Building a Cloud Strategy for Your Digital Campus

Best Practices for Transitioning to a Modern, Cloud-Ready IT Foundation that Improves Agility, Flexibility, and Costs
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Cloud Adoption Is on the Rise in Higher Education

A decade ago, few could have predicted the velocity and impact of change occurring today across academic institutions worldwide. Schools have increasingly diverse student populations. There's tremendous growth in learning options. Mobile devices are connecting everywhere—on- and off-campus. With no end in sight, what is your institution’s plan to evolve amid rapid change in what defines a digital campus?

If you are expecting progress toward business goals to be catalyzed by modern IT approaches such as cloud that redefine learning, boost IT operational efficiency, and maintain data privacy, there’s good news. Recent advancements in cloud delivery models have addressed multi-cloud management, security, data privacy, and regulatory concerns. So, there’s no better time than now for your academic institution to embrace hybrid cloud services to meet your goals.

Lowering costs, elevating IT service levels, compliance, and disaster recovery are the primary reasons campus IT is choosing multiple cloud platforms today. Speeding up systems of engagement development closely follows, illustrating the ways in which cloud has become central to strategic IT decision making.1 As more schools and universities embrace modern approaches to teaching and learning—which often requires increased data storage and access to web-based apps and platforms—cloud computing’s popularity is on the rise.2

Continue reading to understand why academic institutions facing the growing complexities of integrating new technologies into existing platforms while accommodating legacy applications are choosing hybrid cloud as a best-practice strategy to address critical learning and business requirements.

1 Forrester Data, Global Business Technographics® Infrastructure Survey, 2017
Why Hybrid Cloud?

For many academic institutions, school-owned data centers remain central to IT operations. A majority of workloads live on-premises, especially legacy business applications and sensitive institutional data. Recognizing that integrating public cloud into current service offerings is not only critical, but also offers economic and operational advantages, academic institutions are looking to shift to a more agile, hybrid cloud model that leverages both private and public cloud to meet business needs.

IT leaders in academic institutions recently reported deploying hybrid cloud can yield significant benefits.

What are the benefits of using hybrid cloud platforms or environments?

- Lower storage costs overall: 38%
- Improved security and compliance: 33%
- Lower compute costs overall: 31%
- Faster release of new features, products: 30%
- Access to a broader range of apps and services than with only one cloud environment: 29%
- Better IT cost management overall: 29%
- Improved disaster recovery and/or business continuity: 28%
- Improved data management: 28%
- Improved IT infrastructure management and flexibility: 27%
- Improved app or infrastructure performance: 23%

Base: 104 infrastructure decision-makers who would describe their cloud strategy as “hybrid”
Source: Forrester Data, Global Business Technographics® Infrastructure Survey, 2017
Business Drivers Accelerate Investment

Because cloud is a strategy, not a destination, VMware works closely with higher education IT teams around the world to first identify the top business challenges IT teams anticipate cloud can help solve.

- **Research & Development at Lower Cost** – Universities want to tap the power and lower-cost capacity of cloud to speed delivery of consistent, secure, and compliant research and development environments. Hybrid cloud offers the flexibility to pay only for consumed resources—from storage to processing power—gaining tremendous efficiency benefits.

- **Infrastructure-as-a-Service Portals** – Campuses seeking to quickly and easily deliver compute, storage, and networking resources to internal customers, such as individual colleges or departments, are choosing hybrid cloud to make all needed services available through a self-service portal, improving time to delivery of infrastructure from weeks to minutes.

- **Consolidate & Modernize Data Centers** – Schools dealing with mergers or those part of larger systems, are having to address data center sprawl and workload consolidation. Virtualization and hybrid cloud services are becoming an ideal strategy to eliminate computing silos and expand capacity—all without specific hardware dependencies, moving from a primarily CapEx model toward OpEx.

- **Modernize & Migrate Applications** – As curriculum demands increase, schools want hybrid cloud to speed the provisioning of new app types such as cloud-native and SaaS without abandoning traditional apps. Too difficult to re-architect or rewrite quickly, legacy apps can be considered for migration to hybrid cloud as an evolution strategy. While significantly reducing effort, cost, and schedules, hybrid cloud helps ensure consistent management and monitoring of all workloads across clouds.

- **Enhance Security** – Academic institutions seeking ways to detect, mitigate, and prevent brand-damaging breaches are discovering that fully integrated, multilayered security capabilities across clouds and services with multitenancy and policy-based governance from trusted partners make running critical or sensitive apps in the cloud more comfortable for them.

- **Manage Performance and Contain Costs** – Because oversight remains important, universities are looking to proven hybrid cloud providers for the interoperability that enables IT to use existing tools and skill sets to manage across clouds and to easily move apps between private and public clouds as needed.

KEY TAKEAWAY: FOCUS ON WHY, THEN DECIDE HOW.
Yet Concerns Remain

IT organizations in schools of all sizes report security, privacy, and migration of applications and/or data between clouds as top challenges when moving to the cloud. For your institution to achieve cloud computing’s efficiency and cost benefits, it’s imperative to have a good understanding of the needs of your workloads. Otherwise, short-term decisions may prove to be risky and actually set your strategic plans back in the longer term.

Change the Way You Think About Hybrid Cloud

Only when you understand your workloads—and how they translate into meeting your top business requirements for moving to cloud—can you build a strategy to ensure those workloads always have what they need. For example, consider your answers to the following questions:

• Which of your applications are designed to run in multiple data centers?
• How much does it cost to run them, and are there hard-coded hooks into the current infrastructure?
• Are there times when you need more computing resources (e.g., during enrollment or for high performance computing)?
• What applications are best suited for cloud, and which cloud?
• What are the security, compliance, and regulatory implications of migrating applications to the cloud?

Requirements for Hybrid Cloud Success

For public clouds to become a critical element of your modernization strategy, you need a single, consistent, familiar experience across your data center and cloud environments. VMware Cloud provides it.

Choice - IT can run, manage, connect, and secure the entire application portfolio on any cloud to any device. Security and compliance - IT gains multi-layered security across clouds with a ubiquitous software layer. Financial transparency - IT can spin up POC & training environments easily in the cloud—Amazon Web Services, IBM Cloud, Azure, Google Cloud, and VMware Cloud Provider Program clouds—improving business agility and controlling capital costs. Lower TCO - Teams leverage existing skill sets and tools, gaining operational consistency and helping to prevent rising costs.

VMware’s Approach: Hybrid Cloud at Your Academic Institution’s Pace

Cloud-first digital transformation includes adopting a hybrid model that helps grow and streamline your business, so you can effectively compete in a landscape of increasingly efficient, lower-cost, and digital institutions.

VMware Cloud Foundation™, which includes industry-leading VMware vSphere®, VMware vSAN™, and VMware NSX® virtualization technologies, provides the simplest way to build an integrated hybrid cloud. It features a complete set of software and services for compute, storage, networking, security, and cloud management to run enterprise apps—traditional or containerized—in private or public cloud environments. It is easy to operate with built-in automated lifecycle management, providing the ultimate cloud extensibility and freedom.

With VMware, your school can choose the best approach to meet a particular business need, for example, maintain a private cloud on-premises and expand it to the public cloud for DevTest, disaster recovery (DR), seasonal spikes and online learning initiatives, or rely on hybrid cloud to reduce data center footprint or migrate prioritized apps and workloads.

“How does one support the needs of legacy, business critical applications, and provide flexible infrastructure to support new virtual machine-based applications or a migration to SaaS? The answer is the hybrid cloud.”

NATHAN THALER
DIRECTOR OF CLOUD PLATFORMS, MIT
An Example Education Cloud Powered by VMware

With a Software-Defined Data Center (SDDC) approach, Université Laval (U-Laval) has transformed into an IT service broker, offering its departments a cloud-based alternative to managing their own IT infrastructures, as well as serving the extended community with a public cloud.

The Solution

U-Laval used excess data center capacity and VMware technologies to deploy an affordable and secure public cloud offering. The addition of VMware NSX® network virtualization enables U-Laval to deliver isolated environments to different tenants on the same infrastructure, with fast provisioning and low costs. This allows U-Laval to offer regional municipalities, public sector entities, and school boards in Quebec an affordable and secure data center as a service. U-Laval offers clients of its Cumulus community cloud an easy-to-use, cost-effective, and secure alternative to managing their own infrastructures.

Benefits

• Cost-effective agility helps customers keep pace with their changing needs.
• Improved security options use micro-segmentation and distributed firewalling.
• Community cloud service adds revenue stream without new staff.

"Organizations are struggling to keep up with the growth in data, inadequate or obsolete infrastructure, and rapid changes in technology. With the software-defined data center we’ve built, and leveraging the security, automation, and multitenancy capabilities of VMware NSX®, we have gone to market with a solution that cost-effectively addresses these issues."

GUILLAUME MOUTIER
DIRECTOR OF ARCHITECTURE,
UNIVERSITE’ LAVAL
Cloud Progress in Education

If your academic institution isn’t strategizing or already moving to hybrid cloud, you risk being left behind. A full 84 percent of academic institutions recently surveyed have either implemented or are planning to implement hybrid cloud within the next 12 months.

How far along are you in your implementation of hybrid cloud?

- No immediate plans (within the next 12 mo.): 4%
- Planning to implement within the next 12 mo.: 44%
- Implementing/Implemented: 12%
- Expanding/upgrading implementation: 40%

Base: 104 infrastructure decision-makers who would describe their cloud strategy as “hybrid”
Source: Forrester Data, Global Business Technographics® Infrastructure Survey, 2017
Best Practices for Transitioning Your Institution to Hybrid Cloud

As you progress, there are six best practices to keep in mind to maximize success on your hybrid cloud journey:

1. Modernize your data center to build for cloud.
2. Find a common set of cloud management capabilities that reduces complexity and improves operational efficiency.
3. Make your existing staff an even bigger asset.
4. Stop rewriting education applications or code.
5. Insist that integrated security be a must-have, everywhere!
6. Discover a highly reliable platform that supports cloud adoption at your pace.

“Business process improvement can decrease the need for customization of enterprise systems and increase alignment between business processes and institutional mission. A move to the cloud can be a catalyst for examining business processes in this way. Because processes tend to span functional unit boundaries, strategies in this area are most successful when they include multiple units at an institution.”

EDUCAUSE 2017
TRENDS AND TECHNOLOGIES: CLOUD
1. Modernize Your Data Center to Build for Cloud

The right IT environment is critical to supporting education’s rapid, on-going changes. However, to move forward, you need to fully assess the data center infrastructure you have. Knowing what you own and what you need will help you better achieve the goal of running a workload in its optimal environment—whether in your own private or a public cloud.

VMware’s innovative software-defined architecture of natively integrated compute, network, and storage virtualization technologies, together with automation and management, enables academic institutions to modernize infrastructure, automate the delivery and management of IT services, and run modern cloud-native and microservices-based applications. This software-defined approach delivers cloud service provider agility and economics in the data center, and extends to an elastic hybrid cloud environment.

In a software-defined data center (SDDC), you can move and manage business and IT applications across and between private and public clouds with common policies, security, and enterprise management capabilities. You achieve greater freedom and control, enabling you to respond much faster to student, faculty, and staff demands—which in turn can spur innovation, strengthen your institution’s reputation and brand, and help attract and retain top talent.

Often an institutions’ digital transformation journey evolves from supporting capabilities onsite to offsite. You’ve likely already virtualized compute with VMware to reduce costs and improve operational efficiency. If a majority of your mission-critical apps are not yet virtualized, that’s an easy next step. After that, you can gain the delivery speed and scalability of public cloud when helpful, leaving most core applications and personally identifiable information (PII) on-premises. At the same time, you can begin to identify applications and data to remain in the cloud, as well as workloads that may need to move between private and public clouds. All of this can be accomplished without the need for a specific hardware platform and without vendor lock-in—creating the ideal hybrid cloud environment.

VMware vSAN was the only solution that delivered the agility and performance we needed to scale our business to meet the demands of increased student enrollment. We have seen increased stability for university operations as well as student and staff services.”

MARIUSZ NOWAK
DIRECTOR OF INFRASTRUCTURE SERVICES, OAKLAND UNIVERSITY
Find A Common Set of Cloud Management Capabilities That Reduces Complexity and Improves Operational Efficiency

VMware’s cloud management platform unifies the management of public, private, and hybrid cloud resources, enables the automation and delivery of applications, and streamlines operations across clouds. A well-architected, enterprise cloud management platform delivers the following key benefits to academic institutions:

- **Agility** – Every school needs to move faster in today’s digital climate. VMware’s automated provisioning capabilities are particularly important to application management teams, which are under constant pressure to accelerate the delivery of new applications and software updates.

- **Efficiency** – Many new demands are being placed on academic IT organizations, but there typically isn’t a lot of funding to meet those demands. A cloud management platform can help increase your IT team’s efficiency by automating repetitive tasks as well as dramatically improve the utilization of in-house and cloud-based data center resources.

- **Control** – One of the greatest IT concerns with the move to cloud-based services is the risk of losing control of critical applications and their associated data. An enterprise cloud management platform helps you maintain, or increase, visibility and control of your company’s assets, regardless of where they reside. The platform gives you the right level of control to support your needs in the quest to balance agility, risk, and cost dynamics.

- **Choice** – A hybrid cloud environment, managed by a cloud management platform, enables your IT team to leverage heterogeneous on-premises resources, including a hypervisor such as vSphere, along with any number of public clouds. This flexibility makes it possible to match the right hybrid cloud services with the particular requirements of individual academic departments, application owners, and development teams for an optimal service delivery strategy.
3. Make Your Existing Staff an Even Bigger Asset

You shouldn’t have to hire new IT staff to implement your cloud strategy. Evolving to a modern foundation with VMware allows your academic institution to take advantage of having the same architecture and operational excellence both on-premises and in the cloud. This makes it easier for distributed IT teams, including satellite campuses, to gain greater agility and maintain control over their IT environments while enterprise-level functions stay with central IT.

Trusting your existing IT staff—that already has expertise managing legacy workloads—to help evolve the sprawling and complex IT ecosystems found in your environment is simply a smart move. Existing employees can seamlessly extend their VMware compute virtualization skills and technology experiences to natively integrated virtualized storage, networking, and even desktop services in a software-defined solution. By leveraging current tools, skill sets, and solutions, your team can move faster to achieve digital transformation goals without disrupting your operations or budget.

“When schools understand that they can get resources and applications cheaper and quicker, they are inclined to use the UNH central IT secure data center.”

DAVID BIRD
LEAD SYSTEM ADMINISTRATOR,
UNIVERSITY OF NEW HAMPSHIRE
4. Stop Rewriting Education Applications or Code

VMware supports an open and interoperable approach to hybrid cloud, saving IT teams the time and hassle associated with reinventing, replatforming, and rewriting application code that isn’t already designed to run across multiple clouds. VMware has teamed with leading public cloud providers to ensure access to cloud services globally with consistent infrastructure and operations. Additionally, VMware and VMware Cloud Providers help ensure institutions are choosing an infrastructure platform that gives them freedom and control today and into the future. There’s no rewriting of apps, security, and networking policies required when moving workloads to the cloud (or back) with VMware’s approach to hybrid cloud.

An Example Hybrid Cloud: Two Leaders, One Solution
VMware Cloud™ on AWS, powered by VMware Cloud Foundation, is a best-of-breed commercial cloud solution that eliminates the complexity and intensive resource management required to adopt hybrid cloud. The jointly engineered hybrid cloud solution brings the benefits of hybrid cloud using VMware SDDC technologies—virtual compute, storage, and networking—to the AWS Cloud. VMware Cloud on AWS removes traditional barriers to hybrid cloud portability by supporting workloads on-premises and in the public cloud using a common operating platform.

WITH VMWARE CLOUD ON AWS, YOUR ACADEMIC INSTITUTION CAN
• STRENGTHEN SECURITY AND STREAMLINE COMPLIANCE
• ACHIEVE FLEXIBILITY, OPTIMIZE COSTS, AND INCREASE EFFICIENCY WITHOUT COMPLEXITY
• LEVERAGE EXISTING TEAMS, SKILL SETS, TOOLS, AND PROCESSES
5. Insist That Integrated Security be a Must-Have, Everywhere!

Academic institutions adopting hybrid cloud must also solve challenges around networking, security, and policy management across environments. Keeping data secure and personal information private is not only mandated by regulatory guidelines, it’s imperative for business success. That’s why every campus transitioning to the cloud should develop a zero-trust environment.

With VMware NSX, the University of New Hampshire (UNH) has gained increased efficiency and savings along with improved security for its SDDC environment. The solution is increasing flexibility and agility, opening doors for new revenue opportunities.

Using VMware NSX and VMware vRealize Automation™ technologies together, IT staff can model complete, multitier application environments that bake in network and security policies. Efficiency is greatly improved through repeatable processes, seamlessly delivered time and time again. Through native integration of vRealize Automation and NSX, IT can standardize delivery and reduce manual overload, leverage micro-segmentation to protect east-west traffic and secure applications easily and consistently, regardless of where they run, and throughout their lifecycle.

With VMware solutions, UNH has

- Adopted a zero-trust security posture across data centers using micro-segmentation, increasing security capabilities and mitigating risk
- Streamlined operations across multiple IT teams, reducing deployment times for new applications from months to days
- Reduced spending by avoiding major data center upgrades of network hardware, power, and cooling
Discover a Highly Reliable Platform that Supports Cloud Adoption at Your Pace

VMware Cloud supports seamless bi-directional application portability and migration, so your academic institution can run workloads where you want them, depending on business needs. You benefit from both the speed of live migration of workloads between on-premises and public clouds and optimized workload distribution, which saves time and money by preventing downtime.

Minimize Disruption

Because VMware technology supports high availability, your IT staff can be sure that in the event of a failure, affected software is automatically restarted on another production server with spare capacity. With VMware, you minimize downtime and service disruption at lower TCO.

Consistently Meet Business Needs

The adoption of cloud and the migration of legacy applications and other workloads to private, public, and hybrid clouds are strategic decisions that can help transform the way students learn and your institution operates. That’s why it’s critical to build on a foundation that delivers the ultimate in flexibility, interoperability, and ease of management across clouds. VMware supports the seamless move of the applications you choose, to the cloud you want, at your own pace, as your school demands.

"When a department needs a system, they no longer have to order the system, wait three weeks, provision it, so on and so forth. Now the entire process, which involves logging onto a self-service portal and clicking a few buttons, only takes 20 minutes. On top of that, the cost of running a virtual machine instead of a physical server is dramatically cheaper."

BRIAN PIETREWICZ
DIRECTOR OF COMPUTING PLATFORMS, UNIVERSITY OF NEW MEXICO
Move Your Academic Institution to Cloud with VMware

Ever-increasing budget pressures and faster service delivery demands are providing the impetus your IT and business teams need to move cloud strategies forward. And the timing couldn’t be better. There is greater growth in the sophistication, stability, security, and types of cloud applications, solutions, and support services than ever.

As an integral part of their digital transformation strategies, academic institutions worldwide are choosing VMware hybrid cloud solutions to overcome scalability, availability, and budget challenges. They are modernizing IT foundations with VMware to improve learning, teaching, research, agility, speed of service delivery, and security at lower costs.

Familiar VMware technology already in your data center extends to private and public clouds, enabling your on-premises infrastructure to continue to deliver high ROI. Existing teams with the right skill sets are also already in place to move your cloud strategy forward.

Your institution’s ability to continue to attract and retain the best students, educators, staff will depend on IT’s ability to best match data center and cloud solutions to the needs of each application. Following best practices and leveraging continuing advancements in cloud delivery models make now the ideal time to adopt a hybrid cloud solution that accelerates your digital campus plans.

Adopt a hybrid cloud strategy. Learn more.

> Web@http://www.vmware.com/go/education
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> VMware Education Blog@https://blogs.vmware.com/industry-solutions/education