



Dell Technologies World 2019: Storage Takes Front Stage

[Dell Technologies World 2019](#) just finished up in Las Vegas, and as usual it didn't disappoint. There are a number of interesting announcements on a variety of subjects, some of which we will cover below. If you missed Dell Technologies World 2019, you can see the General Sessions replays [here](#).



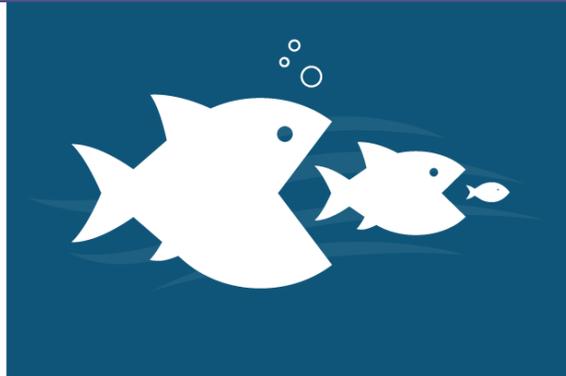
One of the most interesting things was the amplified focus on storage and its importance in the Dell product portfolio. There were two specific instances of that caught my attention at Dell Technologies World 2019:

- **NVMe™/NVMe-oF™ and Dell:** The Dell storage team had several sessions where NVMe and NVMe over Fabric (NVMe-oF) were featured. In fact, there were ten (10!) sessions (according to the breakout session catalog) that featured NVMe or NVMe-oF, including multiple sessions on how NVMe fit into the [Dell PowerMax product line](#). There was one breakout session conducted by [David Black](#) (Senior Distinguished Engineer at Dell) that dealt just with what NVMe, NVMe-oF, and storage-class memory (SCM) are, and why they were important. This is quite a change from last year, when there was very little discussion of NVMe (and less on NVMe-oF) and how it fit into the Dell storage product line.

- **Dell and the Cloud:** On Monday of Dell Technology World, Dell announced a hybrid cloud venture with [VMware](#) and [Microsoft](#). The hybrid cloud offering combines Dell EMC and VMware [VxRail](#) storage platforms with VMware's Cloud Foundation to provide the on-premise portion of the hybrid cloud solution, while using [Microsoft Azure](#) as the cloud provider. [Varun Chhabra](#) (Vice-President of Product Marketing at Dell EMC Cloud) discussed the new offering on CRNtv (you can view it [here](#)).

More Consolidation in the Storage Industry

There have been several interesting mergers and acquisitions in the storage industry during the first few months of 2019. This follows a pretty "active" 2018, which saw IBM's \$33B purchase of RedHat. Some of the more notable acquisitions during the past six months include the following:



- **[Dell Reverse Stock Swap](#):** In late December 2018, [Dell](#) again became a public company (on the NYSE) through a stock swap deal involving VMware. During the five years that Dell was private, revenue increase by roughly \$30B (from \$57B to \$87.5B), and Dell also acquired EMC. This made Dell the largest storage company by revenue, and the largest US IT company, with its portfolio now including Dell, Dell/EMC, Pivotal, RSA, SecureWorks, Virtustream, and VMware.
- **[Nvidia's Acquisition of Mellanox](#):** In March, Nvidia acquired Mellanox for \$6.9B. Both companies are leaders in the high-performance computing (HPC) space, so there are some natural synergies that will result. It certainly opens up the possibility of connecting Nvidia GPGPUs directly to Ethernet and InfiniBand networks, providing a level of independence from server manufacturers whose loyalties tend to lie closer to Intel.
- **[F5 Purchases NginX](#):** March also witnessed the purchase of NginX (a leading database and application delivery provider) for \$670M. This deal provides additional capabilities to F5 for NetOps and DevOps.
- **[Pure Storage Buys Compuverde](#):** This acquisition was announced in early April, and provides Pure Storage with a software file storage capability that it can utilize in the cloud storage market.
- **[Xilinx Purchases Solarflare](#):** A month later, Solarflare was acquired by Xilinx for an undisclosed sum. The companies have been working together for several years in the FinTech and High-Frequency Trading (HFT) space, so this acquisition completes an already-existing partnership, and leaves struggling Chelsio as the only "free" NIC manufacturer on the board.
- **[DDN Acquires Nexenta](#):** DDN's purchase of Nexenta (in many ways the original software-defined storage company) follows last year's acquisition of the remnants of

Tintri (an all-flash array company). Given that Nexenta was not able to build on its original growth during the last decade, this probably represents another bargain-basement acquisition for DDN, but one that could provide it with an even stronger footing in the media and entertainment (M&E) market.

For certain, these will not be the last acquisitions this year; there is too much free capital in the coffers of large storage companies. If the first four months of this year are any indication, 2019 promises to be an exciting year!

The G2M Research multi-panel webinar on Scale-Out Flash Storage (SOFS) systems was Tuesday May 7th (you can view it [here](#), and access all of the G2M Research webinars [here](#)). We have several more G2M Research multi-vendor webinars scheduled for this year (the registration links are embedded in the title; all webinars are at 9:00 AM Pacific time):



- Tuesday June 11th: [Computational Storage - Use Cases](#)
- Tuesday July 9th: [What Features are Important for AFAs in the NVMe™ Era?](#)
- Tuesday July 30th: [Composable Storage - What is It, and Why Is It Important?](#)
- Tuesday September 3rd: [Use Cases for Servers with NVMe™](#)
- Tuesday September 24th: [Advanced NVMe™ SSDs - Changing the Game](#)
- Tuesday October 22nd: [Using Storage Appliances and JBOFs to Create Storage Networks](#)
- Tuesday November 12th: [Best Practices for Deploying NVMe™ over Fabric](#)

The G2M Research multi-vendor webinars are a great opportunity to learn about the latest advances in storage technology from leading vendors in an interactive environment. Last year's multi-vendor webinars were very well-received, with an average of over 400 registrants per webinar. All registrants will receive the link to the webinar recording, so even if you can't attend please sign up so you can enjoy the recording!

Upcoming 2019 NVMe and Storage Events

[HPE Discover 2019](#) (June 18th-20th; Las Vegas, NV)

Join HPE in Las Vegas in 62 days to Transform, Network, Learn & Celebrate. Meet Experts Who Can Accelerate Your Transformation & Learn How to Unlock Insights with AI. Event Highlights.

[Flash Memory Summit](#) (August 6th-8th; Santa Clara, CA)

Learn the latest storage design tricks at *Flash Memory Summit 2019*. The annual event features NVMe, NVMe-oF, and Persistent Memory technologies.

Enterprise Storage Newsfeed

[SSDs expected to drop below 10 cents per GB by the end of the year](#)

PCGamesN

The cost of one gigabyte of NAND **flash** is expected to drop below 10 cents before the end of the year, according to new market research. The NAND ...

[SK Hynix Begins Sampling of 96-Layer 1 Tb 3D QLC NAND](#)

AnandTech

SSDs using the new devices will be available sometime next year. SK Hynix's 1 Tb 3D QLC is based on charge trap **flash** (CTF) design with a ...

[NetApp adds end-to-end NVMe to mid-range storage array](#)

Blocks and Files

A busy day yesterday for NetApp, which launched a mid-range all-flash array with end-to-end **NVMe** access, pushed out an ONTAP software update ..

[Midrange NetApp flash looks to steal Dell EMC's thunder](#)

TechTarget

NetApp integrated **NVMe** fabric support in FAS arrays last year, coupled with back-end SAS SSDs for storage. AFF A320 controllers connect to an ...

[Mellanox Chooses WekaIO Matrix to Accelerate EDA Workload](#)

Yahoo Finance

Customer reveals how the **NVMe**-native file system has enabled efficiencies in its datacenter. WekaIO, the innovation leader in high-performance, ...

[SerialTek Introduces Advanced PCIe®/NVMe™ Gen4 Interposers for AIC, M.2, U.2 and U.3](#)

PRNewswire (press release)

SerialTek solutions support a variety of standards, including PCI Express (PCIe), **Non-Volatile Memory Express** (NVMe), Serial Attached SCSI (SAS) ..

[Transition to NVMe protocol depends on performance, workload](#)

TechTarget

NVMe and **NVMe** over fabrics promise to bring dramatic changes to data center storage infrastructures by enabling increased application density and ...

[No Dell, our storage array is faster than yours – Infinidat](#)

Blocks and Files

Latency was reduced to 32 μ s for reads and 38 μ s for writes when using **NVMe**-oF with Remote Direct Memory Access over converged Ethernet ...

[Excelero Powers AI as a Service with Shared NVMe at InstaDeep](#)

insideHPC

By allowing the GPU optimized servers to access remote scalable, high-performance **NVMe** flash storage drives as if they were local flash – with full ...

[NetApp AFF A800 Review](#)

StorageReview.com

The AFF A800 is the top-of-the-line ONTAP all-flash storage array from NetApp, which at launch offered an industry-first, end-to-end **NVMe**/FC over ...

[Dell Technologies World 2019: Storage innovations](#)

TechGenix (blog)

The company also detailed that the EMC Unity XT is NVMe (**non-volatile memory express**) ready, which will boost performance. The device also ...

[InstaDeep™ Powers AI as a Service With Shared NVMe](#)

Yahoo Finance

By allowing the GPU optimized servers to access remote scalable, high-performance **NVMe** flash storage drives as if they were local flash - with full ...

[NVMe Fabrics Enter Express Lane](#)

EnterpriseAI

NVMe proponents insist the storage protocol that leverages high-speed flash storage and persistent memory media will greatly reduce datacenter ...

[Marvell Acquires Aquantia for roughly \\$450 Million](#)

guru3d.com (press release)

Marvell today announced the industry's first **NVMe** over Fabric (**NVMe-oF**) SSD converter controller, the 88SN2400 designed and ...

[Samsung: drive writes per day is not where SSD endurance is at](#)

Blocks and Files

SSD manufacturers over-provision their SSDs above the nominal capacity, because the **SSD flash** cells wear out as data is written and rewritten to ...

[Technicolor taps Excelero NVMe storage for blockbuster films](#)

TechTarget

Before Excelero **NVMe** flash storage entered the picture, Technicolor's creative teams often had to schedule access to the enormous media files that ...

[Violin Doubles Capacity of Leading XVS 8 Storage Platform with Performance-Tuned Standard ...](#)

HPCwire

SAN JOSE, Calif., April 30, 2019 – Violin Systems LLC today announced that adoption of the **NVMe** standard interface into its Extreme Performance ...

[Toshiba Memory America Highlights Transformative Power of Flash-Based Storage at Dell ...](#)

Yahoo Finance

From an entirely new category of SSDs to software that makes flash storage accessible via **NVMe-oF™** (NVM Express™ over Fabrics) networks, TMA ...

[Intel's Flagship Optane Enterprise-Class SSD Just Got More Reliable](#)

Forbes

Outfitting the Optane SSD DC D4800X with dual ports, i.e. it has two fully-functional **NVMe** ports, means there are two paths into and out of the drive, ...

[Scaring Ghost Data Away from SCMs](#)

EE Times

The fear of unexpected data loss goes back to the early days of spinning disk and into the **flash**-powered **SSD** era. Both of these technologies differ ...

[NVMe goes mainstream](#)

ZDNet

NVMe runs over the PCIe interconnect, so in its original form it is fast and has low latency. It was developed in response to the widespread use of ...

[Micron steps up with NVMe SSDs](#)

insideHPC

Micron recently unveiled its new series of flagship solid-state drives (SSDs) featuring the **NVMe** protocol, bringing industry-leading storage ...

[LightBits Super SSD brings NVMe on vanilla Ethernet](#)

ComputerWeekly.com

Super-fast **NVMe** flash storage on vanilla Ethernet – that's the claim made by Israeli startup LightBits Labs, which has launched its Super SSD ...

[Liqid Enables Industry-first Unified Multi-Fabric Support for Composable Infrastructure](#)

Yahoo Finance

Resources such as **NVMe** storage, GPUs, and FPGAs can be deployed across the data center as needed, via multiple fabrics, and monitored through ...

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