Wharton School at the University of Pennsylvania. He holds three patents.

ABOUT PORTWORX

Portworx, the leading data storage company for containers, offers the industry's first storage solution purpose-built for Docker. Portworx container-defined storage spins up quickly and scales elastically based on application requirements—enabling organizations to manage their applications at container speed, in seconds, not days; slash storage and virtual machine costs by 70%; and get enterprise-class storage features for their containers. To learn more about Portworx, visit www.portworx.com.

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