

Empowering today's students to be tomorrow's innovators



Introduction

The digital transformation has become a reality; it is changing the educational institutions' approach to teaching and enhancing the learning environments to offer better support to students, professors and staff. Today, immediate access to information, real time communication, and on-line collaboration have become a must for the 21st Century classroom. Educational organizations – from primary schools, to colleges and universities – also face fierce competition from one to another. They must promote the use of new technologies to attract the best students, faculty and researchers, in order to develop and grow their reputation and prestige.

Challenges

Rich learning environments are generating an exponential and unpredictable amount of different types of data – courses, tests, results, research, images, movies, unstructured data, just to name a few - that need to be properly protected and stored. In addition to those, educational organizations process sensitive information about their staff and students like financial data, medical and personal records, etc. All that information is subject to specific local compliance requirements: the Family Educational Rights and Privacy Act, The Children's Internet Protection Act, the Gramm-Leach-Bliley Act as well the Notifiable Data Breach Scheme in Australia, and GDPR in EMEA.

Traditionally, educational institutions have provided devices to their students, faculty and staff that were owned by the respective organization or corporation. However, the consumerization of IT has forced schools and universities to embrace, implement and support "Bring Your Own Device" programs. This lets users bring their personal devices - laptops, notebooks, smartphones, tablets, phablets - for learning and research purposes. While convenient, this approach can weaken an organization's IT security posture and puts data protection and security at the forefront of IT teams' priorities: educational organizations possess and exponentially generate a huge amount of personal, sensitive and valuable data that cybercriminals are specifically seeking.

With so many users and different types of devices connecting to the school's network, the chances of being hit by a ransomware attack are ever increasing. According to a report published by Gemalto in September 2017¹, "the education sector had experienced 118 breaches (13% of all breaches) that impacted a total of 32 million records. The jump in breaches from the previous six months was significant at 103%. But the rise in the number of records involved was monumental at 4,957%, increasing from 641,000 records."

Highlights

- Comprehensive, Unified Data Management Platform
- Data protection and scale-out storage
- Complete protection for virtual and physical servers
- Comprehensive data protection on-premises and DRaaS
- Primary and secondary Storage

"With StorageCraft's technology we've achieved a new level of data protection, scalability, and peace of mind. We can't recreate the data our researchers generate, and it needs to be stored in perpetuity, so data protection is absolutely critical for us. Not only are we protecting our VMware infrastructure with Veeam and StorageCraft, we have been using StorageCraft to protect departments' primary research data."

Brandon Savage
MIT's Plasma Science and Fusion Center*

¹ [Breach Level Index 2017 H1 Report, powered by Gemalto](#)

* StorageCraft OneXafe customers: <https://www.storagecraft.com/learning-center>

As technology revolutionizes the classroom experience, many educational institutions have turned to virtualization solutions to reduce the overall costs and improve operational efficiencies. They also seek to increase centralized computing and applications access for students, faculty, and administrators. While virtualization offers many benefits (power consumption reduction, secure remote access from any devices, extended life cycle of thin clients, just to name a few), it can drastically increase the challenges associated with implementing a shared storage infrastructure.

Server virtualization creates three primary challenges to the storage infrastructure: the I/O blender effect of virtual machines, rapid storage growth of virtual machines and associated data and high availability requirements. In addition, it requires the ability to recover systems quickly by using backup copies. Most deployed storage solutions in the education sector are based on legacy scale-up architecture with limited scalability. Once the scalability limits are reached, the only available options are to either add another storage island with separate management or undergo the challenging task of a forklift upgrade and replace the existing unit. The consequences are significant downtime and an increase in the total cost of ownership, which is the antithesis of virtualization in the first place.

All of these issues are creating complex challenges for the operations and infrastructure administrators to solve when it comes down to storage, from scalability, management, costs, data availability and protection.

Tom Randazzo , senior systems administrator at Santa Clara University*, explained: *"I was very concerned that we were going to buy a product that I would sell to my manager, my director, my CIO, that we were going to bring in, it is going to cost \$150,000 and 9 months down the road, oops, we undersized it. Tomorrow you don't know what is coming down the road".*

Lee Berkowitz, IT and network manager at MIT's Plasma Science and Fusion Center* states: *"Our scientists and researchers rely on their critical research data and with our growing capacity needs, drive failures put our data at risk if we were to lose multiple RAID drives. We knew a traditional RAID-based solution would not meet our needs, and we knew we needed a simple and cost-effective solution but didn't want to compromise on the enterprise features we required. Data protection is also very key to us given the importance of our research."*

"We chose OneXafe to solve our data storage and management challenges because of its superior functionality, outperforming Unitrends or Infracore. In addition, it offered nearly twice the available storage compared to Veeam and Exagrid—at much better economics. OneXafe is incredibly easy to use and the technical support has been stellar. As a systems administrator who's running hard and fast with few resources, this really matters."

- Don Remy, Systems Administrator, Nebo School District

* StorageCraft OneXafe customers: <https://www.storagecraft.com/learning-center>

Data Protection Features

- SLA-based data protection
- Host-based VM protection
- Agent-based protection
- Instant recovery with VirtualBoot (milliseconds)
- App-consistant restore
- Hardware independant recovery
- Modern, optimized console experience
- Unified data protection lifecycle management
- Enhanced inflight data verification
- Analytical reports
- Retained metadata for improved recovery

Storage Features

- Distributed file system
- Scale-out object-based storage
- All-flash (performance) or HDDbased (capacity)
- Encryption-at-rest
- Inline variable length deduplication and compression

DRaaS Features

- One-click failover to StorageCraft Cloud Services
- Purpose-built DR cloud solution
- Replication and DR as a Service
- Orchestrated on-cloud virtualization
- Highly customizable
- Seed/BMR drives & web download
- High availability - 99.999% uptime
- Self-service, one-stop portal

StorageCraft solutions

Data protection can't be an afterthought: it is at the core of the digital transformation that education institutions around the world are facing. This can prove to be a complex equation to solve, as educational organizations face notoriously constrained budgets and resources.

OneXafe scale-out converged storage

OneXafe is a converged data platform that unifies enterprise-class data protection with scale-out storage in a highly scalable and configurable solution to satisfy the demands of organizations of all sizes. For businesses looking to protect and manage their data in heterogeneous environments, OneXafe eliminates complexity and provides flexible deployment to accommodate the needs of differing workloads, all while significantly reducing costs associated with primary and secondary storage as well as data protection software. By integrating data protection and scale-out storage from the ground up, OneXafe eliminates much of the complexity related to managing and protecting data. It removes the need for siloed solutions, minimizes costs incurred from standalone hardware and software solutions, and eliminates redundancy in management.

The OneXafe 5410 and 4400 series appliances come with built-in enterprise-grade features such as continuous data protection, inline variable-length deduplication and compression, and multi-site disaster recovery for an entire virtualization infrastructure. With most storage management tasks automated, OneSystem eliminates the need for storage expertise to install and operate.

Scale-out:

- **Non-disruptively scale performance** by simply adding additional OneXafe into a cluster with zero configuration
- **Add capacity granularly** and have the aggregate capacity quickly and easily available for applications and users

Dynamic and cost effective growth:

- **Grow capacity on demand** with no upfront investments, scaling from a few TBs to hundreds of TBs of raw flash or multiple PBs of hard-drive storage capacity
- **Bring your own drives** - HDDs and supported SSD - that can be mix-and-match (SATA, SAS) and different with different capacity within the same OneXafe and within an OneXafe Ring, without paying a storage vendor premium
- **Provisioning of additional capacity is nearly instantaneous** since there is no Redundant Array of Independent Disks. (RAID0, volumes, or Logical Unit Number (LUN) to configure
- **Organizations can save up to 50%** compared to legacy SAN or NAS solutions

Continuous Data Protection

- **Advanced Continuous Data Protection (CDP)** automatically captures file writes into with zero configurations to the system
- **Quick online recovery of previous versions of files** from space-optimized snapshots without time-consuming restores from backups in the event of a ransomware attack or other type of disasters
- **Encryption at rest to meet internal governance** and specific industry compliance requirements

Ease of use and Management Simplicity

- OneSystem is an innovative, multi-tenant, cloud based or on premise management service
- Enables storage admins to manage their on-premises OneXafe from any browser
- Enables a simplified storage management workflow that is visual, point-and-click, drag-and-drop, and directly actionable
- Failed disks (or OneXafe appliance) can simply be removed and replaced with no disruption to data services
- OneXafe can easily be installed in less than 15 minutes--provisioned and available to serve data

Inline De-duplication

- Inline de-duplication is automatically performed across the global file system with no configuration questions to answer or no management overhead
- Achieve data reduction up to 20X resulting in a smaller storage capacity footprint

According to Narcotics Anonymous, the definition of insanity is “doing the same thing over and over and expecting a different result.” If schools, colleges and storage administrators at universities try to solve the challenges associated with managing this ever-growing amount of data with the same technology they have been using, insanity may certainly be in their future because things just won’t get better. OneXafe scale-out NAS Storage offers innovative technology that is designed for the exponential growth of data challenges IT faces today, not those it faced ten, twenty or thirty years ago.

Data Protection and DRaaS

No two educational institutions have the same IT environments or requirements, but one thing they have in common is the need to protect themselves from unplanned downtime, whether caused by everyday disruptions or major disasters. With demands for 24/7 availability and data growth skyrocketing, the ability to quickly recover its mission critical systems and resume normal business operations is crucial. Educational organizations need complete confidence that their entire IT environment - virtual or physical - is fully protected, and can be reliably recovered in minutes. Since you never know what resources will be available to you in a disaster, the flexibility to be able to recover anywhere, anytime, every single time is mission-critical.

OneXafe is a comprehensive data management and protection solution; it integrates scale-out storage with enterprise-class data protection.

Back up: capture everything—systems, applications, configuration settings, services, data—so you don’t risk losing irreplaceable data, custom applications, or your operating system.

Scheduling: run backups regularly, even while people work (they won’t even notice), and you’ll never risk losing more than a few minutes of data.

Testing: run easy-to-execute tests on your backup images, and you’ll be sure your backups will work when a disaster strikes.

Recovery: recover a file or a folder or restore a whole system fast, to the same or different hardware, and avoid downtime and its costs.

Migration: move a system to a new machine without losing uptime, and do so regardless of your hardware choice.

Cloud Services: store backups remotely, recover data, virtualize your machines and re-create your network in our cloud purpose-built for disaster recovery

Conclusion

Both scalability and data protection are mission-critical for today’s education organizations, which are expected to rapidly react to ever-accelerating pace of information-creation and consumption of storage by students and researchers. Schools, colleges and universities need instant recovery from failure, state-of-the-art backup and recovery and protection from new threats, such as ransomware. But they also need storage that is feature-rich, easy to manage, and affordable, so they can prioritize investment in other areas and deliver first-class education to their students or offer better research facilities to their faculty. StorageCraft is the vendor of choice for the 21st century classroom to safeguard schools, colleges and universities data by combining the best in reliable data protection with infinite scale-out storage.

For more information, visit www.storagecraft.com