

The Economics of Cloud Options in Higher Education



While universities are home to students of a wide variety of different age groups, statistics show that almost 70% are below the age of 24. This nestles the majority of today's students firmly in the demographic cohort known as 'Generation Z', comprising those who were born towards the end of the technological revolution in the 1990's. Exposed to an unprecedented level of technology from an early age, this generation is often described as 'digitally native', with studies showing that 82% of students globally have at least a basic level of computer literacy.

It should come as no surprise therefore that 81% of university students find digital learning technology helps improve their grades, while 69% find it helps their focus. To meet the demands of today's generation of tech-driven students, higher education institutions must make sure that their IT capabilities are up to scratch. In addition, with enrollment in higher education on the increase across the globe, it's clear that IT must not only be upgraded, but expanded also.

The question is, how can higher education institutions perform these upgrades at scale without breaking the bank and, crucially, without disrupting the academic careers of students? While the answer inevitably is cloud computing, this in itself leads to questions around cost and logistics. Which cloud strategy (i.e. public, private or hybrid) will enable institutions to deliver always-on services to the university community without breaking the bank? What are the pros and cons of scaling on-premises, into public cloud, or in hybrid cloud?

Here we look at the most cost-effective and most risk-averse strategies for higher education institutions looking to migrate and scale IT in the cloud.

The economics of the cloud

The crucial first step in cloud adoption is performing an economic analysis, also known as 'Cloud Economics'. Cloud Economics puts tried-and-true economic theories to work, helping IT managers make better, more cost-effective decisions about cloud adoption and usage.

A blend of traditional and behavioural economics, Cloud Economics suggests that you need to weigh the best choice from both a cost and a performance perspective, while being aware of common biases and blind spots that affect cloud decisions.

As well as potential costs, it is equally as important to weigh up risks. Every IT project – cloud notwithstanding – will carry risk. Establishing risk tolerance is therefore a crucial step in determining the pathway to the cloud, one which takes into account both financial and performance-related issues that may arise as a result of a certain strategy. If they do, it might be time to explore a new option.

Through the lens of Cloud Economics, let's take a look at the risks and benefits of the three ways to upgrade and scale IT environments in higher education institutions.

Keeping IT on-premise

Purchasing new infrastructure to boost the capacity of your on-premises environment is one way to scale. When it comes to educational applications or mission-critical services such as online student grading systems, the private option offers the important benefit of using the same infrastructure, effectively eliminating the downtime risks which come with re-factoring apps.

This can get costly, though. Not only is hardware expensive, but the resources that lie idle during quieter periods – i.e. outside of term time, when the number of students on campus drops to a minimum – are effectively money down the drain. Scalability is also a considerable issue. Building out on-premises infrastructure to cope with scalability demands can be a massive line item on the budget sheet. Not only is there the infrastructure itself, but real estate and utility costs, too.



Taking the public cloud option

The flexible pricing plans and reliability of public cloud solutions makes it an attractive option for higher education. Public cloud environments carry the benefits of scaling up and scaling out: scaling up involves paying more for extra grunt by increasing the size of an instance, while scaling out involves adding new instances, which also need new load balancers and schedulers.

However, scaling out in public cloud means that some applications may need to be re-written to suit the new environment, which often involves a high per-application cost. Disruption to an application's performance is also a common occurrence, especially when moving applications and services into and back out of public cloud environments. While the public cloud may be one of the lower-cost options, the risk of disruption to students' academic careers and to the working life of teaching staff can mean that the cost is to performance, rather than financial.

Finding the middle ground with a hybrid approach

Hybrid cloud is proving a popular choice for those seeking to solve the cloud economics puzzle. This provides the crucial advantage of 'elastic' capacity, wherein cloud usage can quickly scale to meet demand by sharing workloads across private and public cloud environments. This is particularly useful for all-important disaster recovery (DR) and backup systems, which provide a failover solution to maintain continuity in the instance of a hardware failure on-premise.

For the education sector in particular, hybrid cloud comes with two significant advantages. For one, institutions can protect, extend or consolidate their existing existing on-premises data center investments, making pricing more sustainable. Secondly, hybrid cloud environments can be set up to use consistent infrastructure and consistent operations, meaning they can be used and managed by existing teams with existing skill sets, tools, and processes.

The tangible impact on TCO

You can't put a price tag on the value of education. The value of the education experience, however, has a slightly more straightforward budgetary structure. As mentioned above, there is a clear link between the availability of digital tools and the ability of students to maximise the value they get from education. This helps explain the massive 25% annual growth in the value of investments being made in cloud computing by educational institutions, projected to be worth \$25.4bn by 2021.

The hugely important role of education, in both the lives of students and within society as a whole, means these investments must be made very carefully. In the world of Cloud Economics, this is where the benefits of subscription-based contracts for total cost of ownership (TCO) are clear.

By deploying a hyperconverged infrastructure solution, for example, institutions can benefit from a 28% reduction in the TCO of traditional 3-tier systems¹, thanks in large part to lower infrastructure and operational costs. But the cost savings of the cloud don't stop there.

According to a new IDC White Paper², the value of running applications on VMware Cloud on AWS in a VMware hybrid cloud environment can result in an increased revenue of \$6.56 million per organisation per year from improved business results, 44% lower cost of operations over three year and 27% improvement in application performance. On average, total migration-related costs compared to other public cloud options, were 57% lower and needed 59% less staff time.

Impact on Business Results: Revenue

	Per Organisation	Per 100 VMs
Higher revenue from improved business results		
Total additional revenue	\$6.56 million	\$1.31 million
Total net revenue*	\$983,600	\$196,000
Higher revenue from reduced unplanned downtime		
Total additional revenue	\$3.45 million	\$0.69 million
Total net revenue*	\$517,500	\$103,100

n = 10 Source: IDC White Paper, sponsored by VMware,

[The Business Value of Running Applications on VMware Cloud on AWS in VMware Hybrid Cloud Environments, October 2020](#)

*15% margin assumption is applied.

Digital education is non-negotiable

For students and educators that demand greater personalization and learning resources access, anytime, anywhere, on every device, IT innovation is critical.

Students and faculty staff rely on traditional teaching resources, learning platforms, and campus operations, but these still depend heavily on legacy applications to run critical processes. As a result, academic institutions incur more maintenance costs and exposure to risks than necessary.

Amongst educational institutions, this has created demand for sleeker app and infrastructure deployment, monitoring, and maintenance across physical, virtual, and cloud environments, as well as intelligent operations, such as centralised management and automation. But whilst producing the ideas is a good first step, being able to successfully execute and scale the digital education experience will be key to meeting the expectations of today's generation of student.

Underpinning this execution piece is a digital foundation. A platform that incorporates the infrastructure, apps, services and devices that will allow you to experience, develop, scale and execute. We want to enable your people to work faster and smarter.

If you would like to learn more about the economics of cloud options, please check out our [Cloud Economics page](#).



