

Cloud Computing: Modern day Architecture of Data Storage



Cloud computing is a general term for the delivery of hosted services over the internet. The availability of high-capacity networks, low-cost computers, storage devices as well as the widespread adoption of hardware virtualization along with service-oriented architecture has led to growth in cloud computing. Cloud computing is the on-demand delivery of computing power, database storage, applications, and other IT resources through a cloud services platform via the internet with “pay-as-you-go pricing”.

The Basics

Running applications that share photos to millions of mobile users or supporting the critical operations of your business, a cloud services platform provides rapid access to flexible and low cost IT resources. With cloud computing, you don’t need to make large upfront investments in hardware and spend a lot of time on the heavy lifting of managing that hardware. Instead, you get the provision of exactly the right type and size of computing resources that you require to operate your IT department’s data storage. Most importantly, you can access as many resources as you need with quick access and only pay for the services that you have utilized.

Cloud computing has three main types that are commonly referred to as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). Selecting the right type of cloud computing for your needs can help you strike the right balance of control and the avoidance of undifferentiated heavy lifting

Distinct Models of Cloud Computing

Three distinct models of cloud computing services are as follows: private, public or hybrid.

Private cloud services are delivered from a business's data center to internal users. This model offers the versatility and convenience of the cloud while preserving the management, control, and security to local data centers. Internal users may or may not be billed for services through IT chargeback.

Public cloud services are usually a third-party cloud service provider. It delivers the cloud service over the internet. Public cloud services are sold on demand, typically by the minute or hour, though long-term commitments are available for many services. Customers only pay for the CPU cycles, storage or bandwidth they consume.

Hybrid cloud service is a combination of public cloud services and an on-premises private cloud, with orchestration and automation between the two. Companies can run mission-critical workloads or sensitive applications on the private cloud and use the public cloud to handle workload bursts or spikes in demand. The goal of a hybrid cloud is to create a unified, automated and scalable environment.

Various Characteristics and Benefits

Cloud computing boasts several attractive benefits for businesses and end users. Five of the main benefits of cloud computing are:

Self-service provisioning: End users can spin up computer resources for almost any type of workload on demand. This eliminates the traditional need for IT administrators to provision and manage compute resources.

Elasticity: Companies can scale up as computing needs increase and scale down again as demands decrease. This eliminates the need for massive investments in local infrastructure, which may or may not remain active.

Pay per use: Compute resources are measured at a granular level, enabling users to pay only for the resources and workloads they use.

Workload resilience: Cloud service providers often implement redundant resources to ensure resilient storage and to keep important workloads running often across multiple global regions.

Migration flexibility: Organizations can move certain workloads from the cloud to different cloud platforms as desired or automatically for better cost savings or to use new services as they emerge.

Advantages of Cloud Computing

The rise of cloud-based software has offered companies from all sectors a number of benefits, including the ability to use software from any device, either via a native app or a browser. As a result, users are able to carry over their files and settings to other devices in a completely seamless manner. Cloud computing is about far more than just accessing files on multiple devices, however. Thanks to cloud-computing services, users can check their email on any computer and even store files using services such as Dropbox and Google Drive. Cloud-computing services also make it possible for users to back up their music, files, and

photos, ensuring that those files are immediately available in the event of a hard drive crash.

Emerging cloud technologies and services

Cloud providers are competitive, and they constantly expand their services to differentiate themselves. This has led public cloud providers to offer far more than common compute and storage instances.

For example, serverless, or event-driven computing is a cloud service that executes specific functions, such as image processing and database updates. Traditional cloud deployments require users to establish a compute instance and load code into that instance. With serverless computing, developers simply create code, and the cloud provider loads and executes that code in response to real-world events so that users don't have to worry about the server or instance aspect of the cloud deployment. Users only pay for the number of transactions that the function executes.

Another crop of emerging cloud technologies and services relates to artificial intelligence (AI) and machine learning. These technologies build machine understanding, enable systems to mimic human understanding and respond to changes in data to benefit the business.

Data Security: Topmost Priority

Cloud computing security remains a primary concern for businesses contemplating cloud adoption, especially public cloud adoption. Public cloud service providers share their underlying hardware infrastructure between numerous customers, as the public cloud is a multi-tenant environment. This environment demands isolation between logical compute resources. At the same time, access to public cloud storage and compute resources is guarded by account login credentials.

Many organizations bound by complex regulatory obligations and governance standards are still hesitant to place data or workloads in the public cloud for fear of outages, loss or theft. However, this resistance is fading, as logical isolation has proven reliable, and the addition of data encryption and various identity and access management tools has improved security within the public cloud.

Driving Growth of Cloud Computing

One of the biggest impediments to cloud computing has been internet bandwidth: People needed the internet to be a super-fast, rushing river, moving just as fast wirelessly as it does in the wired home or office. Today everyone is finally getting there with widespread broadband adoptions, and with 3G and 4G wireless technology. The companies also had to wait for internet security standards and protocols to get solid enough to make CEOs feel safe while exporting huge data clusters out of their buildings and into someone else's hands. But now that they have, and realized the real potential associated with the ability to outsource the software and hardware necessary for tech services, the pace at which businesses have embraced and are utilizing internet-based systems has quickened than ever.

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