Industry Trends Perspective Update Newsletter

Information Technology and Data infrastructure

Cloud Virtual Physical Software Defined

Volume 17, Issue III

Hello and welcome to the March 2017 issue of the Server StorageIO update newsletter.

First a reminder world backup (and recovery) day is on March 31. Following up from the February Server StorageIO update newsletter that had a focus on data protection this edition includes some additional posts, articles, tips and commentary below.

Other data infrastructure (and tradecraft) topics in this edition include cloud, virtual, server, storage and I/O including NVMe as well as networks. Industry trends include new technology and services announcements, cloud services, HPE buying Nimble among other activity. Check out the Converged Infrastructure (CI), Hyper-Converged (HCI) and Cluster in Box (or Cloud in Box) coverage including a recent SNIA webinar I was invited to be the guest presenter for, along with companion post below.

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Enjoy this edition of the Server StorageIO update newsletter.

Cheers GS

Data Infrastructure and IT Industry Activity Trends

Some recent Industry Activities, Trends, News and Announcements include:

Dell EMC has discontinued the NVMe direct attached shared DSSD D5 all flash array has been discontinued. At about the same time Dell EMC is shutting down the DSSD D5 product, it has also signaled they will leverage the various technologies including NVMe across their broad server storage portfolio in different ways moving forward. While Dell EMC is shutting down DSSD D5, they are also bringing additional NVMe solutions to the market including those they have been shipping for years (e.g. on the server-side). Learn more about DSSD D5 here and here including perspectives of how it could have been used (plays for playbooks).

Meanwhile NVMe industry activity continues to expand with different solutions from startups such as E8, Excelero, Everspin, Intel, Mellanox, Micron, Samsung and WD SANdisk among others. Also keep in mind, if the answer is NVMe, then what were and are the questions to ask, as well as what are some easy to use benchmark scripts (using fio, diskspd, vdbench, iometer).

Speaking of NVMe, flash and SSDs, Amazon Web Services (AWS) have added new Elastic Cloud Compute (EC2) storage and I/O optimized i3 instances. These new instances are available in various configurations with different amounts of vCPU (cores or logical processors),

memory and NVMe SSD capacities (and quantity) along with price.

Note that the price per i3 instance varies not only by its configuration, also for image and region deployed in. The flash SSD capacities range from an entry-level (i3.large) with 2 vCPU (logical processors), 15.25GB of RAM and a single 475GB NVMe SSD that for example in the US East Region was recently priced at $0.156 per hour. At the high-end there is the i3.16xlarge with 64 vCPU (logical processors), 488GB RAM and 8 x 1900GB NVMe SSDs with a recent US East Region price of $4.992 per hour. Note that the vCPU refers to the available number of logical processors available and not necessarily cores or sockets.

Also note that your performance will vary, and while NVMe protocol tends to use less CPU per I/O, if generating a large number of I/Os you will need some CPU. What this means is that if you find your performance limited compared to expectations with the lower end i3 instances, move up to a larger instance and see what happens. If you have a Windows-based environment, you can use a tool such as Diskspd to see what happens with I/O performance as you decrease the number of CPUs used.

Chelsio has announced they are now Microsoft Azure Stack Certified with their iWARP RDMA host adapter solutions, as well as for converged infrastructure (CI), hyper-converged (HCI) and legacy server storage deployments. As part of the announcement, Chelsio is also offering a 30 day no cost trial of their adapters for Microsoft Azure Stack, Windows Server 2016 and Windows 10 client environments. Learn more about the Chelsio trial offer here.

Everspin (the MRAM Spintorque, persistent RAM folks) have announced a new Storage Class Memory (SCM) NVMe accessible family (nvNITRO) of storage accelerator devices (PCIe AiC, U.2). Whats interesting about Everspin is that they are using NVMe for accessing their persistent RAM (e.g. MRAM) making it easily plug compatible with existing operating systems or hypervisors. This means using standard out of the box NVMe drivers where the Everspin SCM appears as a block device (for compatibility) functioning as a low latency, high performance persistent write cache.

Something else interesting besides making the new memory compatible with existing servers CPU complex via PCIe, is how Everspin is demonstrating that NVMe as a general access protocol is not just exclusive to nand flash-based SSDs. What this means is that instead of using non-persistent DRAM, or slower NAND flash (or 3D XPoint SCM), Everspin nvNITRO enables high endurance write cache with persistent to compliment existing NAND flash as well as emerging 3D XPoint based storage. Keep an eye on Everspin as they are doing some interesting things for future discussions.

Google Cloud Services has added additional regions (cloud locations) and other enhancements.

HPE continued buying into server storage I/O data infrastructure technologies announcing an all cash (e.g. no stock) acquisition of Nimble Storage (NMBL). The cash acquisition for a little over $1B USD amounts to $12.50 USD per Nimble share, double what it had traded at. As a refresh, or overview, Nimble is an all flash shared storage system leverage NAND flash solid storage device (SSD) performance. Note that Nimble also partners with Cisco and Lenovo platforms that compete with HPE servers for converged systems. View additional perspectives here.

Riverbed has announced the release of Steelfusion 5 which while its name implies physical hardware metal, the solution is available as tin wrapped (e.g. hardware appliance) software. However the solution is also available for deployment as a VMware virtual appliance for remote office branch office (ROBO) among others. Enhancements include converged functionality such as NAS support along with network latency as well as bandwidth among other features.

Check out other industry news, comments, trends perspectives here.

Server StorageIOblog Posts

Recent and popular Server StorageIOblog posts include:

- [Preparing For World Backup Day 2017 Are You Prepared](#)
- [Backup, Big data, Big Data Protection, CMG & More with Tom Becchetti Podcast](#)
- [Server Storage I/O Converged (CI) Hyper-converged (HCI) overview](#)
- [HPE Continues Buying Into Server Storage I/O Data Infrastructures](#)
- [Software Defined Cloud Bulk Object Storage Trends News](#)
- [Software Defined, Cloud, Bulk and Object Storage Fundamentals](#)
- [Kevin Closson discusses SLOB Server CPU I/O Database Performance benchmarks](#)
- [February 2017 Server StorageIO Update Newsletter](#)

View other recent as well as past [StorageIOblog posts here](#)

Server StorageIO Commentary in the news

Recent Server StorageIO industry trends perspectives commentary in the news.

[Via InfoStor:](#) 8 Big Enterprise SSD Trends to Expect in 2017
Watch for increased capacities at lower cost, differentiation awareness of high-capacity, low-cost and lower performing SSDs versus improved durability and performance along with cost capacity enhancements for active SSD (read and write optimized). You can also expect increased support for NVMe both as a back-end storage device with different form factors (e.g., M.2 gum sticks, U.2 8639 drives, PCIe cards) as well as front-end (e.g., storage systems that are NVMe-attached) including local direct-attached and fiber-attached. This means more awareness around NVMe both as front-end and back-end deployment options.

[Via SearchITOperations:](#) Storage performance bottlenecks
Sometimes it takes more than an aspirin to cure a headache. There may be a bottleneck somewhere else, in hardware, software, storage system architecture or something else.

[Via SearchDNS:](#) Parsing through the software-defined storage hype *Beyond scalability, SDS technology aims for freedom from the limits of proprietary hardware.* [Via InfoStor:](#) Data Storage Industry Braces for AI and Machine Learning *AI could also lead to untapped hidden or unknown value in existing data that has no or little perceived value.*

[Via SearchDataCenter:](#) New options to evolve data backup recovery

View more Server, Storage and I/O trends and perspectives comments [here](#)

Various Tips, Tools, Technology and Tradecraft Topics

Recent Data Infrastructure Tradecraft Articles, Tips, Tools, Tricks and related topics.

Via ComputerWeekly: [Time to restore from backup: Do you know where your data is?](#)
Via IDG/NetworkWorld: [Ensure your data infrastructure remains available and resilient](#)
Via IDG/NetworkWorld: [Whats a data infrastructure?](#)

Check out Scott Lowe [@Scott_Lowe](#) of VMware fame who while having a virtual networking focus has a nice [roundup of related data infrastructure topics](#) cloud, open source among others.

Want to take a break from reading or listening to tech talk, check out some of the fun videos including aerial drone (and some technology topics) at [www.storageio.tv](#).

View more [tips and articles here](#)

Events and Activities

Recent and upcoming event activities.

May 8-10, 2017 - Dell EMCworld - Las Vegas

April 3-7, 2017 - Seminars - Dutch workshop seminar series - Nijkerk Netherlands

March 15, 2017 - Webinar - SNIA/BrightTalk - HyperConverged and Storage - 10AM PT

January 26 2017 - Seminar - Presenting at Wipro SDx Summit London UK

See more webinars and activities on the Server StorageIO Events page here.

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