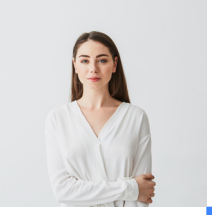
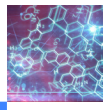
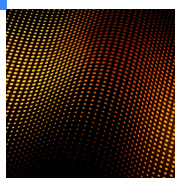
Guide

Meeting Education Technology Challenges with Cloud Volumes ONTAP

NetApp®







Introduction

The education industry has been transformed by the cloud, from student email and mission-critical business systems, to online distance learning platforms and student information systems.

In this guide, we'll examine the special challenges of cloud computing in education, including real-life success stories of education customers who have used NetApp's Cloud Volumes ONTAP to achieve huge benefits for themselves and for the people they help learn.

NetApp

Table of Contents

How the Cloud Is Solving Challenges in Education

The scalability and elasticity of the cloud's IaaS and SaaS service models are a perfect fit for addressing the trends and challenges in higher education as we head into the 2020s.

Learning institutions foster a unique culture of collaboration across faculty, students, and administrative staff, often in the face geographically-dispersed campuses. Today, nearly 70% of North American institutions of higher education have moved, or are in the process of moving, their admin systems to the cloud. About 50% of those institutions have adopted cloud-based collaboration systems to enhance the sharing of information across campus.

IaaS (Infrastructure as a Service)

The cloud offers infrastructure resources such as compute and storage that traditionally had to be bought, owned, and controlled by the education institution. The cloud offers those things in a pay-as-you-go model.

SaaS (Software as a Service)

Instead of providing their own software solutions for systems used to run their operations, educational institutions and businesses can rely on those offered by the public cloud providers.

NetApp

What Makes Educational Technology So Important?

1 | INSTANT ACCESS AND COLLABORATION

2 | MASSIVE DATA AMOUNTS

3 | MOOCS AND ELEARNING

4 | FASTER DEVELOPMENT

1 | STUDENT COLLABORATION AND INTERCONNECTIVITY

Demographically, students are one of the most highly-networked and connected populations and they expect to use the technology they bring with them to class seamlessly across their school's IT backbone. This helps them communicate, access content, and collaborate. In most cases, the cloud is making it possible to meet those expectations. Cloud services allow universities to cost-effectively upgrade communication and learning systems without massive capital investments in infrastructure. In the US, such savings are crucial in the face of shrinking government support for institutions of higher learning.

2 | HUGE DATA REPOSITORIES

Like many other sectors, there are different approaches to educational technology taking place. Higher education faces the challenge of managing and gaining insight from massive and growing quantities of data—from student and faculty information to sophisticated research analytics. Furthermore, this data requires high levels of security and governance in order to meet both privacy and intellectual property requirements. Cloud deployments—whether public, private, hybrid, or community—have proven highly effective in meeting these needs.

NetApp

3 MOOCS

Yet another example is the support of Massive Open Online Courses (MOOCs), which first appeared on the higher education scene in 2012, with a modest worldwide enrollment of 1.5 million. By 2016, through leveraging cloud-based infrastructures, global MOOC enrollment figures had reached 58 million, with courses being offered by the world's foremost universities such as Stanford, Harvard, and Columbia.

4 FASTER DEVELOPMENT

Last but certainly not least, higher education has become an increasingly competitive market. In order to remain attractive to faculty and students, institutions of higher learning are under pressure to rapidly and continuously launch new courses and introduce innovative learning methods and materials. As in the software world, cloud-enabled DevOps has become critical in the education sector for maintaining agility and a competitive edge. Being perceived at the cutting edge is also important for hiring and retaining top-tier IT personnel with cloud expertise.

NetApp

Cloud Volumes ONTAP Is Enhancing Educational Technology

NetApp Cloud Volumes ONTAP is a customer-deployed data storage management platform that runs on and enhances the AWS and Azure public clouds. Cloud Volumes ONTAP helps NetApp's education customers efficiently lift and shift workloads to the cloud, cost effectively manage storage and secondary backups, and gain single-pane visibility across even the most complex infrastructures.

Key Cloud Volumes ONTAP Features

NetApp Cloud Volumes ONTAP is a customer-deployed data storage management platform that runs on and enhances the AWS and Azure public clouds. Cloud Volumes ONTAP helps NetApp's education customers efficiently lift and shift workloads to the cloud, cost effectively manage storage and secondary backups, and gain single-pane visibility across even the most complex infrastructures.

Data Migration and Data Replication with SnapMirror® and Cloud Sync. Cloud Sync provides rapid and secure file transfers between diverse source and target formats such as on-premises NFS or CIFS file shares, Amazon S3, Azure Blob, NetApp StorageGRID®, and Webscale appliances. With SnapMirror, existing NetApp storage users get fast and incremental cross-platform data replication for backup, disaster recovery, and overall data mobility. After an initial baseline copy, only the changes made to the source data since the last synchronization are sent to the destination.

Data Protection with NetApp Snapshot™ technology for creating instantaneous point-in-time copies of file systems. Create up to 255 snapshots per volume with impacting performance and only consuming a minimal amount of storage space.

Cost savings with built-in storage efficiencies: In-line deduplication and compression for up to 30:1 data-reduction ratios, along with thin provisioning and automated storage tiering between object and block storage on AWS and Azure.

Data Cloning with FlexClone® allows you to instantly clone data volumes of any size to writable destination volumes without copying the source data. New storage is allocated only for data changes made to the clone. This feature, which leverages the Snapshot technology, is particularly useful for creating temporary development and test environments.

Increased manageability and orchestration with OnCommand® Cloud Manager. This single-pane data storage management control panel provides visibility across complex infrastructures. Also accessible via API calls.

Hybrid Cloud & Multicloud operability makes data mobility and synchronization seamless and in keeping with the NetApp Data Fabric philosophy.

Kubernetes persistent volume provisioning using Trident to automatically answer provision volume claims with Cloud Volumes ONTAP storage on AWS or Azure.

NetApp

Education Success Stories with Cloud Volumes ONTAP

In this section we'll explore the case studies of four organizations in the education sector that are using Cloud Volumes ONTAP to gain better capabilities in the cloud.

Higher Education | Educational Software | Online Learning | Public School District

Monash University: From Cloud-First to Cloud-Only

MONASH University

Monash University is the largest university in Australia, employing and educating 80,000+ students, faculty, and administrative staff members in campus locations on four different continents. Driven by its mission "to inspire and equip students to be agents of change," Monash University has been placed within the ranks of the top 1% of universities across the globe.

Monash University had made the strategic decision to move from a cloud-first to a cloud-only strategy and adopted a multicloud model based on AWS and Azure. It was faced with the task of migrating 3,500 workloads to the cloud within a 12-month period.

Using Cloud Volumes ONTAP's lift & shift and data replication features and Cloud Manager's intuitive interface, they were able to transition to the cloud seamlessly with 1-click full-stack provisioning. They ended up reducing their AWS storage spend by more than 25% and soon realized the benefits of being able to spin up and tear down new environments quickly (in minutes rather than months) as well as retaining data indefinitely.

To find out more about Monash's digital transformation read the full case study here.

- Cloud-only strategy
- Multicloud deployment
- 3,500 workloads in the cloud
- Long-term data retention

D2L: Moving an Online Learning Platform to the Cloud

Founded in 1999, D2L (Desire to Learn) is a leading online learning platform for K-12, higher education, and corporate customers. Today, they support millions of users and thousands of schools, academic institutions, and corporations around the globe. In their highly competitive market, they stand out for their innovation, high availability, and quality.

Maintaining their on-prem infrastructure was taking up too much time and money, resources they would rather have been using to move their core business forward. That's why D2L decided to transition its platform to AWS for on-demand scalability while using Cloud Volumes ONTAP for optimized management, enhanced storage efficiency, and better data protection. Well aware of the risk in shifting petabytes of production data to the public cloud, D2L relies on Cloud Volumes ONTAP's Snapshot copies and SnapMirror replication to quickly move their data while protecting it with cost-effective backup and disaster recovery capabilities.

Cloud Volumes ONTAP's built-in storage efficiencies (compression, deduplication) have also reduced the number of files to move, with 20-60% storage space savings depending on the type of workload. Cloud Volumes ONTAP's centralized data management and operational efficiencies were also essential in making it possible for D2L to implement a scalable all-cloud platform for their large (and growing) volume of data. The resources they have freed up have been reallocated to innovation that will enhance the customer experience.

To find out more about D2L's move to the cloud read the full case study here.

- Cost-effective backup and DR
- 20-60% Reduced footprint
- Ability to scale by a factor of 10
- Increased savings
- Centralized management

Global eLearning Provider: On-Premises to the Cloud

One of the world's largest education software companies, this customer provides managed web solutions for different types of educational software, including higher education technology, for tens of thousands of educational institutions around the world. Their operations include fully- dedicated and isolated development, staging, and production environments for each customer.

A veteran NetApp customer, they decided to deploy Cloud Volumes ONTAP to migrate their on-premises systems from globally dispersed data centers to AWS. Already familiar with the benefits of SnapMirror and FlexClone, they now use these features to create highly-available NFS shares in AWS and to create a seamless data fabric for their education software applications.

Moving to Cloud Volumes ONTAP also gave them much greater control over the management of their Amazon EBS storage, with thin provisioning, data compression, and data deduplication lowering their cloud storage costs.

- Hybrid cloud architecture with seamless data fabric
- High Availability for NFS
- Greater control
- More storage savings

Major Public-School District: High Availability and Compliance

Among the ten largest K-12 public school districts in the US, this major-city school district employs more than 22,000 educators and administrators to guide a student body of nearly 200,000. Their mission is to give a world-class education to each of those students, and Cloud Volumes ONTAP is helping them make that happen.

The school district needed to refresh its infrastructure, and as part of a solution with NetApp chose to deploy Cloud Volumes ONTAP HA for AWS. This configuration makes sure they can withstand any failures or outages with no data loss. The NetApp Data Fabric vision also enabled them to form a seamless platform between their public and private cloud resources. The embedded security within NetApp technology helps protect their data both within the public and private cloud: an important compliance standard as they possess sensitive data about their employees and students, such as HIPAA-regulated health information.

With NetApp's help they were also able to use storage efficiencies to cut down on costs and to leverage the dev/test and analytics tools on AWS.

- Data management
- Security for compliance
- High availability
- Dev/test and analytics on AWS

Summary

Cloud computing in education has transformed the classroom experience. NetApp's Cloud Volumes ONTAP allows education institutions and solution providers to reap all the advantages of cloud computing in education, such as scalability and elasticity, while supporting complex infrastructures, containing storage costs, and protecting highly sensitive data from loss or corruption. This boost for educational technology benefits not just institutions and their educational technology applications, but the students they serve.

If you're ready to benefit from the same platform that is giving D2L and Monash the ability to better educate, try Cloud Volumes ONTAP free today with a 30-day trial on AWS or Azure.

Refer to the Interoperability Matrix Tool (IMT) on the NetApp Support site to validate that the exact product and feature versions described in this document are supported for your specific environment. The NetApp IMT defines the product components and versions that can be used to construct configurations that are supported by NetApp. Specific results depend on each customer's installation in accordance with published specifications.

NA-287-0218