

Komputasi Awan

Artikel

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Tutorial Komputasi Awan

Tutorial Komputasi Awan untuk Pemula



Alex

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Dalam tutorial Komputasi Awan ini, pertama-tama kami akan membahas dasar-dasar Komputasi Awan seperti sejarah dan popularitasnya. Kemudian, kami akan membahas konsep-konsep dasar Komputasi Awan seperti arsitektur dan jenis-jenisnya

Untuk memulai tutorial Komputasi Awan untuk pemula ini dan membantu Anda memahami dasar-dasar Komputasi Awan, mari kita pelajari terlebih dahulu apa itu Komputasi Awan dan kapan pertama kali dikonsepsikan.

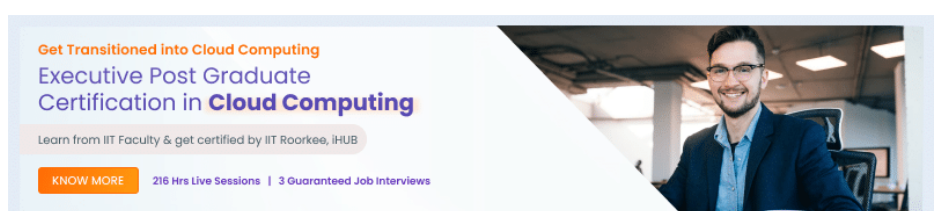
Pelajari Komputasi Awan dengan menonton video tutorial Komputasi Awan di YouTube kami:



Apa itu Komputasi Awan?

[Komputasi awan](#) pada dasarnya adalah penyediaan sumber daya sistem komputer sesuai permintaan, seperti penyimpanan data dan daya komputasi melalui internet. Konsep inti dalam komputasi awan adalah bahwa lokasi layanan dan faktor-faktor lain, seperti perangkat keras atau [sistem operasi](#) tempat layanan tersebut berjalan, tidak relevan bagi pengguna. Meskipun terlalu disederhanakan, inilah bagaimana konsep awan sebagai metafora dipinjam dari skema jaringan telekomunikasi lama.

Selanjutnya dalam tutorial Komputasi Awan ini, kita akan mempelajari tentang popularitas teknologi ini.



Mengapa Komputasi Awan populer?

Perusahaan menengah dan kecil memanfaatkan komputasi awan untuk mengakses [perangkat lunak aplikasi](#) melalui koneksi internet berkecepatan tinggi tanpa harus mengeluarkan biaya untuk perangkat lunak dan perangkat keras komputer.

Ketika teknologi cloud pertama kali diperkenalkan, implikasinya di dunia bisnis masih belum jelas. Namun, aplikasi Cloud Computing yang paling populer telah diamati berada di bidang layanan pelanggan. CRM telah mendapatkan popularitas karena efektivitasnya dalam memberikan layanan pelanggan yang lebih baik untuk semua jenis bisnis melalui penghematan biaya, peningkatan operasional, dan strategi untuk mengatasi masalah bisnis.

Karakteristik Komputasi Awan

Menurut NIST (National Institute of Standards and Technologies), Cloud Computing adalah model yang memungkinkan akses jaringan sesuai permintaan dengan mudah ke kumpulan server, jaringan, aplikasi, penyimpanan, dan layanan bersama dengan manajemen dan interaksi minimal dengan penyedia layanan.

Mari kita bahas beberapa karakteristik [komputasi awan](#) :

1. Akses jaringan luas
2. [Penggabungan sumber daya](#)
3. Layanan mandiri sesuai permintaan
4. Elastisitas cepat
5. Layanan Terukur

Apa implikasi dari karakteristik ini?

- Dalam pengembangannya, Cloud Computing memungkinkan penyampaian aplikasi, konten, dan layanan terintegrasi secara fleksibel ke perangkat yang berlokasi di mana saja dan kapan saja dalam model yang terukur secara mulus dengan hanya menggunakan dan membayar sumber daya yang dibutuhkan
- Dalam industri TI, komputasi awan membantu organisasi menghindari pengadaan dan alokasi perangkat keras, perangkat lunak, dan sumber daya jaringan yang mahal, serta perekrutan tim besar untuk manajemen dan dukungan infrastruktur.
- Dari sudut pandang bisnis, komputasi awan memungkinkan penyedia layanan untuk melayani bisnis tanpa memandang ukuran bisnis tersebut.

Setelah mempelajari karakteristik Cloud Computing, mari kita lanjutkan dan lihat beberapa manfaatnya dalam tutorial Cloud Computing ini.

Manfaat Komputasi Awan

Berikut beberapa [manfaat dari komputasi awan](#) :

- **Aplikasi yang luas:** Komputasi awan memiliki aplikasi di Salesforce, aplikasi Google, akuntansi, kelangsungan bisnis, kolaborasi, berbagi file yang dihosting, dll.
- **Pengurangan biaya lisensi awal:** Dengan biaya lisensi yang lebih rendah (karena ribuan pengguna), pengguna bisnis dapat membayar biaya layanan bulanan atau tahunan yang kecil dan menggunakan penghematan tersebut untuk pertumbuhan bisnis mereka.
- **Biaya perangkat keras yang lebih rendah:** Teknologi cloud memungkinkan aplikasi yang

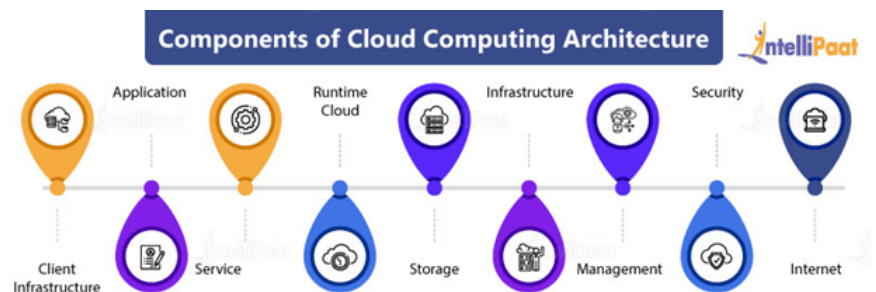
membutuhkan banyak sumber daya server untuk dijalankan pada peralatan penyedia layanan dan secara signifikan meminimalkan kebutuhan instalasi atau pemeliharaan server.

- **Memungkinkan bekerja dari komputer mana pun di mana pun:** Karena bekerja jarak jauh semakin umum, komputasi awan memungkinkan pengguna untuk masuk ke aplikasi mereka dari perangkat dan peramban web apa pun tanpa perlu VPN. Teknologi awan juga menghilangkan kebutuhan untuk mencadangkan data.
- **Menghemat biaya:** Komputasi awan menghemat pengeluaran yang dikeluarkan untuk pemeliharaan, [alokasi sumber daya](#), dan hosting internal.
- **Drives sales:** It can be used to avail new products or services quickly, thus driving revenue generation. It helps adopt new solutions without incurring heavy upfront costs.

Cloud Computing Architecture

[Cloud Computing architecture](#) is a blend of event-driven and service-oriented architectures. It is divided into the front end and the back end:

1. **Front End:** The front end contains the client-side interfaces and applications for accessing Cloud Computing platforms. It is used by the client and includes web servers, mobile devices, thin and fat clients, and tablets.
2. **Back End:** The back end is used by service providers, and it oversees the management of the required resources for providing Cloud Computing services. It constitutes a huge amount of data storage, virtual machines, security mechanisms, deploying models, traffic control mechanisms, servers, etc.



Components of Cloud Computing Architecture

1. **Client infrastructure:** A front-end component that provides GUI for interaction with the cloud.
2. **Application:** Any platform or software that a client wants to access
3. **Service:** Manages the type of service (SaaS, PaaS, or IaaS) accessed according to the requirement of the client
4. **Runtime cloud:** Provides the runtime and execution environments to virtual machines
5. **Storage:** An important component that provides a large storage capacity in the cloud for the storage and management of data
6. **Infrastructure:** Provides services on the application level, host level, and network level and includes software and hardware components such as storage, network devices, servers, [virtualization](#) software, and other storage resources required for supporting the [Cloud Computing model](#)

7. **Management:** Manages components such as application, storage, infrastructure, runtime cloud, service, and other security issues in the backend and helps maintain coordination between them

8. **Security:** A built-in back-end component that employs a security mechanism

9. **Internet:** A medium that enables front-end and back-end interaction

Next in this Cloud Computing tutorial, we will learn about the different types of clouds, along with their examples.

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Types of Clouds

Public Cloud

The [public cloud](#) is open to all for the storage and access of data over the Internet. It utilizes the pay-per-usage method, and the computing resources are managed and run by the cloud service provider (CSP).

Example: EC2, Google App Engine, IBM SmartCloud Enterprise, Windows Azure Services Platform, etc.

Private Cloud

The private cloud (internal cloud/corporate cloud) is used by organizations for the development and management of data centers internally or by a third party. It is deployed using open-source tools such as Eucalyptus and [OpenStack](#).

Based on its management and location, it is divided into:

- On-premises private cloud
- Outsourced private cloud

Hybrid Cloud

The combination of the public and the private cloud models is called a [hybrid cloud](#).

This configuration makes the hybrid cloud partially secure. The services on the public cloud can be accessed by anyone, and the ones running on the private cloud can be accessed solely by the organization's users.

Examples: Gmail, Google Drive, Google Apps, AWS, MS Office on the Web, One Drive, etc.

Community Cloud

The community cloud, as the name suggests, allows services and systems to be accessible by a group of organizations to share information between them and a specific community. It can be owned, operated, and managed by multiple organizations in the community, a third party, or a combination of them.

Examples: The US-based dedicated IBM SoftLayer cloud for federal agencies, healthcare community cloud, etc.

Cloud Computing Services

Software as a Service (SaaS)

SaaS (also known as cloud application services) mostly runs directly through the web browser without downloading and installing these applications.

Examples: Dropbox, Google Apps, Slack, Hubspot, Salesforce, Cisco WebEx, etc.

Platform as a Service (PaaS)

[PaaS](#) (also known as cloud platform services) is similar to SaaS, but it provides a platform for software creation.

Examples: Windows [Azure](#), Magento [Commerce Cloud](#), Force.com, OpenShift, etc.

Infrastructure as a Service (IaaS)

IaaS (also known as cloud infrastructure services) manages applications' data, runtime environments, and middleware.

Example: Google Compute Engine (GCE), [AWS EC2](#), Cisco Metapod, etc.

AWS vs Google Cloud

Let's now compare two of the most popular cloud platforms: AWS and [Google Cloud](#).

AWS was the first in the market to introduce a modern cloud infrastructure service called Amazon Elastic Compute Cloud. Surprisingly, there was no competition in the market for another 7 years. Even to this day, Amazon controls 33 percent of the market, according to

Synergy Group's Chief Analyst and Research Director, and Google is far behind at 9 percent.

Parameters	AWS	Google Cloud
Developed and Managed by	Amazon	Google
Age	11 years	6 years
Object Storage	Amazon Simple Storage Services	Google Cloud Storage
Data Transmission	General format	Fully encrypted format
Cloud Volume Size	500 GB to 16 TB	1 GB to 64 TB
Backup or Disaster Recovery	Provides disaster recovery services	Provides backup services
Pricing	Per hour	Per minute
Containers	Docker and Kubernetes	Kubernetes
Best Features	Dominating the market with a range of cloud-based products and services	Specializes in high-compute offerings for dealing with Big Data
Main Service	Elastic Compute Cloud or EC2	Compute Engine
Cost	High end	Competitive pricing
VM Disk Storage	Amazon Elastic Block Store (AWS EBS)	Persistent disk (HDD and SSD)
File Storage	Amazon Elastic File System (Amazon EFS)	Cloud Filestore
Archive Storage	S3 One Zone – infrequent access; Amazon Glacier offers data querying capabilities	Archival Cloud Storage
Bulk Data Transfer	AWS Import/Export Disk: Shipping disk drives; AWS Snowball (device-based); AWS Snowmobile : Exabyte-scale data transfer via ruggedized shipping container	Nearline (low frequency); Coldline (lowest frequency)
Hybrid Support	AWS Storage Gateway provides managed virtual tape infrastructure for a hybrid environment	Relies on Egnyte for hybrid support
Serverless Computing	AWS Lambda	Container Engine
AI Service and ML	SageMaker	TPU
Tiered	No	Yes

Networking Framework		
Big Data Support	AWS Lambda	AI First
Available Zones	21 zones	20 regions

Why learn Cloud Computing?

As mentioned earlier, Cloud Computing is still in its early stage of adoption. This is because organizations are still not sure which apps to move or when is the right time to do it. But, the adoption of cloud technology will likely be more and more prevalent with time. Instead of turning their attention to cost, Cloud Computing vendors are strongly pushing Cloud Computing as a contributor to digital transformation.

Even though Cloud Computing is slowly gaining traction, it has become a critical part of all major IT companies globally. Almost everything in the digital world has a connection to the cloud.

According to AWS, Cloud Computing is the one skill that will help professionals remain relevant and with a secure job.

More than US\$1.3 trillion in IT spending will be directly or indirectly affected by the shift to the cloud by 2022. – Forbes

Businesses around the world have a rising demand for Cloud Computing skills as more and more companies are switching to cloud solutions. Here is why you should consider a certification in Cloud Computing:

1. Increasing demand for Cloud Computing experts
2. Improved job prospects across all industries
3. High earning potential

There are many tools that a Cloud Computing aspirant should know such as [Puppet](#), [Chef](#), [Python](#), Linux, [AWS EC2](#), [S3](#), [CLI](#) (Command Line Interface), Scalability concepts, etc. A certification is a great way to acquire proficiency in the latest skills.

Now that you are aware of its demand, we will learn about some of the [Cloud Computing applications](#) and their use cases in various companies.

Applications of Cloud Computing

Cloud Computing technology is most widely used in the following areas:

1. **Art applications:** Cloud Computing offers various art applications such as Adobe Creative Cloud, Vistaprint, Moo, etc.
2. **Business applications:** Business applications such as Mailchimp, and Salesforce. PayPal, etc. are based on cloud service providers.
3. **Data storage and backup applications:** Cloud Computing allows storage of data on the cloud and access over the Internet along with backup recovery applications. Examples: Google G Suite, Mozy, Box.com, etc.
4. **Education applications:** Cloud Computing in the education sector offers virtual classroom

environments, online learning platforms, and student learning portals, which can be accessed by students. Examples: Google Apps for Education, Chromebooks, tablets with Google Play for Education, AWS in education, etc.

5. **Entertainment applications:** Entertainment industries employ a multi-cloud strategy for audience interaction. Examples: Online games, video conferencing apps, etc.
6. **Management applications:** Cloud management tools help in the management of all types of cloud activities, such as data integration, resource deployment, and disaster recovery, and provide administrative control over the applications, platforms, and infrastructure. Examples: Evernote, GoToMeeting, Toggl, etc.
7. **Social applications:** Social cloud applications allow a large community of users to connect with each other via social networking applications such as Facebook, Twitter, LinkedIn, etc.
- 8.

Companies Using Cloud Computing

Following are a few popular companies that have implemented Cloud Computing in their operations.

- **Netflix**

This movie streaming giant is producing its own shows and dealing with a huge number of customers through the cloud. This helps with scalability and helps meet any rise in demand and lulls in activity.

- **Xerox**

As surprising as it may seem that a paper-photocopy is on board with cloud technology, Xerox not only offers a Cloud Print Solution for users to access printers irrespective of their location but also has introduced its own cloud service that is catered toward SMC.

- **Instagram**

Instagram started employing Cloud Computing for greater scalability and to be able to handle a large number of users.

- **Etsy**

While scalability is a great feature of the cloud, its cost-effective analytics is the most attractive feature of all. Etsy is an e-commerce site that has to sort through large amounts of data every single day, which makes predictive analytics with big data solutions the right fit for it. Etsy's Taste Test feature helps determine the products that are suitable for a particular customer.

- **Apple**

It shouldn't come as a surprise that Apple has included Cloud Computing for handling the release of Siri. The actual magic of Siri happens in the cloud where all questions asked by users are sent and processed to give back an appropriate answer. The expansion of Siri over

the cloud has been so seamless that Apple users never realized that there was any change.

Future of Cloud Computing

All businesses today are turning to innovation to accomplish their business goals and speed up growth. Cloud Computing is helping them in that regard. It is one of the most powerful and expansive technologies right now that shows great potential to grow in the future and prove beneficial.

Cloud Computing's cost-effectiveness can help companies drive growth. The future of this technology is a combination of cloud-based software products and on-premises compute for the creation of hybrid IT solutions.

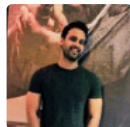
Before switching to Cloud Computing technology, one should, however, keep in mind that it is essential to be familiar with the latest developments taking place in the cloud space, which can be effectively achieved through up-to-date [cloud computing courses](#).

Conclusion

Today, everything is digitally connected to the cloud. Cloud Computing introduces a whole new world of jobs, platforms, applications, and services. Now is the right time to jump onto the cloud! If you're looking to build a solid foundation and enhance your skills, enrolling in a [DevOps and Cloud Computing course](#) can be a game-changer for your career.

Hope you liked our blog on Cloud Computing tutorial for beginners. Do let us know in the comments section below if you have anything more to add!

About the Author



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Rupinder is a distinguished Cloud Computing & DevOps associate with architect-level AWS, Azure, and GCP certifications. He has extensive experience in Cloud Architecture, Deployment and optimization, Cloud Security, and more. He advocates for knowledge sharing and in his free time trains and mentors working professionals who are interested in the Cloud & DevOps domain.

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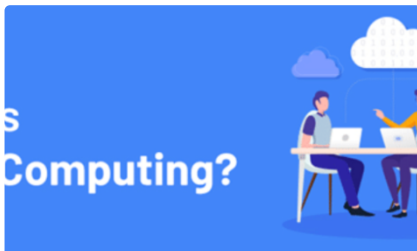
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