IBM.

IBM Spectrum Virtualize for Public Cloud

Enabling real-time disaster recovery, replication and data mobility between on-premises and public cloud storage or between public cloud data centers.

Finding space for rapidly growing data volumes is a critical concern for enterprises today—but it's not the only data concern. Companies in a recent study ranked "data protection," "hardware costs," and "rapid data growth" among their top storage challenges.[1] And in another survey, 78 percent said that they are using public cloud services to some degree.[2] How the organization stores, manages and protects data, in other words, can be as important as how much capacity the organization provides for data.

The challenge for these organizations is how to link on-premises storage with public cloud storage while retaining flexibility and without introducing new complexity or requiring significant new capital investment.

IBM Spectrum Virtualize is a leading software-defined storage solution[3] that has been proven for years in IBM SAN Volume Controller (SVC), the IBM FlashSystem and Storwize families, and VersaStack converged infrastructure—with more than 180,000 systems running IBM Spectrum Virtualize. These systems are delivering six nines availability while managing more than

11 exabytes of data.[4]

Running on-premises, IBM Spectrum Virtualize supports capacity built into storage systems as well as capacity in over 500 different storage systems from IBM and other vendors. This wide range of storage support means that the solution may be used with practically any storage in a data center today.

IBM Spectrum Virtualize for Public Cloud has been optimized to run on public cloud provider Infrastructure as a Service, specifically Amazon Web Services (AWS) and IBM Cloud. IBM Spectrum Virtualize for Public Cloud is deployed on EC2 on AWS and supports AWS Elastic Block Store (EBS). On IBM Cloud, IBM Spectrum Virtualize for Public Cloud runs on bare metal servers and virtualizes IBM Cloud Performance and Endurance block storage options.

Working together, IBM Spectrum Virtualize and IBM Spectrum Virtualize for Public Cloud support synchronous and asynchronous mirroring between on-premises and cloud data centers or between cloud data centers. These functions can be used to:

- Migrate data between on-premises and public cloud data centers or between two public cloud data centers

- Create a scalable solution for mission-critical workloads on the public cloud, with the ability to deploy high availability clusters that can scale up to four-node clusters on AWS and eight-node clusters on IBM Cloud.

- Implement disaster-recovery strategies between on-premises and public cloud data centers or between two public cloud data centers

- Enable cloud-based DevOps with easy replication of data from on-premises sources

- Enhance performance and functionality, and lower cost of IBM Cloud or AWS block storage with advanced data services such as IBM FlashCopy, thin provisioning, data reduction (compression and deduplication), and IBM Easy Tier.

- Improve cyber resiliency using IBM Spectrum Virtualize for Public Cloud on AWS "air gap" snapshots to S3.

- Enjoy consistent data management between on-premises storage and public cloud.
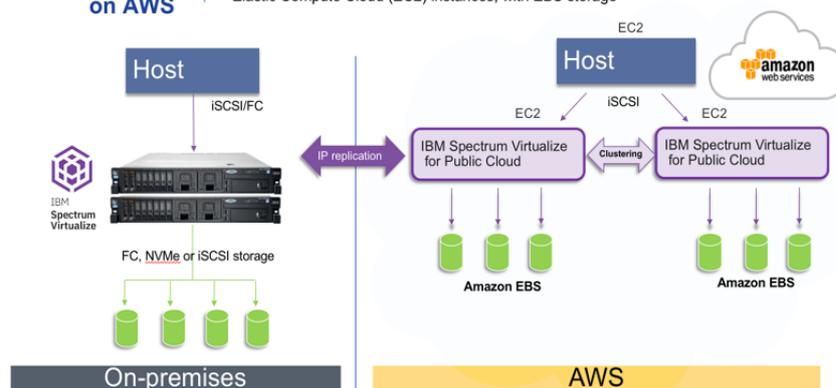
IBM Spectrum Virtualize for Public Cloud capabilities include:

- IBM Spectrum Virtualize on premises and IBM Spectrum Virtualize for Public Cloud together enable a hybrid multicloud deployment with a single data management layer between on premises and the cloud across heterogeneous storage pools that may exist in the data center.

- Storage pooling and automated allocation with thin provisioning

- Easy Tier automated tiering

- Deduplication and compression to reduce cloud storage costs

- FlashCopy and remote mirror for local snapshots and remote replication

- Support for virtualized and containerized server environments including VMware, Microsoft Hyper-V, IBM PowerVM, Red Hat OpenShift, CRI-O, and Kubernetes

With the use of Spectrum Virtualize for Public Cloud on supported public cloud providers, storage administrators can easily migrate data from any of more than 500 supported storage systems to standard public cloud storage, or use public cloud options for disaster recovery.

The benefits of IBM Spectrum Virtualize

IBM Spectrum Virtualize software delivers leading benefits that improve how you use storage in three key ways:

Improving data value: IBM Spectrum Virtualize software helps reduce the cost of storing data by increasing utilization, employing data reduction, and accelerating applications to speed business insights.

Increasing data security: IBM Spectrum Virtualize helps protect data from theft or inappropriate disclosure while enabling a high-availability strategy that includes protection for data and application mobility and disaster recovery.

Enhancing data simplicity: IBM Spectrum Virtualize provides a data strategy that is independent of your choice of infrastructure, delivering tightly integrated functionality and consistent management across heterogeneous storage.

The software layer provided by IBM Spectrum Virtualize on-premises or in the cloud can provide a significant business advantage by delivering more services faster and more efficiently, enabling real-time business insights and supporting more customer interaction. Capabilities such as rapid, flexible provisioning; simplified configuration changes; nondisruptive movement of data among tiers of storage; data reduction; and a single user interface help make your storage infrastructure—and your hybrid cloud—simpler, more cost-effective and easier to manage.

Multicloud data mobility for block storage

IBM Spectrum Virtualize for Public Cloud promotes true multicloud flexibility and mobility. Data can be moved to other clouds: on-premises private cloud, a managed service provider (MSP) hosted private cloud, another supported public cloud or even a traditional on-premises infrastructure. Regardless of platform, data management and storage function are consistent, and a full range of storage types are supported.

Scalability

Choose from supported IBM Cloud bare metal server or supported AWS EC2 instances to meet different cost and performance requirements. Deploy in pairs for availability and add additional pairs to a configuration for scalability. Match those with IBM Cloud Performance storage and high-efficiency IBM Cloud Endurance storage options or AWS EBS storage to build a configuration tailored to your specific needs. Add or change storage at any time. On IBM Cloud, dedicated servers and pre-allocated input/output operations per second (IOPS) for Performance storage ensure consistent and dependable performance. On AWS, select from several supported EC2 instances that cover a range of performance options, paired with any capacity and performance EBS storage for maximum flexibility.

Deployment designed for the cloud

Deploy IBM Spectrum Virtualize for Pubic Cloud on AWS directly from AWS Marketplace through a predefined Cloud Formation Template that automatically and securely installs the software, and deploys a high availability two-node cluster on selected EC2 instances. Any Amazon EBS block storage can be attached. On IBM Cloud, automated installation scripts assist deployment

of the software on bare metal servers purchased from the IBM Cloud portal. Automated configuration includes setting up a cluster through a private VLAN network. IBM Performance or Endurance block storage is supported behind the cluster, which can scale from two to eight nodes.

Building a hybrid cloud solution

Traditional practices that provide data replication simply by copying storage at one facility to largely identical storage at another facility aren't an option where public cloud is concerned. And using conventional software to replicate data imposes unnecessary loads on application servers. IBM Spectrum Virtualize for Public Cloud provides a new solution to combine on-premises and cloud storage for higher flexibility at lower cost for a comprehensive selection of use cases.

Deploy enterprise-class disaster recovery on public cloud infrastructure

Use native IP-based replication to mirror data to AWS and IBM Cloud, with a multi-node configuration for high availability and performance. End-to-end application-aware failover and failback through VMware cloud automation integration. No extra appliances needed. Synchronous and asynchronous mirroring support a range of recovery point objective (RPO) and recovery time objective (RTO) targets depending on business needs. On AWS, in addition to supporting EBS block storage, you can further enhance your options for protection through native snapshots to S3 that provide "air gap" data protection to help promote cyber resiliency. The S3 copies can be reversed back to IBM Spectrum Virtualize for Public Cloud if desired, to avoid expensive egress charges to an on-premises gateway or infrastructure.

[1]"2017 Storage Trends: Challenges and Spending," *Enterprise Strategy Group*, August 2017.
http://www.esg-global.com/research/esg-brief-2017-storage-trends-challenges-and-spending

[2]"2017 IT Spending Intentions Survey," *Enterprise Strategy Group*, March 2017.
http://www.esg-global.com/2017-it-spending-intentions-survey

[3]"IBM Spectrum Storage Suite: Meeting Industry Needs for Software-Defined Storage," *IDC*, January 2016.
https://www.ibm.com/common/ssi/cgi-bin/ssialias?subtype=WH&infotype=SA&htmlfid=TSL03265USEN&attachment=TSL03265USEN.PDF

[4] Based on IBM internal measurements – July 2017.

[5] IBM lab measurements – April 2012.

IBM Spectrum Virtualize at a glance

	IBM Cloud	**AWS**
Storage supported	IBM Endurance, Performance block storage	Elastic Block Storage, S3
Licensing approach	All inclusive flat capacity licensing per TB/Month or perpetual license with options for multi-year service and support	All inclusive flat capacity licensing per TB/Month or perpetual license with options for multi-year service and support
Platforms	IBM Cloud bare metal servers (one per node)	EC2 instances (one per node) from the following list: c5.4xlarge, c5.9xlarge or c5.18xlarge
Reliability, availability and serviceability (RAS)	IBM Spectrum Virtualize for Public Cloud software	IBM Spectrum Virtualize for Public Cloud software
Deployment approach	Semi-automated script to deploy on cloud infrastructure	AWS Marketplace with Cloud Formation Template
Service	IBM for both software and cloud infrastructure	IBM for software; Amazon for cloud infrastructure
Scalability	Up to eight nodes per cluster	Up to four nodes per cluster

Why IBM?

IBM Spectrum Virtualize for Public Cloud is a member of the IBM Spectrum Storage family of solutions, which also includes IBM Spectrum Control for analytics-driven data management; IBM Spectrum Protect for optimized protection and reduced backup costs; IBM Spectrum Archive for fast data retention; IBM Spectrum Accelerate for rapidly deployed cloud-based storage; IBM Spectrum Scale for high-performance, highly scalable storage for unstructured data; and IBM Spectrum Copy Data Management for simplified copy management.

IBM Research is a leader in the development of storage technologies in both software and hardware, including storage management and optimization capabilities. To help you get the most from your data, IBM offers industry-leading capabilities for analytics, content management and databases. With more than 40 global data centers powering thousands of customers, IBM is a leading provider of cloud-based storage and computing services.

For more information

To learn more about IBM Spectrum Virtualize for Public Cloud software and the IBM Spectrum Storage family of storage software products, please contact your IBM representative or IBM Business Partner, or visit: **ibm.com**/us-en/marketplace/virtualization-software

Additionally, IBM Global Financing provides numerous payment options to help you acquire the technology you need to grow your business. We provide full lifecycle management of IT products and services, from acquisition to disposition. For more information, visit: ibm.com/financing

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