

It's all powered by IBM Spectrum Virtualize



The common, intelligent software platform that delivers advanced data services across the IBM FlashSystem family and SVC.

The industry-leading capabilities of IBM Spectrum Virtualize include automated data movement, synchronous and asynchronous copy services (either on-premises or to the public cloud), isolated and immutable copies with Safeguarded Copy and encryption, high-availability configurations, storage tiering, and data reduction technologies, among many others.



High Availability (HA) & Disaster Recovery (DR)

What is HyperSwap?

HyperSwap is an HA solution where a pair of SVC nodes, or a FlashSystem controller are located at different sites and run as a cluster. Each volume is accessible from both sites, with IO being mirrored across synchronously.

If the physical storage at site A fails, the controller at site A can forward requests to site B, with no interruption to the host. If site A fails completely, then the host can fail over to site B. When site A recovers, HyperSwap will take a consistent copy and resynchronize across the two sites so that full HA is restored. With host clustering, this gives full HA capability.

What is enhanced stretch cluster?

Similar to HyperSwap is enhanced stretch cluster, where a pair of SVC nodes are split across sites. Following a failed site being restored data is resynchronized.

This has the potential to be a lower cost solution over HyperSwap.

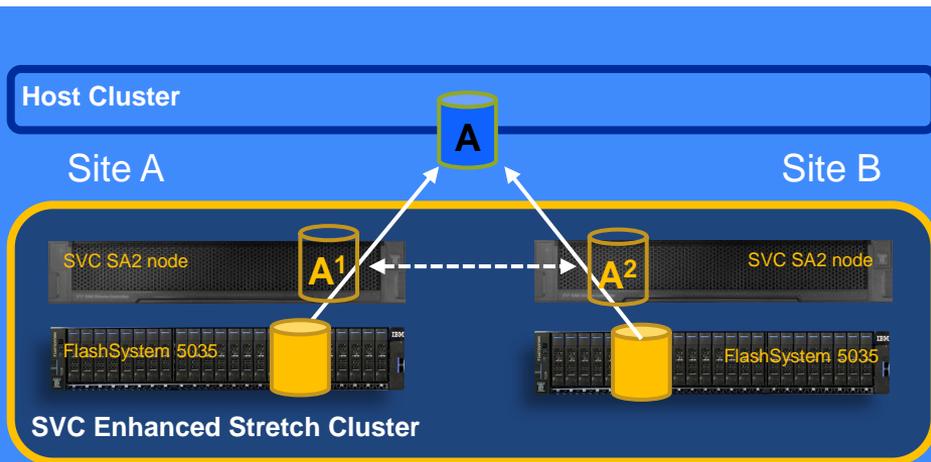
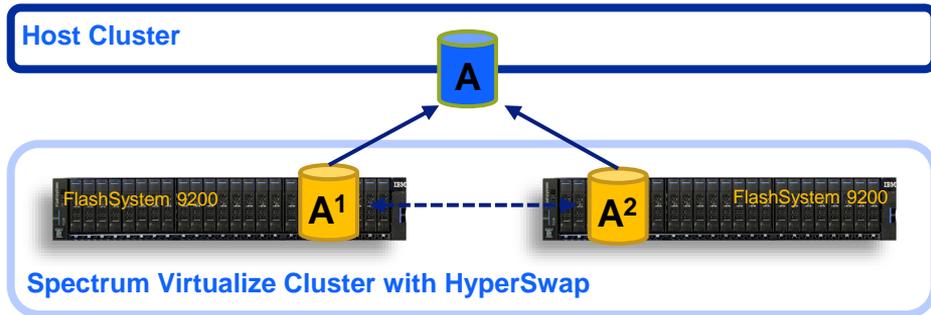
How do you do Disaster Recovery (and 3-site)?

IBM Spectrum Virtualize can do both synchronous and asynchronous copy of a volume between different FlashSystem controllers, or SVC clusters. This gives the user the ability to maintain two (or three copies) of a volume across different sites and tune the RPO to meet their cost and business goals.

Alternatively, Enhanced Stretch Cluster can be used with a third site, giving the choice of sync or async to the third site.

Where can I get more information?

There are pretty big topics and much more information on these and other Copy Services topics can be found in the [FlashSystem and Spectrum Virtualize Redbooks](#)



Safeguarded Copy

What is Safeguarded Copy?

Safeguarded Copy prevents point in time copies of data from being modified or deleted due to user errors, malicious destruction or ransomware attacks

How does it work?

An **administrator role** can create immutable point in time copies of data. The administrator cannot remove or delete these Safeguarded copies, and they cannot remove or compromise the pools the copies are stored in.

A separate **security administrator role** can manage security and users, as well as the Safeguarded copies and location of the copies.

How is data restored from the copies in the event of an attack?

The Safeguarded copies are not directly mountable to a host. In order to restore from a copy, a copy is made to a new volume which can then be mapped to a host for access. It's good practice to test these copies occasionally to establish known good points-in-time.

Is FlashCopy required for Safeguarded Copy?

Yes, Safeguarded Copy makes use of FlashCopy technology.

Does Safeguarded Copy require other software?

Yes, Safeguarded Copy requires IBM Copy Services Manager software for the copy scheduling and recovery capabilities. If you're already using Copy Service Manager, then you can use it with Safeguarded Copy. Alternatively, an IBM Copy Manager for IBM Spectrum Virtualize software bundle is available.

