Demystifying Cloud Computing

Executive Summary

The need for smarter infrastructure and truly globalized operations drive businesses to the Cloud. However, "Cloud first" is not the same thing as "Cloud Smart", – and it is not as simple either. Adopting the Cloud, although very easy and simplified by the different Cloud solutions available, public, private and hybrid Cloud capabilities need to be evaluated and weighed for their alignment with your business operations in order for adopting the Cloud to be simplified.

The Cloud is not a one-size-fits-all solution – every customer, every strategy, business vision, short and long term goal, and every workload needs to be understood, alongside the critical measurements for success.

Introduction

We are shedding light on the huge subject of "Cloud" and clarifying considerations organizations need when envisaging, conceptualizing, designing, and implementing a "Cloud Smart" strategy. But before we get there...

"Cloud Smart" vs "Cloud First"?

With so many reasons to adopt and so many customers adopting, many organizations are moving towards or are already using Cloud as both a means to improve efficiency and to explore new ways of working and business operations. In this context, Cloud typically means Public Cloud. When organizations take a "Cloud First" approach, it essentially means that they prioritize the use of the Cloud as the first solution approach. We typically recommend businesses to evaluate their workload or business requirements for a "Cloud Smart" approach. "Cloud Smart" is an approach that considers all the aspects of a workload or business requirement. These considerations are factored into during solution design, including cost, compliance, control, complexity, and the competency required to support such a deployment model.

Why are organizations moving to the Cloud?

The Cloud has been a lucrative opportunity for most businesses that have relied heavily on physical infrastructure, on-premise, hosted, or co-located datacenters because of four principal reasons:
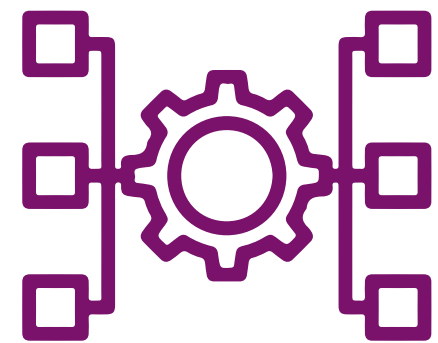
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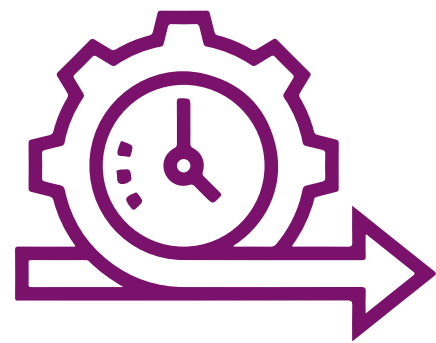
Business Agility

Allowing self-service oriented provisioning that significantly reduces the lag between request and fulfilment.

2

Infrastructure Manageability

With the elimination of physical devices, the "as a Service" offering simplifying procurement and disposal, and the standardized tool set allowing for significant automation, managing infrastructure has seen a tangible reduction in cost, human resources, and time.

3

Financial Model

With a transparent pay as you go model that allows immediate visibility into what is used, how much, where, by who, and how, IT teams now can instantly show the ROI against each infrastructure investment.

4

User Experience

When it is fast and easy to provision new infrastructure, easier to use a 24x7 support coverage, self-service tools, automation, and even basic infrastructure troubleshooting and maintenance, the productivity, efficiency of users rise, thus, naturally improving user experience.

Before we get into why Smart Cloud is more desirable than Cloud First, let us quickly delve into the four different types of Cloud:

1

Public Cloud

A platform that uses the standard Cloud computing model to make infrastructure available and accessible - such as virtual machines, applications, or storage. Some public Cloud services are free, while others are offered through a variety of subscription or on-demand pricing schemes, including pay-per-usage models or Operational Expense (OpEx).

2

Private Cloud

Where Cloud computing resources are used exclusively by one business or organization. The private Cloud can be anything from a physically located at your organization's on-premises datacenter, co-located at another shared datacenter space, to hosted service offered by a third-party hosting provider. Private Cloud services and infrastructure are always maintained on a private network, and the hardware and software are dedicated solely to your organization. Consequently, Private Cloud is considered Capital Expenditure (CapEx), although some vendors have begun to offer OpEx options in a pay-as-you-go model.

3

Hybrid Cloud

A platform that gives organizations many advantages — greater flexibility, more deployment options, security, compliance, and getting more value from their existing infrastructure. Essentially a mix of Public and Private Cloud, it allows businesses to seamlessly scale up and down when computing and processing demand fluctuates without giving third-party datacenters access to the entirety of the enterprise data. Organizations gain the flexibility and innovative capability the public Cloud provides by running some of their workloads on the Cloud while maintaining compliance and security of sensitive data using their own datacenter via a Private Cloud. This is a combination of OpEx and CapEx models that can be leveraged as appropriate. Since Hybrid Cloud Computing became a leading trend in 2021, it's important to understand how the blend of public and private Cloud services impact business applications.

4

Multi-Cloud

Multi-Cloud operating models utilize more than one Cloud environment to varying degrees. You can choose to leverage multiple Cloud environments with specialized capabilities to better align with requirements and business objectives.

If you think there is too much complexity and uncertainty in choosing the right approach for your Cloud journey, rest assured, all you need to do is work with the basics – **the five considerations of running workloads in a Cloud computing model:**
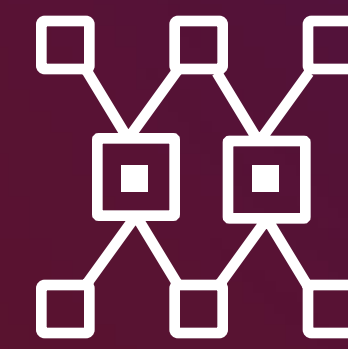
Costs

Control

Compliance

Competency

Complexity

Costs

The amount you will end up paying for each element of the Cloud you consume.

1

Data Transit charges – Similar to a hosted website, there is a cost for data transfer to and from a Cloud instance. Cloud providers have their respective charges for how much it costs for data movement and can be a hidden cost if you don't understand how they structure these charges. Typically public Cloud providers charge a smaller fee for placing data into the Cloud, but charge a higher fee for moving data from the Cloud. They may benefit from using existing storage resources and data management capabilities to minimize the financial impact on data transit costs.

2

Compute Cycles – One of the obvious costs associated with running workloads in the public Cloud, but it may not be included in the project scope, especially when running development-related workloads. Do you want the reserved capacity to be ready for sudden spikes in demand, or do you want to pay for just what you use or invest in IT infrastructure to get maximum return on investment? Understanding the cost and the tradeoff of subscribing to compute capacity is key to maintaining an optimal cost-to-result ratio while setting out on your Cloud journey.

3

Cloud Services – If you have managed on-premise infrastructure, you know there are services required beyond the obvious. It is helpful to determine if your Cloud provider charges additional costs for the services utilized, like containers and microservices. Each time an application uses a service, it costs you, and these costs can add up very quickly!

Control

The degree of ownership you have over how your Cloud instance is built up, how it is managed, maintained, and delivered.

1

Data control and management – The Cloud provider may give you the platform, the infrastructure, or the container as a service. You are still responsible for defining the data lifecycle requirements of the data. How it is secured, backed up, and retired, to mention a few. The Cloud provider may not provide data Lifecycle Management.

2

Deployment – You can now choose to run your control plane on a private or hybrid Cloud model. How you choose to deploy your workloads to the Cloud is truly up to you.

3

Delivery – The one area where organizations have difficulty delivering Cloud services. The Cloud ecosystem itself is in a constant state of flux with changes frequently occurring, with new functionalities being added with almost disturbing regularity. Disruption is the only constant here and to find stability on the Cloud is almost the holy grail in itself.

Compliance

Keeping people, processes, and technologies in compliance with the authorities.

1

Legal requirements - To be compliant with International, Federal, State and local regulations, many organizations fully understand when they have a "Cloud First" model.

2

Data location is a concern when facing regulatory requirements like HIPAA and GDPR. Data must reside in particular locations or subject to specific rules as to where personal information is stored. Organizations that must follow these rules must also keep this data on-premise or in a third-party hosting provider.

Competency

Knowing what you are thinking, talking, and doing, so the outcome is both expected and exceptional.

1

Cloud Knowledge within your organization is critically important to understand to deliver Cloud services. Thus, ensuring that you have the right skill set to support a hybrid Cloud model. Organizations usually tend to manage with existing skills with hypervisor providers and allow the VMs to run on-premises or in the public Cloud.

2

Security, while an important element for every organization, is even more significant when moving to a hybrid Cloud model. The attack surface has grown exponentially larger - IoT devices, work from anywhere devices, servers at the edge, workload in the public Cloud are all potential threat vectors. The applications and data are no longer sitting behind a firewall where security handled in one place – like the access; security also needs to be everywhere.

3

Controls need to be established and agreed upon by all the stakeholders to succeed in developing the ability to run in an efficient and effective hybrid Cloud world.
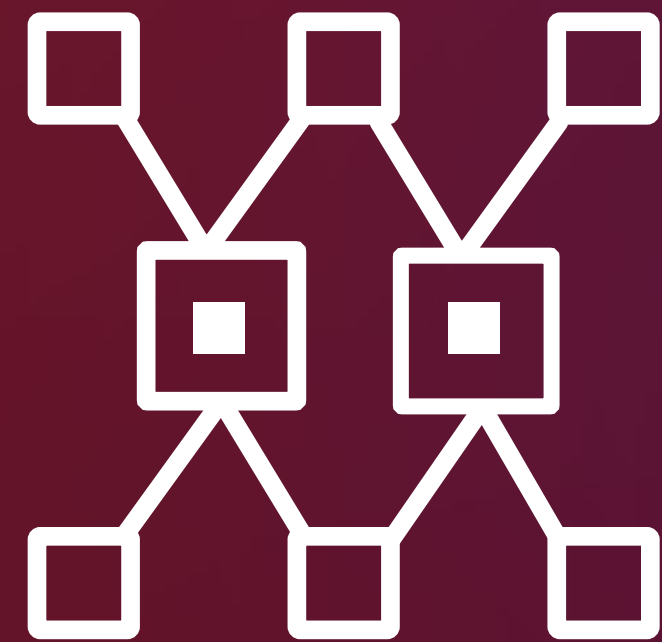
Complexity

Simplifying the journey by understanding the technology, its capabilities, where conditions apply, and what to watch out for.

1

Complex data relationships must be understood when implementing Cloud-ready applications. Adding patchwork tools and overarching workflows to bridge gaps is no longer an option. Where is the data in question, and what are the data lifecycle requirements for each piece of data? These are questions worth asking.

2

The development of business application logic needs to be seriously considered. What are the development requirements? Can existing Cloud services be used to deliver a specific function? Or do we need to create unique business logic to handle these requirements? An open-minded approach will both improve functionality, increase productivity, and reduce roadblocks in the future.

3

Delivering the support model of the past may not meet the needs of an evolving Cloud model. The Cloud doesn't just offer a zero-physical footprint. It opens up such a wide spectrum of possibilities that traditional support models may become irrelevant. A good question to begin asking is whether your support personnel is able to properly diagnose a problem that is happening.

Useful Cloud Terms

What are the different terms used when discussing Cloud functionality?

1

Infrastructure-as-a-service (IaaS)
Comprises highly scalable, automated compute resources and is fully self-service for accessing and monitoring computers, networking, storage, and other services. IaaS allows businesses to purchase resources on-demand and as-needed instead of having to buy the hardware outright.

2

Software-as-a-service (SaaS)
Due to its web delivery model, SaaS eliminates the need to have IT sta install and manage each application instance, as vendors manage all the potential technical issues, such as data, middleware, servers, and storage, resulting in streamlined maintenance and support.

3

Platform-as-a-service (PaaS)
The delivery model of PaaS is similar to SaaS, except instead of delivering the software over the internet, PaaS provides a platform for software creation. This platform is delivered via the web, giving developers the freedom to concentrate on building the software without having to worry about operating systems, software updates, storage, or infrastructure.

Conclusion

Demystifying the Cloud sounds simple at first glance, but it is complex as well. And yet, by getting the basics right, it is not so difficult to implement. Most organizations must face the reality of having to implement a cloud approach. The five considerations of running workloads on the Cloud are important cornerstones, and it is equally important to understand all aspects of developing a cloud strategy.

Organizations must also align IT capabilities with business outcomes for a sustainable journey towards achieving the business vision that required the cloud strategy, to begin with. What will you do with smarter cloud computing solutions? See what the future could look like for your business when you go from data center, to Data-Centered with Lenovo Smarter Infrastructure solutions, powered by Intel® Xeon® Platinum Processor.

Having a clear and balanced cloud strategy that will help you navigate your Intelligent Transformation journey is critical.

Learn More

References

1. 5 Hybrid Cloud trends to watch in 2021
https://enterprisersproject.com/article/2021/1/5-hybrid-cloud-trends-2021

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