

# ***Cloud Computing***



## ***The Essential Overview***

**Sterlite**

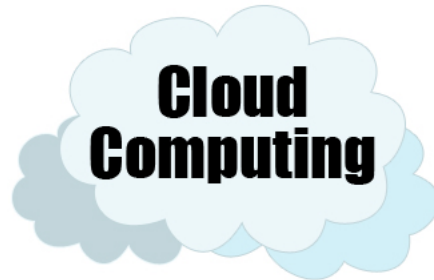
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# Introduction

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With the rapid evolution of technology, it can be difficult for organizations to keep up with the latest trends for innovation. There is often great uncertainty in predicting which tools will stand out and which will give way to the next big idea. Fortunately, cloud computing has been around in one form or another since the 1950's. Today, 61% of enterprises have at least one application that is cloud-based<sup>1</sup>. As more organizations adopt cloud computing into their daily operations and experiment with its capabilities, it has transformed into an effective business solution unlike any other.



Cloud computing produces a multitude of benefits including numerous opportunities for cost-savings and organizational flexibility. As with any expanding design, there are also several risks and challenges involved, mainly revolving around security concerns and a lack of standards. Even with these challenges, it is clear that the benefits outweigh the risks as 49% of executive-level management views cloud computing as transformational to their business strategies<sup>1</sup>.

Considering the accelerated growth and acceptance of cloud computing as a business tool, it is clear that organizations need to incorporate this evolving technology into their business tactics to stay competitive and emerge as industry leaders. The first action necessary for using cloud computing as a means of business advancement is education, and that is the exact purpose of this white paper. The following pages contain a fundamental breakdown of not only the different service models and cloud classifications, but the benefits and challenges involved in adopting this technology.

<sup>1</sup> Columbus, Louis. "IDG Cloud Computing Survey: Security, Integration Challenge Growth." *Forbes*. Forbes, Inc., 13 August 2013. Web. August 2013.

# Defining Cloud Computing

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## Overview

Cloud computing is a term that has existed for over 60 years and though its definition has evolved over the years, it is often simply defined today as the assortment of services and applications that is delivered through the internet. It is commonly understood to consist of a collection of five essential characteristics, three main service models, and four deployment models.

## The Essential Characteristics

*On-Demand Self-Service*: A user can independently manage the computing capabilities and services without needing to contact a service provider.

*Broad Network Access*: The network needs to be accessible from anywhere and through a wide range of devices including workstations, laptops, mobile phones, and tablets.

*Resource Pooling*: A provider's computing system is shared by multiple organizations creating a dynamic allocation of resources (storage, memory, network bandwidth, etc.) dictated by current demands.

*Rapid Elasticity*: Computing capabilities and services need to be provisioned automatically in order to maintain superior levels of reliability and security through operational demands.

*Measured Service*: Cloud resources are managed and optimized by using standards appropriate to the category of service being used and are typically billed on a pay-per-use or charge-per-use basis.

## The Service Models

*Software as a Service (SaaS)*: Consumers purchase access to the provider's cloud infrastructure and use its applications or services. The consumer does not have control over the provider's cloud infrastructure with the exception of limited configuration settings.

*Platform as a Service (PaaS)*: Consumers purchase access to the provider's cloud infrastructure, but install their own software and applications, which are either consumer-created or purchased from a third party. The consumer does not have control over the provider's cloud infrastructure and only manages the software and applications.

# Defining Cloud Computing

## The Service Models (continued)

Infrastructure as a Service (IaaS): Consumers purchase access to the provider's cloud infrastructure and control operating systems, deployed applications, storage, and select networking components. The consumer does not have control over the provider's cloud infrastructure.

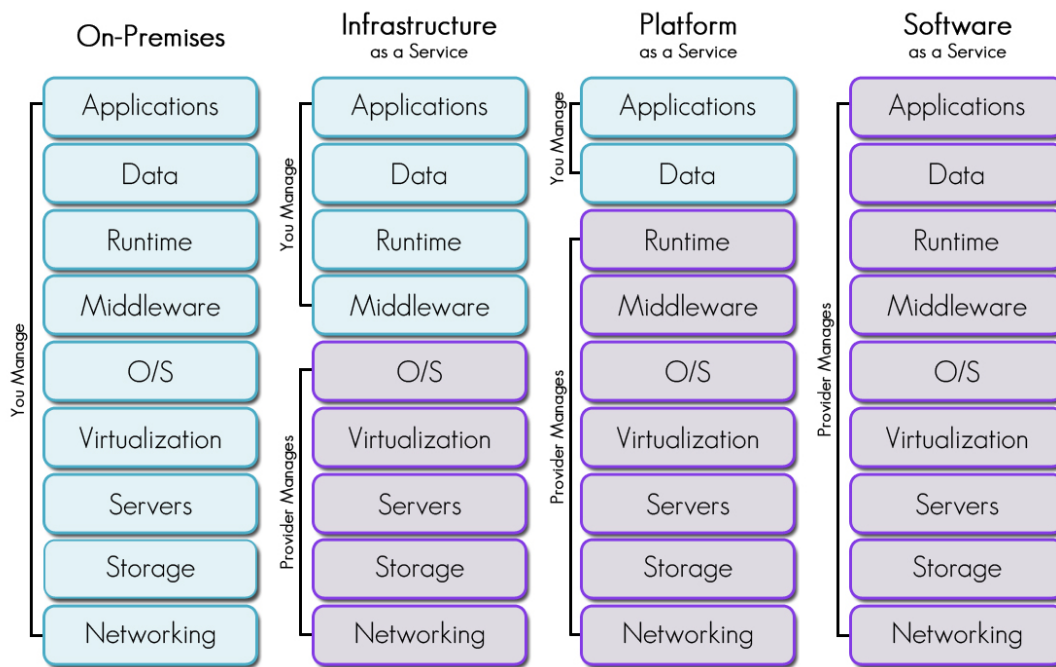


Figure 1: Cloud Computing Service Models

While there are three main service models defined by the National Institute of Standards and Technology (NIST), additional service models are currently being developed as sub-offerings, typically of SaaS. These additional service models include, but are not limited to: Data as a Service, Network as a Service, Business Processes as a Service, Communications as a Service, Database as a Service, Strategy as a Service, and Collaboration as a Service.

# Defining Cloud Computing

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## The Deployment Models

Private Cloud: The cloud infrastructure is created exclusively for a single organization. It may be operated in-house or by a third party, and may exist on or off premises.

Community Cloud: The cloud infrastructure is created exclusively for a community of organizations with shared concerns and requirements. It may be operated by any of the community organizations or by a third party, and may exist on or off premises.

Public Cloud: The cloud infrastructure is created for use by the general public on a commercial basis and exists on the premises of the cloud provider.

Hybrid Cloud: The cloud infrastructure is composed of two or more of the cloud deployment models (Private, Community, Public) that are generally bound by standardized or proprietary technology that allows for data and application portability between cloud types.

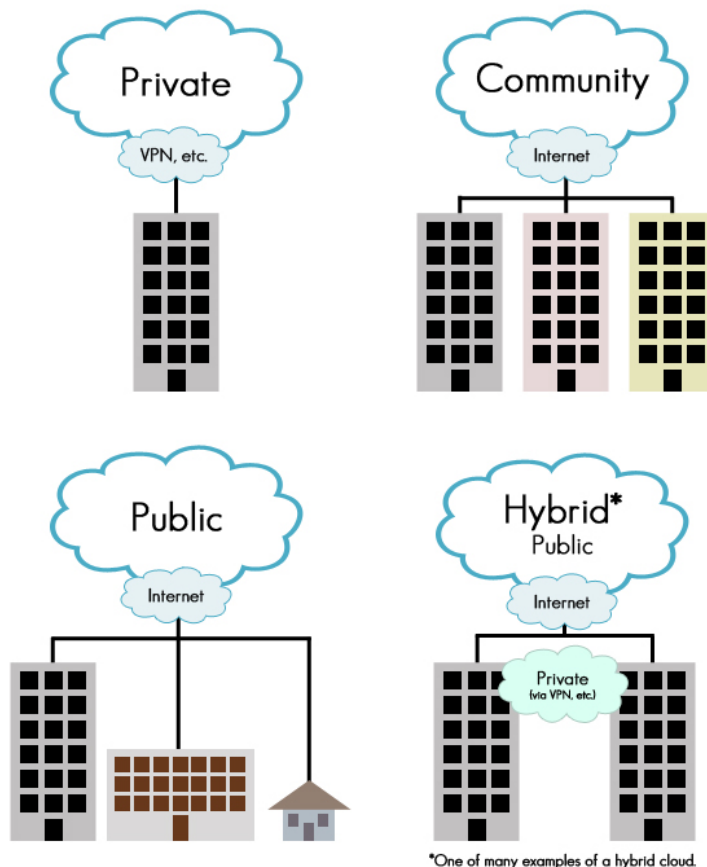


Figure 2: Cloud Computing Deployment Models

# The Benefits of Cloud Computing

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There are a wide variety of possible benefits achieved from implementing a cloud into an organization's structure. These include not only enhancements to an organization's daily functions, but also extend into individual departments and general business development. The following are a few of the main benefits that have been experienced by organizations who have implemented cloud computing:

*Cost-Savings:* Cloud computing may reduce the costs of in-house operations, capital expenditures, and overhead.

*Agility:* Not only is the cloud flexible in the allocation of its resources, but it allows for added elasticity in operational processes. In addition, when a cloud is deployed within an organization, it can be scaled larger or smaller depending on market conditions and business growth.

*Accessibility:* Cloud computing can increase the productivity levels of users as they are able to access the network from any location and any device.

*Collaboration:* Implementing a cloud within an organization can allow users to work in collectively on a project regardless of location.

*Efficiency:* With users able to access the cloud and collaborate from any location, cloud deployment can increase operations effectiveness, enable business continuity, and reduce maintenance tasks.

*Innovation:* Cloud computing can reduce the time and costs necessary to operate a thriving business, creating a surplus of energy that can be allocated to developing new business initiatives and enhancing the current mission.

# The Challenges of Cloud Computing

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Cloud computing is continuously evolving which can create many challenges for organizations intending to implement this technology. While certain concerns can be resolved by deploying a specific cloud model, others can be addressed in the agreement between the provider and the consumer. Additionally, there are certain issues that are currently under evaluation due to the elastic nature of the industry and technology. With these concerns and risks, it is important to fully evaluate the benefits and challenges on a case by case basis for each organization.

*Privacy:* Cloud vendors have access to an organization's data, with or without that organization's permission. Concerns arise that a vendor may accidentally or deliberately alter or delete data.

*Compliance & Regulations:* With the development of new laws and the transformation of existing laws, it can be difficult to adhere to the regulations for tracking and monitoring data access. This issue extends to all cloud deployment models.

*Legal:* While there are several legal issues including security and the sharing of proprietary data resources, concerns regarding data possession and jurisdiction are also at the forefront of cloud computing legal matters.

*Security:* The main security concerns revolve around data segregation, privacy, bug exploitation, recovery, accountability, malicious insiders, and multi-tenancy issues, to name a few. Although the most secure cloud computing deployment consists of a Private Cloud on-site which allows for visual inspection to ensure that data has not been compromised, this is not the best solution for every organization.

*Transferability:* Cloud computing system standards are still being developed and, as a result, many vendors have proprietary standards, tools, and protocols which may make it difficult to migrate to another vendor.

## Conclusion

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Cloud computing has evolved into one of the latest technology trends to assist not only with the everyday functions of an organization, but also propel that business forward by allowing for agility, collaboration, and innovation. In addition, implementing a cloud model within an organization can create a multitude of cost-savings in a variety of departments as well as within the business model as a whole.



While there are numerous concerns over the implementation and usage of cloud computing within organizations large and small, many of these concerns can be addressed directly with the cloud provider. These concerns are continually under examination and many organizations are working to develop a model that addresses all concerns from privacy issues to legal matters.

Depending on the needs and requirements of an organization, there are numerous options for incorporating cloud computing into operations and processes to provide an assortment of benefits. Whether it is with a straightforward private cloud or a hybrid model, cloud computing can take any organization to new heights by creating efficiency and modernization.



## About Sterlite

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Sterlite ([www.sterliteusa.com](http://www.sterliteusa.com)) provides a full spectrum of IT services to facilitate business solutions for local, government, national, and multinational organizations. By carefully defining protocols for various tasks and ensuring that these procedures are properly implemented, we are committed to delivering our clients with custom-built services and solutions of the highest standards.

Sterlite's focus on quality is reflected in one of our key goals: to integrate cutting-edge technology into our clients' organization to provide a competitive advantage that today's marketplace demands. This commitment to excellence is shown through our thorough understanding of our customers' businesses and dedication to providing cost-effective, first-class business solutions.