The Economics
of Cloud Options
in Government

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From the early use of stone tools to complex genetic engineering, technology has proven itself to be both an accelerant and a trigger of revolutionary social and economic change. At the same time, the rate of technological innovation is always accelerating. Today, the rate of wide-reaching change is such that governments across the world are realising the need to launch massive modernisation projects to keep up with citizen demand. There is now an expectation that consumers, will receive the same level of personalised and responsive experiences from our public services as we do from our private organisations.

In EMEA, several new initiatives have been launched in the last few years alone. For example, the South African government's Commission on the 4th Industrial Revolution, the Israeli government's Digital Israel Initiative and the European Union's Commission on Digital Strategy. The broad aim of these initiatives is to clearly set out a set of objectives to be realised over the course of the coming years. But as the challenging events of 2020 have shown, mapping out the journey to achieving these objectives cannot necessarily be done in advance. As a result, the focus for governments should be on boosting the agility, flexibility and resilience of its technology.

The first step in doing so is making sure that internal IT capabilities are up to scratch. While it's clear that IT must not only be upgraded, but expanded, the question is, how can government institutions perform these upgrades at scale without breaking the bank and, crucially, without causing disruption to the lives of citizens? While the answer inevitably is cloud computing, this in itself leads to further questions around cost and logistics. Which cloud strategy (i.e. public, private or hybrid) will enable institutions to deliver always-on services to the public whilst staying on budget? 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 government 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 building public service applications or running other highly sensitive, mission critical processes, 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 required storage, compute and networking capacity is a moving target, running the risk of either under or overspending – both of which are subject to high levels of scrutiny when it comes to publicly-funded projects. 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 government institutions. 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 citizen services and to government 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.

There are two specific economic advantages of hybrid cloud. For one, existing on-premises data centre investments are intrinsically secure, and can be easily extended or consolidated, making pricing structures 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

The hugely important role of government institutions at the local, national and international levels means that 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 systems[1], 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 report by IDC[2], 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.

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1 Taneja Group, "When Comparing Cloud Alternatives, For the Best TCO Leverage VMware Cloud Foundation," April 2019

2 IDC White Paper, sponsored by VMWare, The Business Value of Running Applications on VMware Cloud on AWS in VMware Hybrid Cloud Environments, October 2020

Providing digital public services is non-negotiable

To stay abreast of the rapid social and economic change being driven by digital transformation, and to ensure that its benefits for the public at large are realised, IT innovation is critical.

Citizens and staff have already seen a number of innovative new digital services arrive on the scene, but a majority of government applications still depend heavily on legacy infrastructure. As a result, government institutions incur more maintenance costs and exposure to risks than necessary.

Governments must therefore look to deliver 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 massive change to IT infrastructure at scale will be key to meeting the needs of the digital age.

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.