

1.2 *Benefits that can be garnered from moving to the cloud*

“I’ll never buy another server again,” said the Director of IT for a medium-sized Software-as-a-Service (SaaS) company, only partially in jest, after recently completing the deployment of a new corporate website for his organization. This website (a PHP-based application with a MySQL backend) showcased the corporate brand and the primary online lead-generation capability for the company’s business.

Before the overhaul, it was run from a redundant pair of web servers hosted by one of the leading managed-hosting service providers at a total cost of roughly \$2,200/month. The company replaced the infrastructure for the original website with a cloud implementation consisting of a pair of virtual server instances running for roughly \$250/month—almost a 90 percent savings! Its quality of service (QoS) team monitored the performance and availability of the website before and after the change and saw no measureable difference in the service quality delivered to end users. Buoyed by the success with this initial project, this organization is looking at all future initiatives for the possibility of deployment within the cloud, including a software-build system and offsite backup.

1.2.1 *Economic benefits of the change from capital to operational expenses*

As we said when discussing the five main principles of cloud computing, the fundamental economic benefit that cloud computing brings to the table is related to the magical conversion of CAPEX to OPEX. A pay-as-you-go model for resource use reshapes the fundamental cost structure of building and operating applications. The initial barrier to starting a project is drastically reduced; and until there is dramatic uptake in the use of an application that has been developed, the costs for running it remain low.

The good news is that this isn't the only cost advantage. By harnessing the cloud, you can also take advantage of cloud providers' economic leverage because of the volume at which they can purchase hardware, power, and bandwidth resources.

In many cases, the economic benefits discussed here will pan out—but as you'll see later, there are always exceptions. For some situations and applications, it makes better economic sense not to use cloud computing. It isn't a panacea.

1.2.2 Agility benefits from not having to procure and provision servers

In addition to lowering the financial barrier to initiating new projects, the cloud approach improves an organization's agility. It comprehensively reduces the months of planning, purchasing, provisioning, and configuring.

Let's take as an example a performance-testing project launching a new consumer-facing website. In the old world, there were two ways to solve this problem, depending on your timeframes and budget. The first involved purchasing a software license for a load-testing tool like HP Mercury LoadRunner and purchasing the requisite servers to run the load-testing software. At that point, you were ready to script your tests and run your test plan. Alternatively, you could hire an outside consulting company that specialized in performance testing and have it run the tests for you. Both were time-consuming exercises, depending on how long it took to negotiate either the licensing agreement for the software or the consulting agreement with the outside firm.

Fast-forward to the new world of cloud computing. You have two new faster and more flexible ways of accomplishing the same task: use an open-source load-testing application installed on cloud instances, and use the cloud's virtual machines to perform the load test (on as many servers as you need). The time required to set up and begin applying load to a system is under half an hour. This includes signing up for an account, as the Python open source load-testing tool called Pylot demonstrates (see <http://coreygoldberg.blogspot.com/2009/02/pylot-web-load-testing-from-amazon.html>).

If you're looking for a more packaged approach, you can use one of the SaaS offerings that uses the cloud to generate traffic. They can automatically run tests in a coordinated fashion across multiple instances running from multiple cloud operators, all in an on-demand fashion. In either of these scenarios, the time to result is a matter of hours or days, generating time, not to mention cost efficiencies. We'll explore more about cloud-based testing in chapter 7.

1.2.3 Efficiency benefits that may lead to competitive advantages

Adopting cloud technologies presents many opportunities to those who are able to capitalize on them. As we have discussed, there are potential economic as well as time-to-market advantages in using the technology. As organizations adopt cloud computing, they will realize efficiencies that organizations that are slower to move won't realize, putting them at an advantage competitively.

1.2.4 Security stronger and better in the cloud

Surprised by the heading? Don't be: it's true. As you're aware, corporate buildings no longer have electrical generators (which they used to) because we leave electricity generation to the experts. If corporations have their own data centers, they have to develop standard security operating procedures. But it's not their core business to run a secure data center. They can and will make mistakes. A lot of mistakes. The total annual fraud and security breach tab is \$1 trillion, according to cybersecurity research firm Poneman (www.nationalcybersecurity.com).

But first, as always, you must weigh the potential benefits against the potential costs. You must take into account other factors, such as reliability and performance, before making the leap into the clouds. In future chapters, we'll address these issues; but suffice it to say we believe that after you understand them and take the proper measures, they can be managed. This done, you'll be able to realize the full benefits of moving to the cloud.

In the next section, we'll look at the evolution of technology that enabled cloud computing. This short detour into history is important because you can learn from previous platform shifts to understand what is similar and what is different this time. That in turn can help you make informed decisions about your shift to this new evolution of IT—the cloud.