Distributed and Cloud System Programming

(5CS022)

REPORT

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Introduction:

The term "Cloud" in "Cloud Computing" means the Internet, so Cloud Computing is the delivery of different computing services through the Internet. The services can include databases, storage, servers etc. Rather than keeping data on a single hard drive or local storage device, cloud-based storage allows to save them to a remote database. (Microsoft, n.d.)

As the world today is getting digitalized by every second, it is only natural that multiple businesses are shifting from traditional in-house or outsourced hosting to cloud-based systems. When opting for Cloud Computing businesses only need to pay for the cloud services they use, helping them lower their operating costs, run their infrastructure more efficiently, and scale as the business needs change. (Frankenfield, 2023)

Here are four common reasons businesses are turning to cloud computing services:

Cost:

Moving to cloud computing is a cost-effective solution for many businesses as it eliminates the need of buying hardware and software, setting up and running data centres, and hiring employees to manage the infrastructure. The electrical bills for power and cooling, heaps of servers and employees skyrocket the bill. (Microsoft, Top benefits of cloud computing, n.a.) Cloud computing allows businesses with an opportunity to bypass these costs, it is especially beneficial for small to medium-sized businesses that may not have the funding like the big companies. (Cloud, n.a.) Moreover, cloud providers offer businesses pay-as-you-go models which allows them to cut costs by only paying for the resources they use, rather than paying for the whole infrastructure that may not be fully utilized. This means that businesses can scale up or down depending on their needs, without having to worry about the cost of maintaining hardware and software. (Microsoft, Top benefits of cloud computing, n.a.)

In contrast, traditional hosting solutions typically require a considerable amount of investment at the start for hardware, software, and infrastructure, making them less viable for many small and medium-sized businesses. (Cloud, What is cloud hosting?, n.a.) Therefore, the switch to cloud computing is an attractive option for many businesses that are looking to manage and cut their cost without affecting the business.

Security:

On top of being cost-effective, cloud computing also provides several security advantages over traditional hosting solutions. Many cloud providers offer a variety of policies and technologies that strengthen overall security and protect data, apps, and infrastructure from potential threats. (Microsoft, Top benefits of cloud computing, n.a.)

One of the primary security advantages of cloud-based systems over in-house or through traditional hosting providers is the dedicated security teams that are available 24/7 to monitor and respond to security threats. (Frankenfield, 2023) This is often not available in-house or through traditional hosting providers, making cloud systems a more secure option for many businesses. (Cloud, Advantages and Disadvantages of Cloud Computing, n.a.)

Furthermore, cloud providers also generally offer more advanced security features than traditional hosting solutions which include multi-factor authentication, data loss prevention, and network segmentation. These features operate together to provide a more complete security solution, making cloud-based systems an attractive option for businesses wanting better security. (Microsoft, Top benefits of cloud computing, n.a.)

Performance:

Businesses should be able to quickly scale up and down as the demands fluctuate every minute. With cloud systems, this can be achieved through a worldwide network of secure data centres which reduces network latency. (IBM, n.a.) By upgrading to the latest generation of fast and efficient computing hardware, cloud providers can handle technical issues with ease. (Microsoft, Top benefits of cloud computing, n.a.)

In contrast, the traditionally hosted systems often require manual labour to add or remove resources, resulting in downtime or poor performance making them less attractive for businesses looking to impress their customers. (Cloud, Advantages and Disadvantages of Cloud Computing, n.a.)

Reliability:

It's always good to have a backup because disaster never comes knocking on the door. Cloud systems are generally more reliable than traditionally hosted systems as they not only offer cost, security and performance benefits but also make data backup easier and less expensive. Cloud providers typically have multiple sites on their network, which stores duplicate data. This makes data backup simpler and more efficient, as it eliminates the need for businesses to invest in costly backup infrastructures. (Microsoft, Top benefits of cloud computing, n.a.)

Cloud providers dump a lot of money into their infrastructure and backup systems that guarantee continuous uptime. They also offer service-level agreements (SLAs) which often include financial penalties if the provider fails to meet the agreed-upon uptime and availability. (Rosencrance, n.a.)

On the other hand, traditionally hosted systems may not have any SLAs, leaving businesses at risk of downtime and potentially losing customers. (Rosencrance, n.a.) With cloud-based systems, businesses can expect their data and applications to be accessible at all times ensuring reliability and reducing the risk of downtime and loss of customers. (Cloud, Advantages and Disadvantages of Cloud Computing, n.a.)

Conclusion:

In conclusion, cloud systems and solutions have many advantages over traditionally hosted systems in terms of cost, security, performance and reliability. Cloud providers offer cost-saving options to businesses compared to traditional hosting solutions. Cloud providers also have dedicated security teams and invest heavily in security measures. Furthermore. cloud systems are also designed to scale up or down quickly in response to changing demand. Finally, cloud providers offer SLAs that guarantee uptime and availability 24/7. Therefore, it's clear that moving to the cloud is an excellent choice for businesses looking to optimize their costs, improve their security, and enable faster innovation and scalability. (IBM, n.a.) (Microsoft, Top benefits of cloud computing, n.a.) (Rosencrance, n.a.) (Cloud, Advantages and Disadvantages of Cloud Computing, n.a.)

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