

SCI StorInt™ Dispatch

Announcing IBM SVC SSD support, new H/W and S/W

IBM recently announced a new version of SVC software, hardware and SSD support.

SVC SSD support

The latest SVC hardware supports up to four 146GB SSD drives per engine, mirrored to the other storage engine in an IO group. Adding SSD hardware as internal storage increases the number of IOPs that can be sustained from HDD configurations. For instance, the same SVC IOPs could come from hard disk drives alone but far more would be required since SSDs process more IOPs than HDDs can. SSDs can also be used to decrease IO response time for certain workloads and can be factory or field installed in the latest SVC engine hardware.

IBM is introducing the STEC ZEUS IOPS drive as the internal SSD storage for an SVC engine. SVC engines are configured in pairs to form an I/O group and there can be up to four I/O groups in an SVC storage system (called a “cluster”). As such, the maximum SVC system supports ~2.4 TB of mirrored user SSD storage capacity.

New SVC hardware

Concurrent with SSD support, IBM has also introduced new SVC hardware, the 2145-CF8 SVC engine. The new engine is based on the IBM System x3350M2 server and supports quad core Intel Xeon® 5500 2.4GHz processors, up to 24GB of cache, and four 8Gps FC (8GFC). According to IBM, the new CF8 engine can sustain up to twice the IOPs of the prior hardware as well as roughly double the bandwidth. As such, CF8 performs up to 350K read miss IOPs (the SSDs alone can handle up to 200K read miss IOPs) and supports up to 5.8GB/sec read per throughput per I/O group and 4 times that for a full SVC system or cluster.

The CF8 engine replaces the old 8G4 engine however, the current entry level engine, 8A4, will continue to be shipped. IBM says the new engine will cost the same as the old one, roughly doubling price performance. Finally, the new engine can be non-disruptively added to operating SVC clusters or intermixed in pairs with existing engines.

New SVC5 software

In addition, IBM previewed new SVC5 software. The new SVC software adds new iSCSI support, multiple cluster mirroring options, increases the number of remote copy sessions supported concurrently, and supports a new multi-target reverse FlashCopy. Furthermore, SVC5 software has been migrated to a new 64-bit platform and runs on all engine hardware shipped since October 2005. Also, SVC’s cache algorithms have been improved and now support up to 15% more write operations per second over the prior release. SVC5 software can be non-disruptively upgraded from the prior version. IBM also announced additions to SVC’s compatibility matrix. SVC5 now supports EMC CX4-960, new 8 and 4GFC HBAs, and HDS AMS2100,2300&2500, HP MSA 2000, EVA 6400 & 8400, and Fujitsu Eternus 8K&4K.

All SVC engines have two GigE ports, one of which is used for service. These ports can now be used to supply iSCSI target services to act as an iSCSI storage subsystem. The service usage of the GigE can now be shared with ongoing iSCSI access to supported storage.

Understanding the new multiple cluster mirroring options takes some discussion. Customers with up to 4-SVC systems or clusters can now have up to 3 of them replicate to a central, consolidated SVC cluster. As such, the consolidated remote copy site can support each independent VDisk or LUN remote copy session as a separate Metro Mirror (synchronous) or Global Mirror (asynch) replication. In addition, the maximum number of remote copy relationships has been increased to 8192 LUNs, to better support the multi-cluster mirroring option. The 4-SVC clusters can be replicated in other topologies, e.g. cluster A can be mirrored to cluster B which mirrors to cluster C which mirrors to cluster D which mirrors back to cluster A.

Multi-target reverse FlashCopy support will also require additional discussion. Recall that FlashCopy is SVC terminology for point-in-time VDisk copies. One typically creates multiple FlashCopies each at a different point-in-time (p-i-t), used to provide multiple restore points. With SVC5, FlashCopy restores no longer destroy the original source data. As such, any p-i-t copy can be used to restore the original data while continuing to retain access to other p-i-t copies including the original data (in its state prior to restore). The usefulness of this feature is arguable, but it does provide continued access to p-i-t copies after a FlashCopy restore completes.

New thin provisioning enhancements are also provided with SVC5. Now, VDisk mirroring fully supports thin mirroring, i.e., mirroring will not copy blocks that are all 0's. Also, when running on the new model CF8 storage engine, SVC5 will not write "all-0 blocks" to storage. Both new features conserve storage for thin provisioned volumes.

Announcement significance

Late last year IBM sold their 15,000th SVC engine and their 5,000th SVC cluster. This announcement marks the next evolution in a very successful product. IBM seems to be using SVC to attack the mid-market, selling a comprehensive storage solution that can support anyone's SAN storage. The addition of internal SSD storage should improve SVC performance, although SVC already had top 10 IO performance credentials*.

Whether the mid-market takes advantage or needs SSDs anytime soon is anyone's guess. However, SSDs do add a new tier of storage that can be advantageous to some enterprise customers and as such, broadens SVC's market space.

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