



IBM Storage Expands Container Support for Hybrid Cloud and Multi-Clouds

RFG Perspective: In the wake of the COVID-19 pandemic and the New Normal work environment, customers are accelerating their move to cloud-native applications in the hybrid cloud and in private clouds leveraging cloud infrastructure inside corporations. Cloud-native containers – born in the scale-out infrastructure of “hyperscale” cloud providers – are increasingly being deployed in the Core (enterprise data center), in the Cloud and on the Edge in remote sites.

However, it’s still true that most enterprise applications and data are still associated with block storage or file storage that is housed in enterprise data centers. Now, the “New Normal” wave – starting with the onset of the COVID-19 pandemic – is bringing the traditional enterprise and cloud-native worlds closer together. It’s worth noting that some workloads will be transformed to run in on-premises private clouds for security or data-privacy compliance reasons.

Software containers will be central to blending these two models of computing – linking on-prem and off-prem data stores with container-based workloads. Most of this digital transformation for the cloud will be done using containers, object data, Kubernetes orchestration and CSI (Container Storage Interface) industry-standard APIs for Kubernetes-accessible storage resources.

IBM Storage and Containers

In a set of October announcements, IBM Storage is supporting software containers with its IBM Spectrum Storage software products. The full array of IBM Spectrum Storage software supports virtualization, scalable storage for Big Data analytics, data protection and IBM’s Cloud Object Storage (IBM COS).

Cloud-native data is often object data, which must be managed differently than block and file storage – and is often stored separately in other devices. IBM COS support for containers is designed to simplify management of all three data types – object, file and block – in hybrid clouds and multi-cloud deployments.

Key capabilities announced by IBM Storage include container support for direct-attach and external systems via the industry-standard CSI Interface; and a Kubernetes-enabled control plane for data stored by cloud-native workloads.

Expanded Container Support for Storage



IBM Storage is bringing robust container support for hybrid cloud deployments. New extensions to IBM's Spectrum Storage software are making it easier to work with IBM/Red Hat OpenShift containers, including built-in support for Kubernetes in a hybrid cloud environment. Specifically, IBM is announcing software to optimize deployment, ease of use, and simplified management of container-based workloads, including the following:

- **Container Storage Interface (CSI) support.** Container support that leverages the industry-standard Container Storage Interface (CSI) for access to more than 500 brands of storage hardware arrays. Supports CSI snapshots to multiple arrays at customer sites. Using CSI to provide a consistent interface will speed deployments and ease management for storage administrators working in mixed-vendor shops.
- **IBM Spectrum Protect Plus support for CSI snapshots.** Supports data protection for container deployment via IBM Cloud Pak for MCM (the IBM Multi Cloud Manager console). IBM Spectrum Protect Plus supports both containers and VMs for multi-device deployments in hybrid clouds; Red Hat OpenShift supports mixed deployments of VMs and containers.
- **Mixed-vendor deployments.** Improved IBM Spectrum Protect support for customers' mixed storage resources – via the CSI interface – including many types and brands of storage arrays.
- **Cluster-based backup.** New support for backup of Red Hat OpenShift/Kubernetes clusters. This new capability enables making additional copies of a cluster for test and development or for disaster recovery (DR). This is expected to reduce admin time related to customers' disaster recovery (DR) exercises. These exercises are done periodically by IT staffers to prepare for future outages, regardless of what could cause that outage (e.g. network outage, fires, flooding and natural disasters).
- **Google Cloud support.** IBM is adding Google Cloud Platform (GCP) as a new storage tier for IBM Spectrum Protect customers who are deploying multi-cloud workloads. IBM Spectrum Protect software already supports storage tiering for Amazon AWS, Microsoft Azure, and IBM Cloud.
- **AI workload support with IBM Spectrum Scale.** Introduced a container-native storage access capability for IBM Spectrum Scale with a parallel file system that supports AI workloads. This provides the benefits of a container-native approach, such as integrated administration with Kubernetes, while also using clients' existing Spectrum Scale-based storage and data, which can be shared with other platforms. Customers are applying AI, automation and



metadata to improve data analytics for lines-of-business (LoBs) and business units.

- **Metadata support.** Enhanced support for metadata across the enterprise, using the Red Hat OpenShift API for Data Protection (supporting the Velero open-source standard, which runs on many types of storage systems and supports cluster-based backup). Using metadata speeds access for production data in the hybrid cloud – and reduces latency delays associated with data silos in a large organization that has large data warehouses and data lakes.
- **All-Flash-Arrays (AFAs) with Storage-Class Memory.** IBM announced that for all existing (and any new) FlashSystem 7200 and 9200 models, IBM is increasing the maximum number of Storage-Class Memory (SCM) drives in a control enclosure from 4 to 12. Existing installed systems can be upgraded with these new drives.

Analysis

With the IBM Storage announcements of October 2020, we are beginning to see the outlines of how IBM will leverage its 2018 acquisition of Red Hat to expand its footprint in hybrid multi-clouds. Red Hat OpenShift container software is already widely deployed in enterprise and cloud provider data centers worldwide.

It's already clear that IBM CEO Arvind Krishna plans to move quickly to increase IBM's presence in customers' hybrid clouds. He is tapping a broad array of IBM software, including the Red Hat portfolio of OpenShift and Ansible management software, to do so. And he has hinted that more could be done to accelerate customers' use of AI for generating metadata, processing HPC workloads and improving data governance across vast hybrid clouds.

[The IBM Storage announcements](#) underscore the importance of IBM Spectrum Storage software in fulfilling many aspects of IBM's overall strategy for AI and hybrid clouds. Having containers as a unifying focus for enterprise storage – and cloud-native storage – becomes ever more important as customers accelerate their transition to cloud-native applications developed by DevOps and DevSecOps teams.

IBM is leveraging its storage management software tools as a differentiator in its ongoing competition with the other large storage vendors. IBM Spectrum Storage is a software suite of eight products: IBM Spectrum Virtualize, IBM Spectrum Scale, IBM Spectrum Protect, IBM Spectrum Protect Plus, IBM Spectrum Copy Data



Management, IBM Spectrum Discover, IBM Spectrum Control and IBM Spectrum Archive.

Now, all the major phases of storage and data are being adapted to work well in a mixed-mode containerized cloud environment – making the role of IBM Spectrum Storage software more strategic for IBM than ever before.

As customers move from transactional computing, we have come to a moment when aging applications must be changed to support both VMs and containers. The Red Hat portfolio gives DevOps programmers more tools that can be applied to that transition – while carrying forward IBM’s commitment to move toward cloud-centric deployments via support for Kubernetes orchestration, Red Hat OpenShift and Red Hat Ansible for data management.

A Strategy for Container-Enabled Deployment

Deploying the enterprise’s data across those cloud tiers is a pragmatic strategy, given customers’ acceleration of cloud migrations from data centers into hybrid clouds and multi-clouds. With hybrid cloud deployments, storage tiers now span data centers and cloud service providers (CSPs) – including Amazon Web Services (AWS), Microsoft Azure and Google Cloud Platform (GCP) and IBM Cloud.

This wave of migrations is moving many mission-critical enterprise applications and enterprise data from on-prem data centers to off-prem clouds (including hybrid clouds and multi-clouds). IBM is leveraging its storage management software tools as a differentiator in its ongoing competition with other major storage vendors. When the same Spectrum product suite is deployed within the IBM Cloud, it can also be a differentiator for IBM Cloud services.

RFG POV: IBM is committing to a hybrid cloud strategy that makes container support a vital technology for blending traditional mission-critical workloads with cloud-native applications in hybrid clouds. Customers’ CxOs know that containers are fast becoming foundational building blocks for solutions that allow cloud-native workloads to interoperate with mission-critical storage housed across hybrid cloud infrastructure. Customers should take this worldwide move to containers very seriously – taking inventory of their enterprise applications, their enterprise data and their storage resources to see if they be should be modernized to work with a new wave of containerized workloads.

Additional relevant research and consulting services are available. Interested readers should contact Client Services to arrange further discussion or interview Jean S. Bozman, President of Cloud Architects Advisors LLC, who authored this report.