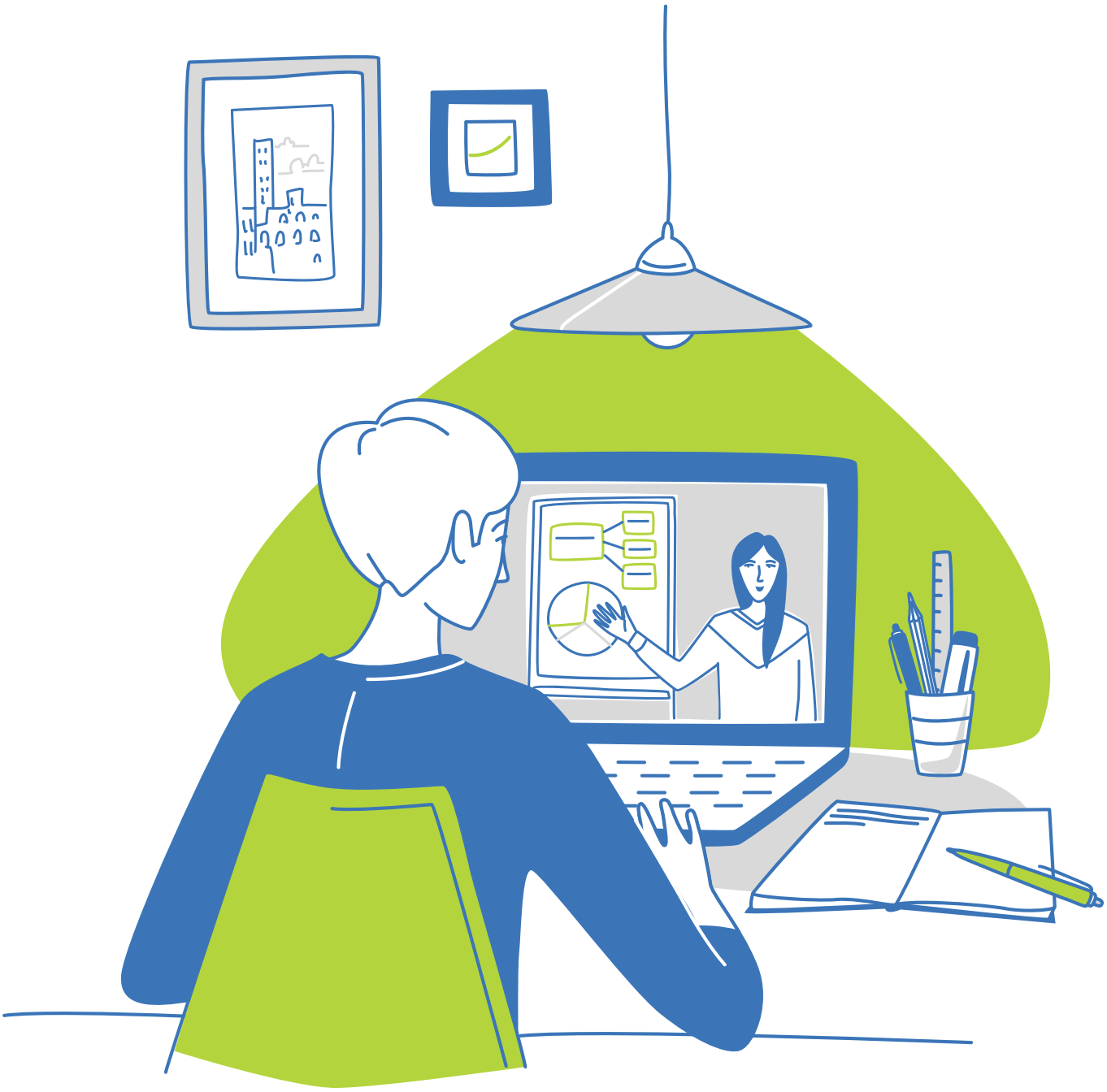


Distance Learning Demands Robust IT Infrastructure – Learn to Deliver Excellence

MARKET TRENDS REPORT

govloop NUTANIX

Introduction

Learn to deliver a seamless experience for educators, students and communities.

Before the pandemic struck in March 2020, most K-12 school administrators could not have imagined Zoom meetings, virtual school board meetings, but now trying to manage a massive remote learning environment. Higher education institutions have already implemented remote or hybrid classes, but not on the scale of suddenly accommodating their enrollment. Both K-12 school districts and universities scrambled to find ways to make it work and are continuing to do as educational institutions look to reopen.

IT and educational administrators have learned many lessons during the past year. They now understand what it takes to administer a remote learning curriculum. They also see that given the right technology and strategy; it can work well in a longer-term manner to support students and staff at all levels of education.

While everyone hopes they won't need to return to full-time remote learning, they recognize that a robust remote or hybrid learning environment brings greater access to learning in general, as well as increased flexibility, better use of teaching resources, and the ability to cater to different learning styles simultaneously.

And that's what seems to be happening; while many classes will revert to standard in-person or cohort formats at some point, some will undoubtedly remain online.

Now that administrators are able to step back to evaluate their strategies for success, more are thinking about a future with consistent distance learning practices. While jury-rigging a working remote learning structure did the job for the short term, the prospect of a permanent relationship with remote learning requires more—unquestionable performance, accessibility, and connectivity; strong security and privacy controls; and a manageable cost structure.

To learn more about how educational institutions can develop a robust infrastructure for remote learning, GovLoop teamed with Nutanix, whose enterprise hybrid cloud platform helps both K-12 and higher education institutions provide secure access to students, teachers, and administrators.

By The Numbers

16.3%

The rate at which the educational technology will grow through 2025, a **2.5% increase** from 2019.

89%

growth was seen in the average number of educational technology tools used by school districts over the previous year.

69%

of educators say they are constantly striving to innovate with technology.

23%

of college students experienced hardware or software problems serious enough to impact their ability to attend or participate in an online course at least occasionally.

63%

of educators expect to see the biggest growth in remote learning over the next three years.

54.1%

or 1.5 million students worked toward online degrees at institutions in their home state in 2019.

67%

of campus faculty have a positive attitude toward remote learning as a result of COVID-19.

53%

of chief operating officers at colleges and universities believe that remote learning will have a lasting impact. **38% believe it will be transformative.**

Distance Learning Demands a New Approach to IT

Challenge: Performance, Availability, and Security

While school districts and universities have found a way to make remote learning work during the pandemic, many have experienced problems with everything from performance and availability to security and privacy.

Performance, availability, and connectivity issues can disrupt classes and diminish the learning experience. For example:

- A synchronous online class scheduled for 10 a.m. might not start until 10:20 a.m. because of platform access issues, cutting into valuable learning time.
- Tech issues disrupt the experience of some students and teachers, while others have no such challenges.
- A large program that students must access for class, such as a computer-aided design/computer-aided manufacturing (CAD/CAM) application, takes up so much bandwidth and processing power that they can cause slowdowns.

For school districts and universities with traditional datacenters, scalability has become a major challenge with remote learning. It's not uncommon for a school to experience a 20-fold increase in traffic during periods of remote learning. This is not only a problem during pandemics, but during other areas of change and adjustment, such as the need to scale up resources at the beginning of a semester and scale them back down for less popular summer school courses and learning options.

Security and privacy concerns are the most important of all. According to a federal advisory issued in December, hackers targeting K-12 distance learning education to steal data and cause disruptions is a very real problem. Distributed Denial of Service (DDoS), ransomware, domain spoofing, and other types of cyberattacks are expected to continue through the 2020-2021 academic year, the federal report noted.

Finally, IT staff at both K-12 and higher education institutions have been inundated with the ongoing work involved in developing, managing, and maintaining distance learning environments—not to mention addressing constant tech support issues. As a result, IT staff are stretched to the breaking point.

Solution: A Hybrid Cloud Approach

To avoid being caught unprepared for whatever comes next, K-12 school districts and universities are looking for more flexible, scalable, and secure infrastructure that will allow them to adapt and scale as needed.

Embracing the cloud is an important first step. Instead of simply moving some workloads to the cloud, more educational institutions are choosing an enterprise multicloud approach based on Hyperconverged Infrastructure (HCI). HCI is a software-centric datacenter infrastructure that seamlessly integrates compute, storage, networking, and virtualization technologies to give end users a unified scale-out platform.

The HCI platform also addresses performance, availability and connectivity issues head-on. Instead of having to think ahead and buy more server or storage capacity, for example, schools can simply spin up what they need. They can also scale resources down when needs diminish and pay less as a result. Nutanix and other HCI platforms go even further, providing a host of additional tools, including integrated machine learning, native file and object storage services, integrated Database-as-a-Service (DBaaS), and low-latency application performance via data locality.

A modern HCI platform also can go a long way toward addressing security and privacy issues by incorporating key tools and functions, including:

- Data at rest encryption
- Identity and access management with role-based access controls
- Micro-segmentation
- Multi-factor authentication

To manage and monitor all of these security controls, progressive HCI solutions use a dashboard approach, which helps IT staff audit security behavior, identify potentially aberrant behavior, and recommend steps for remediation. Nutanix and others HCI platforms will even provide automated Secure Technical Implementation Guides (STIG), which schools can use to establish a security profile by which a system can be measured to ensure that it is remaining compliant.

Best Practices for HCI-Based Remote Learning

Scale as needed.

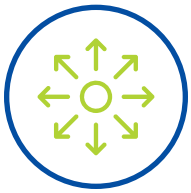
With enterprise hybrid cloud infrastructure, schools don't need to overspend to accommodate future projected growth. Instead, they can scale as needed. A solution that provides "a single pane of glass" for understanding total IT spend across both on-prem and public cloud resources is ideal. Even better yet if the solution can analyze past and present use and recommend ways to economize. For example, Nutanix Xi Beam provides users with the tools to right-size cloud resources and optimize reserved instance purchases.

Infrastructure to support compliance.

Remote learning hasn't changed the fact that schools must comply with a variety of regulations. In some cases, it has actually increased compliance requirements. K-12 school districts, for example, must comply with the Children's Internet Protection Act (CIPA), which requires schools to implement and maintain an Internet safety policy. Both K-12 and institutions of higher learning must comply with many other regulations and policies including the Family Educational Rights and Privacy Act (FERPA), which safeguards the privacy of student education records. Keeping track of compliance requires full visibility and control. One way to ensure compliance is to rely on an automated compliance dashboard that allows schools to create their own set of custom audits to meet specific requirements.

The right HCI can go a long way towards hardening security.

A comprehensive, next-generation HCI platform can help mitigate the impacts of ransomware and other advanced cybersecurity attacks. Nutanix can provide a platform with a hardened core to NIST SP 800-53 standards. If it is certified against other industry compliance standards like ISO, SOC2, SOC3, FIPS 140-2, Common Criteria and FedRAMP, even better. In addition, make sure the platform you choose includes role-based access control, identity and access management, and supports technologies for multi-factor authentication to ensure that only authorized users can access information and perform certain activities. Finally, consider micro-segmenting your virtual infrastructure, which creates zones that isolate attacks and stop them from spreading.



Use HCI for more than remote learning.

While remote learning may be the biggest reason for schools to adopt a hyperconverged infrastructure, many are finding it to be valuable in other ways. School administrations often tend to be busy at the beginning of the school year when students are enrolling in classes, and at the end of semesters for grading, graduation/promotions, and other activities. These times create a much bigger load on infrastructure applications such as admissions, enrollment management, and financial systems, making the scalable infrastructure invaluable. Many schools also depend on HCI for disaster recovery, allowing them to essentially "flip a switch" and start everything up again when disaster hits. Finally, many universities are finding the enterprise multicloud approach useful for research. With a consolidated, encrypted infrastructure platform that meets federal standards, universities are much better positioned to apply for and receive federal research grants. Once approved, the infrastructure also is invaluable in securely accessing the resources required to perform the research without worries about performance or scalability.

"Cloud Smart" Strategy. When education institutions are considering a cloud-first approach, they need to address the four questions:

1. Have you done the financial analysis? Does your board know how much money this is going to cost your institution?
2. What duration are you looking at for consolidating your datacenters into a public cloud — three years, five years, or seven years?
3. Do you think it's possible to move entirely to public cloud?
4. Why not hybrid cloud infrastructure?

A more realistic scenario for legacy apps that don't have ROI to be moved to cloud or predictable workloads is to adopt a mix of on-prem and public cloud infrastructure. A recent "enterprise cloud index" developed by research firm VansonBourne queried 3,400 IT professionals from around the world. The researchers found that nearly nine in 10 IT professionals (86 %) considered hybrid cloud operating model ideal.

Case Study: Preparation Pays Off

Schools that had been progressively moving toward more modern technologies and infrastructures found that they were more prepared than most when the pandemic hit.

Founded in 1997 as the country's first state-wide internet-based public high school, Florida Virtual School (FLVS) now serves many more students in grades K-12. Before the pandemic, FLVS had planned to scale from 200,000 to serve millions of students over several years. To meet fast-changing needs, the Florida Department of Education asked the school to immediately scale to serve 2.7 million students. FLVS chose Nutanix to support its database, application, and security needs for learning in real-time. The quick pivot enabled the school to provide media-rich course offerings in a secure and responsive environment. Even as the number of students increased. FLVS saw a 20% increase in application performance as measured by user experience.

Alabama A&M University took a different but related route, choosing to move workloads from an on-prem datacenter to the Nutanix hyperconverged infrastructure and protect them with the Xi Leap Disaster-Recovery-as-a-Service (DRaaS) solution. This solution eliminated compliance concerns and resulted in better availability, reliability, and uptime.

When COVID-19 impacted education nationwide last year, forcing students, teachers, and administrators off campus, that groundwork became invaluable. Alabama A&M quickly adopted Nutanix Frame to help quickly switch to an online learning model where students could easily stream school applications to their computing devices remotely. The technology also provided staff access to the internal resources they needed to continue supporting students. The university plans to share its expertise and technology with other members of the Minority Serving-Cyberinfrastructure Consortium (MS-CC), which promotes cyberinfrastructure capabilities on campuses that serve large minority populations.

How Nutanix Helps

The Nutanix hybrid cloud platform is simple to operate, fully secure with a zero-trust approach, and is extremely scalable and resilient. Many organizations choose to incorporate other Nutanix offerings on top of the infrastructure to strengthen ease of use, accessibility, governance, and portability. Nutanix infrastructure includes:

- A Desktop-as-a-Service (DaaS) solution that allows IT staff to virtualize students and applications so they can be delivered and managed centrally from a public or private cloud.
- A Software-as-a-Service (SaaS) that delivers underutilized and unused cloud services and provides one-click remediation. This allows IT decision-makers to realize cost savings and set policies to continuously maintain high levels of cloud efficiency.
- An add-on that allows organizations to manage the Nutanix HCI infrastructure from one console.
- A solution for advanced network security that provides visibility into the virtual network application-centric protection from network threats, malware and ransomware, along with security and compliance monitoring. It provides both network and application segmentation to protect entire ecosystems from being infected from potentially dangerous threats.
- Solutions that allow organizations to move legacy apps and data into the public cloud, such as bare metal Amazon Elastic Compute Cloud (Amazon EC2) instances on Amazon Web Services (AWS), without having to re-architect them. With this, you can create, manage and orchestrate infrastructure and applications across private and public clouds through a single interface.

Conclusion

2020 was a year of growing pains for educational institutions. The lessons learned during that time demonstrate that remote learning can work. They also demonstrated what it will take to keep remote learning usable, secure, and flexible: ironclad security and privacy, scalability, accessibility, reliability, and cost-effectiveness.

While many school districts and universities have done an admirable job providing remote learning capabilities under pressure, they understand that it is now time to solidify the process with strong technology. Standardizing on a hyperconverged infrastructure provides schools with the best of all worlds—a secure infrastructure that can morph to meet whatever is needed, and pivot when change is required.

NUTANIX

ABOUT NUTANIX

Nutanix is a global leader in cloud software and hyperconverged infrastructure solutions, making infrastructure invisible so that IT can focus on the applications and services that power their business. Companies around the world use Nutanix Enterprise Cloud OS software to bring one-click application management and mobility across public, private, and distributed edge clouds so they can run any application at any scale with a dramatically lower total cost of ownership. The result is organizations that can rapidly deliver a high-performance IT environment on demand, giving application owners a true cloud-like experience.

For more information: https://www.nutanix.com/solutions/state-local

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ABOUT GOVLOOP

GovLoop's mission is to "connect government to improve government." We aim to inspire public-sector professionals by serving as the knowledge network for government. GovLoop connects more than 300,000 members, fostering cross-government collaboration, solving common problems and advancing government careers. GovLoop is headquartered in Washington, D.C., with a team of dedicated professionals who share a commitment to connect and improve government.

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