Cloud Computing- A beginner's guide

Simply put, cloud computing is the delivery of computing services—servers, storage, databases, networking, software, analytics and more—over the Internet ("the cloud"). Companies offering these computing services are called cloud providers and typically charge for cloud computing services based on usage, similar to how you are billed for water or electricity at home.

Still foggy on how cloud computing works and what it is for? This beginner's guide is designed to demystify basic cloud computing jargon and concepts and quickly bring you up to speed.

Uses of cloud computing

You are probably using cloud computing right now, even if you don't realise it. If you use an online service to send email, edit documents, watch movies or TV, listen to music, play games or store pictures and other files, it is likely that cloud computing is making it all possible behind the scenes. The first cloud computing services are barely a decade old, but already a variety of organisations—from tiny startups to global corporations, government agencies to non-profits—are embracing the technology for all sorts of reasons. Here are a few of the things you can do with the cloud:

- Create new apps and services
- Store, back up and recover data
- Host websites and blogs
- Stream audio and video
- Deliver software on demand
- Analyse data for patterns and make predictions

Top benefits of cloud computing

Cloud computing is a big shift from the traditional way businesses think about IT resources. What is it about cloud computing? Why is cloud computing so popular? Here are 6 common reasons organisations are turning to cloud computing services:

1. Cost

Cloud computing eliminates the capital expense of buying hardware and software and setting up and running on-site datacenters—the racks of servers, the round-the-clock electricity for power and cooling, the IT experts for managing the infrastructure. It adds up fast.

2. Speed

Most cloud computing services are provided self service and on demand, so even vast amounts of computing resources can be provisioned in minutes, typically with just a few mouse clicks, giving businesses a lot of flexibility and taking the pressure off capacity planning.

3. Global scale

The benefits of cloud computing services include the ability to scale elastically. In cloud speak, that means delivering the right amount of IT resources—for example, more or less computing power, storage, bandwidth—right when its needed and from the right geographic location.

4. Productivity

On-site datacenters typically require a lot of "racking and stacking"—hardware set up, software patching and other time-consuming IT management chores. Cloud computing removes the need for many of these tasks, so IT teams can spend time on achieving more important business goals.

5. Performance

The biggest cloud computing services run on a worldwide network of secure datacenters, which are regularly upgraded to the latest generation of fast and

efficient computing hardware. This offers several benefits over a single corporate datacenter, including reduced network latency for applications and greater economies of scale.

6. Reliability

Cloud computing makes data backup, disaster recovery and business continuity easier and less expensive, because data can be mirrored at multiple redundant sites on the cloud provider's network.

Types of cloud services: IaaS, PaaS, SaaS

Most cloud computing services fall into three broad categories: infrastructure as a service (IaaS), platform as a service (PaaS) and software as a service (Saas). These are sometimes called the cloud computing stack, because they build on top of one another. Knowing what they are and how they are different makes it easier to accomplish your business goals.

Infrastructure-as-a-service (IaaS)

The most basic category of cloud computing services. With IaaS, you rent IT infrastructure—servers and virtual machines (VMs), storage, networks, operating systems—from a cloud provider on a pay-as-you-go basis. To learn more, see What is IaaS?

Platform as a service (PaaS)

Platform-as-a-service (PaaS) refers to cloud computing services that supply an on-demand environment for developing, testing, delivering and managing software applications. PaaS is designed to make it easier for developers to quickly create web or mobile apps, without worrying about setting up or managing the underlying infrastructure of servers, storage, network and databases needed for development. To learn more, see What is PaaS?

Software as a service (SaaS)

Software-as-a-service (SaaS) is a method for delivering software applications over the Internet, on demand and typically on a subscription basis. With SaaS, cloud providers host and manage the software application and underlying infrastructure and handle any maintenance, like software upgrades and security patching. Users connect to the application over the Internet, usually with a web browser on their phone, tablet or PC. To learn more, see What is SaaS?

Types of cloud deployments: public, private, hybrid

Not all clouds are the same. There are three different ways to deploy cloud computing resources: public cloud, private cloud and hybrid cloud.

Public cloud

Public clouds are owned and operated by a third-party cloud service provider, which deliver their computing resources like servers and storage over the Internet. Microsoft Azure is an example of a public cloud. With a public cloud, all hardware, software and other supporting infrastructure is owned and managed by the cloud provider. You access these services and manage your account using a web browser.

Private cloud

A private cloud refers to cloud computing resources used exclusively by a single business or organisation. A private cloud can be physically located on the company's on-site datacenter. Some companies also pay third-party service providers to host their private cloud. A private cloud is one in which the services and infrastructure are maintained on a private network.

Hybrid cloud

Hybrid clouds combine public and private clouds, bound together by technology that allows data and applications to be shared between them. By allowing data and applications to move between private and public clouds, hybrid cloud gives businesses greater flexibility and more deployment options.

How cloud computing works

Cloud computing services all work a little differently, depending on the provider. But many provide a friendly, browser-based dashboard that makes it easier for IT professionals and developers to order resources and manage their accounts. Some cloud computing services are also designed to work with REST APIs and a command-line interface (CLI), giving developers multiple options.

How do I choose a cloud service provider?

Once you have decided to make the move to cloud computing, your next step is to select a cloud service provider. It is vital to assess the reliability and capability of a service provider that you plan to entrust with your organisation's applications and data. Some things to consider:

Business health and processes

Financial health: The provider should have a track record of stability and be in a healthy financial position with sufficient capital to operate successfully over the long term.

Organisation, governance, planning and risk management: The provider should have a formal management structure, established risk management policies and a formal process for assessing third-party service providers and vendors.

Trust: You should like the company and its principles. Check the provider's reputation and see who its partners are. Find out its level of cloud experience. Read reviews and talk to customers whose situation is similar to yours.

Business knowledge and technical know-how: The provider should understand your business and what you are looking to do and be able to match it up with their technical expertise.

Compliance audit: The provider should be able to validate compliance with all of your requirements through a third-party audit.

Service Level Agreements (SLAs): Providers should be able to promise you a basic level of service that you are comfortable with.

Performance reporting: The provider should be able to give you performance reports.

Resource monitoring and configuration management: There should be sufficient controls for the provider to track and monitor services provided to customers and any changes made to their systems.

Billing and accounting: This should be automated so that you can monitor what resources you are using and the cost, so you don't run up unexpected bills. There should also be support for billing-related issues.

Technical capabilities and processes

Ease of deployment, management and upgrade. Make sure the provider has mechanisms that make it easy for you to deploy, manage and upgrade your software and applications.

Standard interfaces.

The provider should use standard APIs and data transforms so that your organisation can easily build connections to the cloud.

Event management: The provider should have a formal system for event management which is integrated with its monitoring/management system.

Change management. The provider should have documented and formal processes for requesting, logging, approving, testing and accepting changes.

Hybrid capability: Even if you don't plan to use a hybrid cloud initially, you should make sure the provider can support this model. It has advantages that you may wish to exploit at a later time.

Security practices

Security infrastructure: There should be a comprehensive security infrastructure for all levels and types of cloud services.

Security policies: There should be comprehensive security policies and procedures in place for controlling access to provider and customer systems.

Identity management: Changes to any application service or hardware component should be authorised on a personal or group role basis and authentication should be required for anyone to change an application or data.

Data backup and retention: Policies and procedures to ensure integrity of customer data should be in place and operational.

Physical security: Controls ensuring physical security should be in place, including for access to co-located hardware. Also, data centers should have environmental safeguards to protect equipment and data from disruptive events. There should be redundant networking and power and a documented disaster recovery and business continuity plan.

(Source: Microsoft)