Highlights

Data Security Protection Layers, Risk Mitigation and Controls

Protection Layer	Risks Mitigated	Data Security Controls
Cloud SaaS/Service	**Lower levels (minus IaaS) +:** • Cloud/SaaS privileged access • Cloud environment compromise or failure • Remote legal access	**Encryption at Cloud SaaS/Service +** • **BYOK to cloud** • **Cloud encryption key management**
Application/ Database	**Lower levels +:** • Inside DB: DB Admins, DB Users • Inside App: Application Admins and Users • External compromise of these accounts	• **Application encryption** • **Database column encryption** • **TDE Key Management** • **Tokenization** • **Data masking** • **Database Access Monitoring**
File System / Volume	**Lower level + system level threats:** • External threats/breach of system/ privileged accounts • Enterprise Privileged User/Insider • Cloud IaaS privileged user/breach	• **File level encryption and access controls** • **Privileged user management**
Disk or other Media	**Physical device level:** • Loss, theft or improper retirement of physical media	• **Full disk encryption** • **SAN/Storage array/other KMIP key management** • **Tape encryption** • **VM encryption**

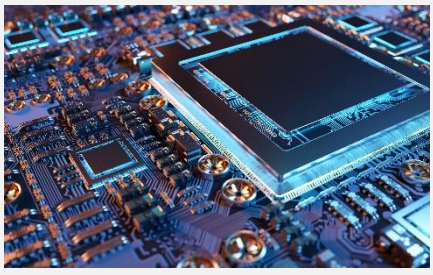
NAB is Back!

The first in-person NAB Show since 2019 was quite a success this past weekend in Las Vegas, NV. 52,468 attendees visited the Las Vegas Convention center to see the newest advancements in media, film, software, storage and ancillary industries. Cloud integration stole the show, with the entertainment and media industries needing to share and upload 4K/8K content taking center stage, alongside media archiving for data management and storage.

Quantum's new F2100 storage appliance took center stage among the storage players, with its 2U 24NVMe SSD's with dual-controller capabilities. Additionally, Quantum announced the H4000 storage appliance at the tradeshow, coupling CatDV MAM and StorNext 7 on the same platform. Quantum's new appliances, as well as their new integrations with Nvidia and CatDV to enhance video content make them a major player in the data intensive media and production spaces. The speed and parallel processing power of the NVMe transfer protocol should help production companies speed up their workflows.

Liqid composable infrastructure was another highlight of the event, and it makes them an emerging player in the software-defined storage space. They claim that their storage solutions are the fastest NVMe platform on the market today, and certainly their adaptive GPU platform is valuable in maximizing resource utilization. Meanwhile, Western Digital is still focused on their external G-Drive and G-Raid storage solutions, which offer portable field editing and backup storage solutions for video producers and camera editors. Open Drive's Atlas Core solution, Seagate Exos CORVAULT hardware, and Spectra Logic with Spectra Vail's cloud management software are notable cloud computing and storage products recognized with NAB awards for 2022.

Chip Shortage Hurting Auto Makers, Driving Car Prices Up



Supply constraints cost the global automotive industry as much as $210B in 2021, and is likely to hurt automakers in 2022 as well. According to a survey conducted by Cox Automotive in March of 2022, "...roughly 45 percent of consumers would postpone their vehicle purchase as the chip shortage drags on." New vehicle prices, which increased only a couple of percentage points in 2020, have increased 12.55% year-over-year from March 2021 to March 2022. Many vehicle buyers are opting to delay their purchase as opposed to paying prices that are closer to or above MSRP, as automaker production and dealership vehicle inventories have been constrained by the chip shortage. If you can get a car, staples like access to music are now a luxury item.

Consumer automotive price sensitivity seems to be increasing the attractiveness and price of used vehicles. Coinciding with the COVID-19 pandemic, the price of used vehicles have increased 48% from March 2020 to March 2022. While the increase in used vehicle prices started in June of 2020, the increase in new vehicle prices didn't start until April of 2021. There are several possible explanations for this. It's possible that used vehicles became a more attractive purchase option then new vehicles with the economic and fiscal insecurity that surrounded the COVID-19 pandemic (ie. consumers were extremely price sensitive). It's also possible that new car inventories were sufficient at the start of the pandemic to absorb the reduction in vehicle manufacturing, delaying the increase in vehicle prices to 2021. One bit of good news is while used car prices are still quite high, they have leveled off and dropped slightly from January 2022 to March 2022 by 4.04%. In order to further lower new and used vehicle prices, the chip shortage likely will need to be ameliorated.

While clearly there is a chip shortage today, the end of the chip shortage has been a bit of a moving target. In the beginning of 2021, car manufacturers such as GM (who saw improvements in their chip supply chains at the end of 2021) predicted that chip supplies would continue to grow, and that the chip shortage would end by the middle of 2022. But now automakers and chip manufacturers alike are predicting that the chip shortage will last into 2023. With carmakers adding more and more chips to vehicles, alongside production bottlenecks due to the Russian Ukrainian war, the shortage does not look to be getting better any time soon.

Qumulo Cloud Now Offers Free Cloud Migration

One of the standouts from NAB 2022 is Qumulo. Qumulo offers cloud migration and a top shelf file management platform designed to scale to their clients needs - from 20 GB to 20 PB. While cloud computing has been around for over a decade, most companies still have not adopted cloud computing, and the cloud sector is expected to grow by 20.7% CAGR from 2020 to 2025. To take advantage of this opportunity for growth, Qumulo unveiled Cumulo Cloud Now - its 1PB free cloud program to accelerate cloud adoption. This free trial period allows companies to test their projected data workloads in a real-time environment. Qumolo's platform is compatible with the three most supported public clouds (AWS, Microsoft Azure, Google Cloud) and allows users to test different workloads without paying for licensing and cloud infrastructure costs, so it's a great opportunity for cloud migration.

One of the benefits of working with Qumulo is that you can seamlessly switch clouds without having to refactor or rearchitect applications. Additionally, their platform is multi-protocol, meaning that it can work with Windows, Apple and Linux users. Finally, having all of your data in the cloud makes it much easier to backup your data and also minimizes the attack surface that ransomware hackers target.
Another key asset of Qumulo's platform is Qumulo Recover Q. Qumulo Recover Q is a backup, disaster recovery service that establishes a backup of clients data in a secondary data site in the cloud. Storing data in a secondary cloud data site is essential in order to ensure that your data stays safe; both from natural disasters which can compromise physical hardware, or cyber attacks where your data may be held for ransom. While it is difficult to find cost estimates for downtime due to malware, the average ransom demand according to EMISOFT is $84,000, and EMISOFT estimates the total cost (of downtime and ransom payments) to be between $42.4B and $169.8B dollars.

Qumulo Cloud Now is a great cloud migration offering that was one of the bright spots of NAB 2022. For more information go to qumulo.com.

KIOXIA America Showcases Breakthrough Flash Storage Solutions at Dell Technologies World

KIOXIA PCIe 5.0, E3.S Form Factor, XL-FLASH and Value SAS SSDs to Take Center Stage

At Dell Technologies World 2022, KIOXIA America, Inc. and Dell jointly conducted a session titled, "KIOXIA and Dell: Together on the Forefront of Storage Technology. 2022 – the Year of Breakthrough Storage Technologies." This session focused on the bevy of new technologies in the SSD realm that have already been seen this year, including exclusives that were unveiled at the event. Highlights included 24G SAS (SAS-4) bringing unprecedented speeds to SAS-equipped architectures, PCIe 5.0 technology doubling the performance of PCIe 4.0, and new form factors enabling higher performance and density than ever before. VP of Marketing and Product Management at KYOXIA Neville Ichhaporia was featured in a can't miss interview on Dell TV that you can find here.

At the convention, Kioxia demonstrated the benefits of its PCIe 4.0 SSD technology in a variety of simulated real-world server and storage configurations and workload combinations.

These included:

- CD7 EDSFF E3.S Data Center SSDs running MongoDB on Dell equipment – in one of the first public demonstrations of an E3.S drive. EDSFF E3 specifications were developed by leading

companies that include Dell and KIOXIA to optimize SSD designs for capacity, power, performance, and thermal/cooling – and to replace legacy 2.5” form factor SSDs.

- FL6 Series Enterprise NVMe™ SCM SSDs being put through their paces in a Dell PowerEdge server running Aerospike. The dual-port and PCIe 4.0-compliant KIOXIA FL6 Series SSDs bridge the gap between DRAM and TLC-based drives, making them well-suited to latency-sensitive use cases such as caching layer, tiering and write logging.
- RM6 Series 12Gb/s SAS SSDs running SED - SEKM encryption and an OLTP database on a Dell PowerEdge R740 server. KIOXIA RM6 drives deliver higher performance and reliability and are targeted to replace SATA SSDs.
- CM6 Series Enterprise NVMe SSDs running VMware® vSAN™ workloads on Dell PowerEdge servers. CM6 drives are designed for enterprise applications and use cases – including high-performance computing, artificial intelligence, caching layer, financial trading, and data analytics.

Additional demos and more information on the entire breadth of KIOXIA products and solutions can be found in the company’s 3D virtual booth.

KIOXIA has been a Dell strategic supplier for two decades and a Diamond-level Dell Technologies World sponsor for multiple years. KIOXIA products can be found in numerous Dell solutions for laptop/mobile computing, desktop, data center, and enterprise servers/storage.

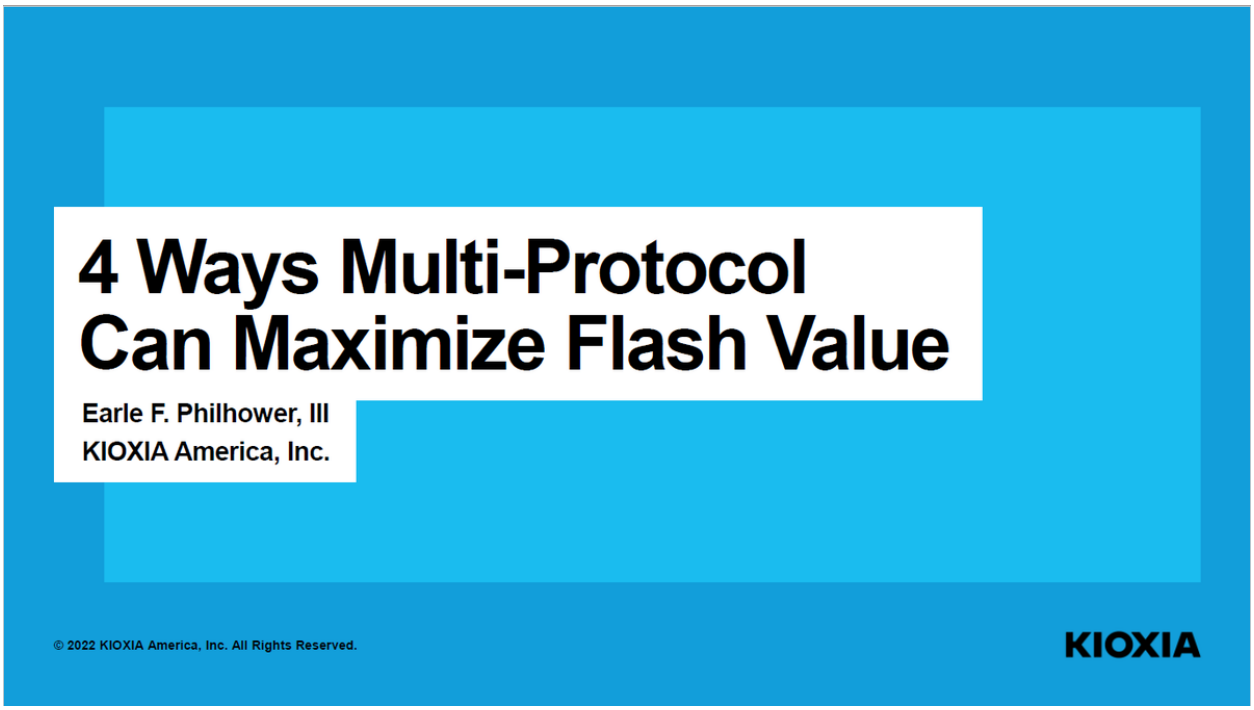
For more information, please visit www.kioxia.com

KIOXIA Webinar Series

Wednesday, March 30, KIOXIA presented “Large-Scale Data Center Revolution for Flash Storage.” Large-scale data centers present unique challenges for the optimal use of flash storage. Problems such as "noisy neighbors", data placement, and the widely varying latency requirements of different classes of applications are incredibly difficult to solve simultaneously with conventional flash architectures. Software-enabled flash (SEF) provides a means to effectively address the challenges of cloud data center. Find out how KIOXIA is approaching these issues with its market-leading approach to SEF by viewing the webinar here and the slidedeck is available here.

Tuesday, February 8, KIOXIA provided an analysis of “4 Ways Multi-Protocol Can Maximize Flash Value.” The webinar video is available to view here and the slidedeck is available here.
Each webinar stands alone and collectively provides an overview of the innovation, direction, and leadership KIOXIA provides in this enterprise storage space.

November 17, KIOXIA presented the second webinar in their four-part webinar series, “The Next Flash Revolution at Scale: Open Source Software + Software-Enabled Technology.” The video is available to view and a copy of the slidedeck is available here. KIOXIA webinar Part 1, “Why Flash Memory At Scale Should be Software-Defined” is available to view here along a copy of the slidedeck here.



Upcoming Conferences

May 10-13	Black Hat Asia, Singapore
May 11-12	AI & Big Data Expo, Santa Clara
May 11-12	Cyber Security & Cloud Congress, Santa Clara
May 18-19	Gartner Digital Workplace Summit, London
June 6-9	RSA Conference, San Francisco & Virtual
June 7-10	Women in Tech Global Conference 2022, TBA & Virtual
June 12-16	Cisco Live, Vegas
June 14-16	Digital Enterprise Show, Malaga
June 15	Cloud Security Summit, Virtual
June 21-22	Gartner Security & Risk Management Summit, Sydney
June 21-22	Gartner Digital Workplace Summit, San Diego
June 29- July1	Mobile World Congress, Shanghai
July 19-20	Cyber Solutions Summit & Expo, Virtual
August 2-4	Flash Memory Summit, Santa Clara
August 6-11	Black Hat USA, Vegas
August 11-14	DEF CON 30, Vegas
September 13-14	CISO Forum, Virtual

September 19-20	Industry of Things World, Berlin
September 28-29	IoT World, Santa Clara
October 5-6	Evolve, Vegas
October 24-27	ICS Cybersecurity Conference, Hybrid/Virtual
November 16	San Diego Cybersecurity Conference, Hybrid
November 16	Threat Hunting Summit, Virtual
November 18-19	Data Strategy & Insights (Forrester Research), Virtual
December 1-2	AI & Big Data Expo Global, London
December 6	Security Operations Summit, Virtual