



## Volume 16, Issue III

Hello and welcome to the March 2016 [Server StorageIO update newsletter](#).

Here in the northern hemisphere spring has officially arrived as of March 20th equinox along with warmer weather, more hours and minutes of day light, and plenty of things to do. In addition to the official arrival of spring here (fall in the southern hemisphere), it also means in the U.S. that [March Madness and college basketball tournament playoff](#) brackets and office (betting) pools are in full swing.

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A couple of other things associated with spring is to move clocks forward which occurred recently here in the U.S. Spring is also a good time to check your smoke and dangerous gas detectors or other alarms. This means replacing batteries and cleaning the detectors.

Besides smoke and gas detectors, spring is also a good time do preventive maintenance on your battery backup uninterruptible power supplies (UPS), as well as generators and other standby power devices. For my part, I had a service tech out to do a tune up on my Kohler generator, as well as replaced some batteries in APC UPS devices.

Besides smoke and CO2 detectors, generators and UPS standby power systems, March madness basketball and other sports tournaments, something else occurs on March 31st (besides being the day before April 1st and April fools day). March 31st is World Backup (and Restore) Day meaning an awareness on making sure your data, applications, settings, configurations, keys, software and systems are backed up, and can be recovered.

Hopefully none of you are in the situation where data, applications, systems, computers, laptops, tablets, smart phones or other devices only get backed up or protected once a year, however maybe you know somebody who does.

March also marks the 10th anniversary of Amazon Web Services (AWS) cloud services ([more here](#)), happy birthday AWS.

March wraps up on the 31st with [World Backup Day](#) which is intended to draw attention to the importance of data protection and your ability to recover applications and data. While backup are important, so to are testing to make sure you can actually use and [recover](#) from what was protected. Keep in mind that while some claim backup is dead, data protection is alive and as along as vendors and others keep referring to data protection as backup, [backup will stay alive](#).

Join me and folks from HP Enterprise (HPE) on March 31st at 1PM ET for a [free webinar](#) compliments of HPE with a theme of Backup with Brains, emphasis on awareness and analytics to enable smart data protection. [Click here](#) to learn more and register.

Enjoy this edition of the Server StorageIO update newsletter and watch for new tips, articles, StorageIO lab report reviews, blog posts, videos and podcast's along with in the news commentary appearing soon.

Cheers GS

## Feature Topic and Theme

This months feature theme and topics include backup (and restore) as part of data protection, more on clouds (public, private and hybrid) including how some providers such as DropBox are moving out of public cloud providers such as AWS building their own data centers.

Building off of the February newsletter there is more on Google including their use of Non-Volatile Memory (NVM) aka NAND Flash [Solid State Devices \(SSD\)](#). and some of their research. In addition to Google's use of SSD, check out the posts and industry activity on [NVMe](#) as well as other news and updates including new converged platforms from Cisco and HPE among others.

## StorageIOblog Posts

Recent and popular Server StorageIOblog posts include:

- [The Future of Ethernet – 2016 Roadmap released by Ethernet Alliance](#)  
Ethernet technologies continue to be enhanced from consumer focused, Internet of Things (IoT) and Internet of Devices (IoD) to enterprise, data centers, IT and non-IT usage as well as cloud and managed service providers. At the lower end where there is broad adoption, the continued evolution of easier to use, lower cost, interoperable technologies and interfaces expands Ethernet adoption footprint while at the higher-end, all of those IoT, IoD, consumer and other devices aggregated (consolidate) into cloud and other services that have the need for speeds from 10GbE, 40GbE, 100GbE and 400GbE.
- Non-Volatile Memory (NVM) includes persistent memory such as NAND flash and other forms [Solid State Devices \(SSD\)](#). NVM express ([NVMe](#)) is a new *server storage* I/P protocol alternative to AHCI/SATA and the SCSI protocol used by Serial Attached SCSI ([SAS](#)). The key question with NVMe is not if, rather [when](#), [where](#), [why](#), [how](#) and with what will it appear in your data center or server storage I/O data infrastructure.

The following are a series of primer and NVMe overview posts along with links to where you can learn more including at [www.thenvmeplace.com](http://www.thenvmeplace.com)

- [NVMe overview and primer – Part I](#)
- [Part II – NVMe overview and primer \(Different Configurations\)](#)
- [Part III - Server StorageIO February 2016 Update Newsletter](#)
- [Part IV – NVMe overview and primer \(Where and How to use NVMe\)](#)
- [Part V – NVMe overview and primer \(Where to learn more, what this all means\)](#)
- [Server StorageIO February 2016 Update Newsletter](#)

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

## Server Storage I/O Industry Activity Trends (Cloud, Virtual, Physical)



Some new Products Technology Services Announcements (PTSA) include:

- [Via Redmondmag](#): AWS Cloud Storage Service Turns 10 years old in March, happy birthday AWS (read more [here at the AWS site](#)).
  - Cisco announced [new flexible HyperFlex converged compute server platforms](#) for hybrid cloud and other deployments. [Also announced](#) were NetApp All Flash Array (AFA) FlexPod converged solutions powered by Cisco UCS servers and networking technology. In other activity, [Cisco unveiled a Digital Network Architecture](#) to enable customer digital data transformation. Cisco also announced its [intent to acquire CliQr](#) for management of hybrid clouds.
  - Data Direct Networks (DDN) expands NAS offerings with new GS14K platform [via PRnewswire](#).
  - [Via Computerworld](#): DropBox quits Amazon cloud, takes back 500 PB of data. DropBox has created their own cloud to host videos, images, files, folders, objects, blobs and other storage items that used to be stored within AWS S3. [In this DropBox post](#), you can read about the why they decided to create their own cloud, as well as how they used a hybrid approach with metadata kept local, actual data stored in AWS S3. Now the data and the metadata are in DropBox data centers. However, DropBox is still keeping some data in AWS particular in different geographies.
  - Web site hosting company GoDaddy has extended their capabilities similar to other service providers by adding an [OpenStack powered cloud service](#). This is a trend that others such as [Bluehost](#) (where my sites are located on a DPS) have evolved from simple shared hosting, to dedicated private servers (DPS), virtual private servers (VPS) along with other cloud related services. Think of a VPS as a virtual machine or cloud instance. Likewise some of the cloud service providers such as AWS are moving into dedicated private servers.
  - Following up from the February 2016 Server StorageIO Update Newsletter that included Google's message to disk vendors: [Make hard drives like this, even if they lose more data](#) and Google [Disk for Data Centers White Paper](#) ([PDF Here](#)), read about [Google experiences](#) SSD.
- In [this PDF white paper](#) that was presented at the recent [Usenix 2016 conference](#) outlining Google's experiences with different types (SLC, MLC, eMLC) and generations of NAND flash SSD media across various vendors and generations. Some of the takeaways include that context matters when looking at SSD metrics on endurance, durability and errors. While some in the industry focus on Unrecoverable Bit Error Rates (UBER), there needs to be awareness around Raw Bit Error Rate (RBER) among other metrics and usage. [Read more about Google's experiences here](#).
- Hewlett Packard Enterprise (HPE) announced Hyper-Converged systems [Via Marketwired](#) including HC 380 based on ProLiant DL380 technology providing all in one (AiO) converged compute, storage and virtualization software with simplified management. The HC 380 is targeted for mid-market aka small medium business (SMB), remote office branch office (ROBO) and workgroups. HPE also announced all flash array (AFA) enhancements for 3PAR storage ([Via Businesswire](#)).
  - [Microsoft has announced](#) that it will be releasing a version of its SQL Server database on Linux. What this means is that as well as being able to use SQL Server and associated tools on Windows and Azure platforms, you will also in the not so distant future be able to deploy on Linux. By making SQL Server available on Linux opens up some interesting scenarios and solution alternatives vs. Oracle along with MySQL and associated MySQL derivatives, as well as NoSQL offerings ([Read more about NoSQL Databases here](#)). [Read more about Microsoft's SQL Server for Linux here](#).

In addition to SQL Server for Linux, Microsoft has also announced enhancements for easing [docker container migrations](#) to clouds. In other Microsoft activity, they announced enhancements to [Storsimple](#) and Azure. Keep an eye out for Windows Server 2016 Tech Preview 5 (e.g. TP5) which will be the next release of the upcoming new version of the popular operating systems.

- MSDI, Rockland IT Solutions and Source Support Services Merge to Form [Congruity](#) with CEO Todd Gresham, along with Mike Stolz and Mark Shirman (formerly of Glasshouse) among others you may know.
- [Via Businesswire](#): PrimaryIO announces server-based flash acceleration for VMware systems, while Riverbed extends Remote Office Branch Office (ROBO) cloud connectivity [Via Businesswire](#).
- [Via Computerworld](#): Samsung ships 12Gbs SAS 15TB 2.5" 3D NAND Flash SSD (Hey Samsung, send me a device or two and will give them a test drive in the Server StorageIO lab ;). Not to be out done, [Via Forbes](#): Seagate announces fast SSD card, as well as for the High Performance Compute (HPC) and Super Compute (SC) markets, [Via HPCwire](#): Seagate Sets Sights on Broader HPC Market with their scale-out clustered Lustre based systems.
- [Servers Direct](#) is now offering the HGST 4U x 60 drive enclosures while [Via PRnewswire](#): SMIC announces RRAM partnership.
- ATTO Technology [has enhanced](#) their RAID Arrays Behind FibreBridge 7500, while Oracle announced mainframe virtual tape library (VTL) cloud support [Via Searchdatabackup](#). In other updates for this month, VMware has released and made generally available (GA) [VSAN 6.2](#) and [Via Businesswire](#): Wave and Centeris Launch Transpacific Broadband Data and Fiber Hub.

The above is a sampling of some of the various industry news, announcements and updates for this March. Watch for more news and updates in April coming out of [NAB](#) and [OpenStack Summit](#) among other events.

View other recent [news and industry trends here](#).

## StorageIO Commentary in the news

View more Server, Storage and I/O hardware as well as software trends comments [here](#)

## Vendors you may not have heard of

Various vendors (and service providers) you may not know or heard about recently.

- [Continuum](#) - R1Soft Server Backup Manager
- [HyperIO](#) - HiMon and HyperIO server storage I/O monitoring software tools
- [Runcast](#) - VMware automation and management software tools
- [Opvigor](#) - VMware health management software tools
- [Asigra](#) - Cloud, Managed Service and distributed backup/data protection tools
- [Datera](#) - Software defined storage management startup
- [E8 Storage](#) - Software Defined Stealth Storage Startup
- [Venyu](#) - Cloud and data center data protection tools
- [StorPool](#) - Distributed software defined storage management tools
- [ExaBlox](#) - Scale out storage solutions

Check out more vendors you may know, have heard of, or that are perhaps new on the [Server StorageIO Industry Links page here](#) (over 1,000 entries and growing).

## StorageIO Tips and Articles

Recent Server StorageIO articles appearing in different venues include:

- **InfoStor:** [Data Protection Gaps, Some Good, Some Not So Good](#)

- **Virtual Blocks (VMware Blogs):** [Part III EVO:RAIL – When And Where To Use It?](#)
- **InfoStor:** [Object Storage Is In Your Future](#)

Check out [these resources and links](#) technology, techniques, trends as well as tools. View more [tips and articles here](#)

## StorageIO Videos and Podcasts

Check out this video (Via YouTube) of a Google Data Center tour.



In the IoT and IoD era of little and big data, how about this video I did with my Phantom DJI drone and a HD GoPro (e.g. 1K vs. 2.7K or 4K in newer cameras). This generates about a GByte of raw data per 10 minutes of flight, which then means another GB copies to a staging area, then to a protected copies, then production versions and so forth. Thus a 2 minute clip in 1080p resulted in plenty of storage including produced, uploaded versions along with backup copies in archives spread across YouTube, Dropbox and elsewhere.



StorageIO podcasts are also available via iTunes and at [StorageIO.tv](#)

## StorageIO Webinars and Industry Events

EMCworld (Las Vegas) May 2-4, 2016

[Interop](#) (Las Vegas) May 4-6 2016

TBA - April 27, 2016 webinar

NAB (Las Vegas) April 19-20, 2016

Backup with Brains - March 31, 2016 [free webinar](#) (1PM ET)

See more webinars and other activities on the [Server StorageIO Events page here](#).

## From StorageIO Labs



## Research, Reviews and Reports

### NVMe is in your future, resources to start preparing today for tomorrow

NVM and NVMe corner ([Via and Compliments of Micron.com](#))

- Why NVMe Should Be in Your Data Center - Preparing for Tomorrow's Data Center Today ([StorageIO Guest Post Via Micron.com](#))
- [Why NVMe Should Be in Your Data Center](#)
- Why [Micron NVMe SSDs](#)
- New Path to [Storage I/O Performance and Resiliency With NVMe](#)
- How [NVMe Will Revolutionize Server and Storage I/O](#)
- How to [Prepare for the NVMe](#) Server Storage I/O Wave

View more NVMe related items at microsite [thenvmeplace.com](http://thenvmeplace.com).

[Read more in this Server StorageIO industry Trends Perspective white paper and lab review.](#)

## Server StorageIO Recommended Reading List

The following are various recommended reading including books, blogs and videos. If you have not done so recently, also check out the Intel Recommended Reading List ([here](#)) where you will also find a couple of mine as well as books from others.

For this months recommended reading, it's a blog site. If you have not visited Eric Siebert's ([@ericsiebert](#)) site [vSphere-land](#) and its companion resources pages including top blogs, do so now.

Granted there is a heavy [VMware](#) server virtualization focus, however there is a good balance of other data infrastructure topics spanning servers, storage, I/O networking, data protection and more.

## Server StorageIO Industry Resources and Links

Check out these useful links and pages:

[storageio.com/links](http://storageio.com/links) - Various industry links (over 1,000 with more to be added soon)

[objectstoragecenter.com](http://objectstoragecenter.com) - Cloud and object storage topics, tips and news items

[dataprotectiondiaries.com](http://dataprotectiondiaries.com) - Various data protection items and topics

[thenvmeplace.com](http://thenvmeplace.com) - Focus on NVMe trends and technologies

[thessdplace.com](http://thessdplace.com) - NVM and Solid State Disk topics, tips and techniques

[storageio.com/performance.com](http://storageio.com/performance.com) - Various server, storage and I/O performance and benchmarking

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