

The Economics of Cloud Options in Healthcare

From the discovery of penicillin to the development of stem cell therapy, technology has always been the key to surpassing the boundaries of medicine. At the same time, a quieter but wider-reaching revolution has been occurring in the use of IT within healthcare institutions. And the pressures this year have accelerated the change. To support the adoption and use of new technology, adapt to the changing attitudes and expectations of patients and staff, and meet the needs of accelerated demand for digital services, the fundamental IT within medical institutions is being rebuilt from the ground up.

From staff shortages to a high rate of growth in the population of older adults, it's clear from the challenges currently being faced in the healthcare sector, that IT capabilities not only need to be upgraded, but expanded. The question is, how can organisations within the industry perform these upgrades at scale and without breaking the bank? Crucially, how too can this be done without causing disruption to patients – whether it's a regular check-up or life-saving treatment?

The first step for many is to realise the flexibility, agility and high levels of availability of taking IT into the cloud. However, this in itself leads to further questions: which cloud strategy (i.e. public, private or hybrid) will enable healthcare institutions to deliver best-in-class treatment to patients whilst staying within 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 healthcare institutions looking to migrate and scale IT in the cloud.

The economics of the cloud

Whether privately or publicly funded, the first step for healthcare institutions embarking on a journey to the cloud is to perform an economic analysis. The standard model of doing so is 'Cloud Economics', which puts tried-and-true economic theories to work in order to help IT managers make better, more cost-effective decisions about cloud adoption and usage.

A blend of traditional and behavioural economics, Cloud Economics weighs 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, be it the risk of disruption to patients and staff, unexpected costs or the risk of service downtime. 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 healthcare institutions.

Keeping IT on-premise

Purchasing new infrastructure to boost the capacity of an on-premises environment is one way to scale. When it comes to building healthcare 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 – something which can be subject to especially high levels of scrutiny when it comes to publicly-funded healthcare institutions. 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. In addition, 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 healthcare 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 patient-facing apps or medical equipment means that the cost is to the wellbeing of patients and staff, rather than to the budget sheet.

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

Budgeting in the healthcare sector can be a contentious issue. 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.

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 ability to use technology as a force for good in the healthcare sector, IT innovation is critical.

Patients and staff have already seen a number of innovative new digital services arrive on the scene, but many institutions may find that the majority of their mission-critical applications still depend heavily on legacy infrastructure. This not only takes valuable budget away from innovation to cover maintenance costs, but with transformation high on the agenda, also increases the risk of any change creating major disruption.

Decision-makers in the healthcare sector 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 must remain as the central focus.

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](#).



