Program Fresh Graduate Academy Digital Talent Scholarship 2019 | Machine Learning

Jenis Teknologi Cloud & Deployment model

Nama pembicara dengan gelar

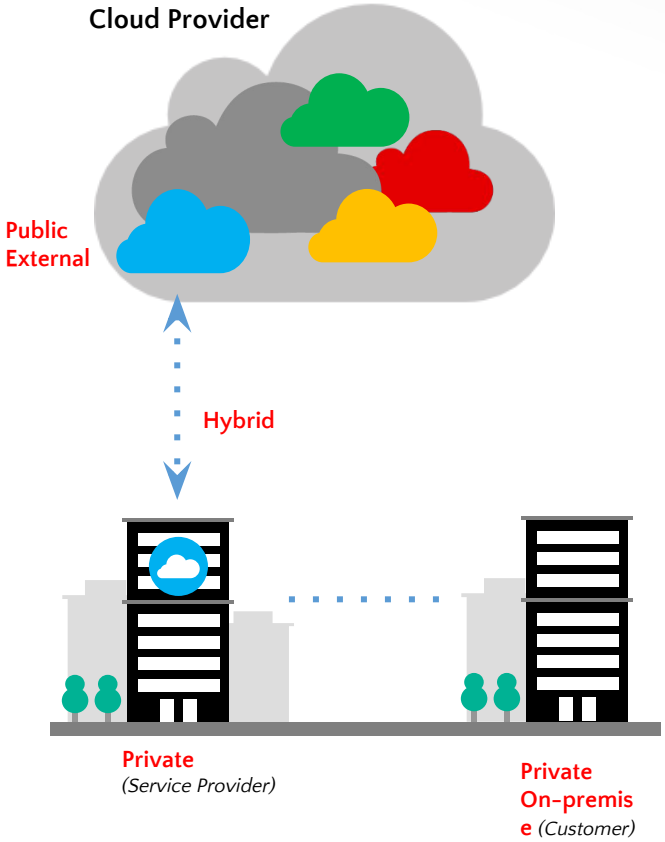
Jenis teknologi Cloud

Cloud Computing: Deployment Model

Deployment Model

- **Private Cloud**
  The cloud infrastructure is provisioned for exclusive use by a single organization comprising multiple consumers (e.g., business units). premises
- **Community Cloud**
  The cloud infrastructure is provisioned for exclusive use by a specific community of consumers from organizations that have shared concerns
- **Public Cloud**
  The cloud infrastructure is provisioned for open use by the general public
- **Hybrid Cloud**
  The cloud infrastructure is a composition of two or more distinct cloud infrastructures (private, community, or public)

Deployment Model



public

Cost

★★★

Service & infrastructure provided publlicly for multiple client. Most economical solution, but security and compliance concerns.

- Share infrastructure accross different users
- Inexpensive and easy to setup

private

Control

★★★

The hosting infrastructure is provided exclusively for one customer (either locally or at en external provider). Most expensive solution for security requirements.

- Does not share infrastructure
- Mission critical workload, security, uptime, etc

hybrid

Both

★★★

Customized combination of private and public cloud services. Most flexible system, but difficult to implement.

- Data residence based on classificaiton
- Dynamic and highly changeable workload

Deployment Model: Private Cloud

Adalah layanan cloud computing yang disediakan untuk memenuhi kebutuhan internal dari organisasi/perusahaan.

- Contoh layanannya:
  - SaaS: Web Application, Mail Server, Database Server untuk keperluan internal.
  - PaaS: Sistem Operasi + Web Server + Framework + Database yang untuk internal
  - IaaS: Virtual machine yang bisa di-request sesuai dengan kebutuhan internal

Deployment Model: Private Cloud

- **Keuntungan:** Keamanan data terjamin, karena dikelola sendiri, Menghemat bandwith internet ketika layanan itu hanya diakses dari jaringan internal, proses bisnis tidak tergantung dengan koneksi internet, tapi tetap saja tergantung dengan koneksi jaringan lokal (intranet).

- **Kerugian:** Membutuhkan Investasi besar untuk menyiapkan infrastrukturnya dan untuk biaya pemeliharaannya.

Deployment Model: Public Cloud

Public Cloud Adalah layanan Cloud Computing yang disediakan untuk masyarakat umum.

- Contoh Public Cloud yang gratis: GoogleMail, Facebook, Twitter, Live Mail, dsb. Contoh
- Public Cloud yang berbayar: Sales Force, Office365, GoogleApps, dsb.

Deployment Model: Public Cloud

- **Keuntungan:** Pengguna tidak perlu berinvestasi untuk merawat serta membangun infrastruktur, platform, ataupun aplikasi.

- **Kerugian:** Sangat tergantung dengan kualitas layanan internet (koneksi) yang kita pakai. Jika koneksi internet mati, maka tidak ada layanan yang dapat diakses. Untuk itu, perlu dipikirkan secara matang infrastruktur internetnya.

Deployment Model: Hybrid Cloud

Hybrid Cloud Adalah gabungan dari layanan Public Cloud dan Private Cloud yang diimplementasikan oleh suatu organisasi/perusahaan. Dalam Hybrid Cloud ini, kita bisa memilih proses bisnis mana yang bisa dipindahkan ke Public Cloud dan proses bisnis mana yang harus tetap berjalan di Private Cloud.

Deployment Model: Hybrid Cloud

- Contohnya: Perusahaan A menyewa layanan dari GoogleApp Engine (Public Cloud) sebagai “rumah” yang dipakai untuk aplikasi yang mereka buat. Di negara tersebut ada aturan kalau data nasabah dari sebuah perusahaan tidak boleh disimpan pada pihak ketiga.

Deployment Model: Hybrid Cloud

- **Keuntungan:** Keamanan data terjamin karena data dapat dikelola sendiri (hal ini TIDAK berarti penyimpan data di public cloud tidak aman, ya). Lebih leluasa untuk memilih mana proses bisnis yang harus tetap berjalan di private cloud dan mana proses bisnis yang bisa dipindahkan ke public cloud dengan tetap menjamin integrasi dari keduanya.

Deployment Model: Hybrid Cloud

- **Kerugian:** Untuk aplikasi yang membutuhkan integrasi antara public cloud dan private cloud, maka perlu dipikirkan infrastruktur internet untuk menunjang hal tersebut.

Deployment Model: Community Cloud

Community Cloud Adalah layanan Cloud Computing yang dibangun eksklusif untuk komunitas tertentu, yang consumer-nya berasal dari organisasi yang mempunyai perhatian yang sama atas sesuatu/beberapa hal, misalnya saja standar keamanan, aturan, compliance, dsb.

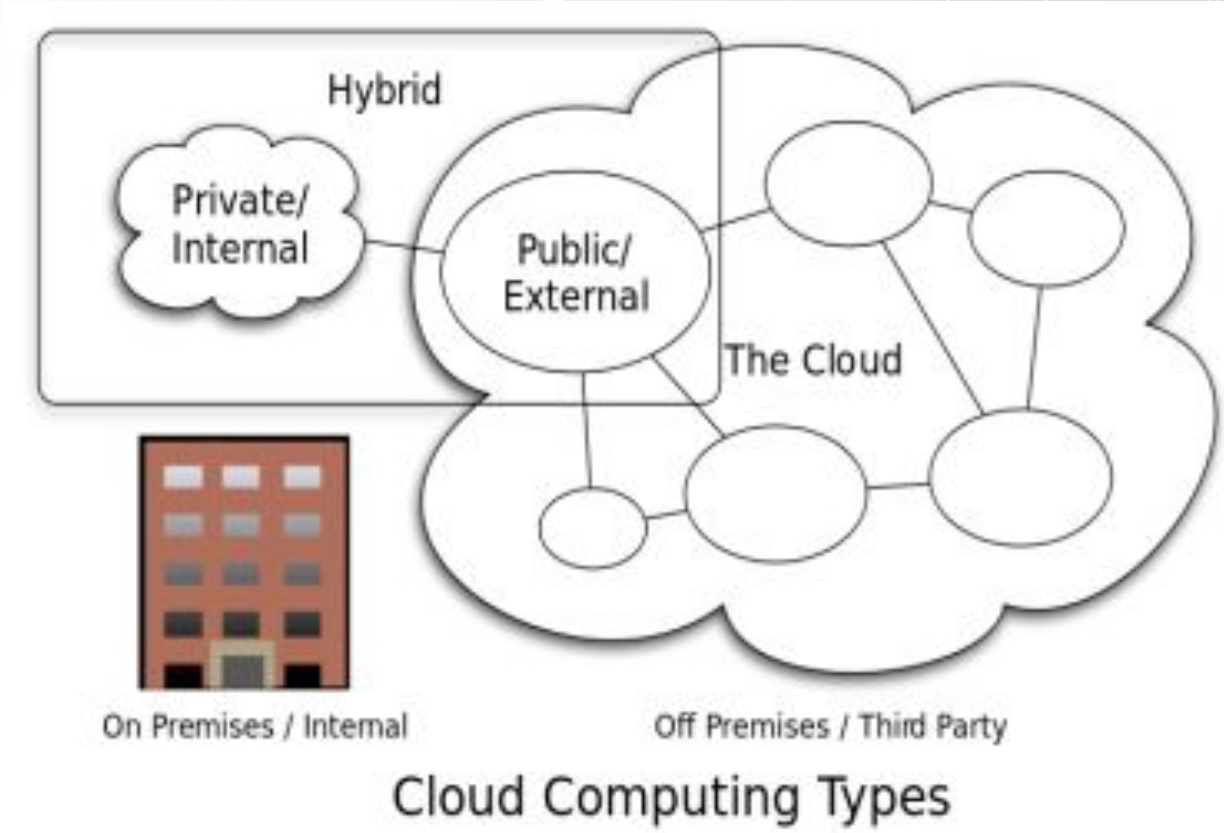
Deployment Model: Community Cloud

- **Keuntungan:** Bisa bekerja sama dengan organisasi lain dalam komunitas yang mempunyai kepentingan yang sama. Melakukan hal yang sama bersama-sama tentunya lebih ringan daripada melakukannya sendiri.

- **Kerugian:** Ketergantungan antar organisasi jika tiap-tiap organisasi tersebut saling berbagi sumber daya.

Cloud Computing – Deployment Models

- Private Cloud
- Public Cloud
- Hybrid Cloud



https://commons.wikimedia.org/w/index.php?curid=6089457

Definition– Deployment Models

Public cloud

- *Public cloud* (off-site and remote) describes cloud computing where resources are dynamically provisioned on an on-demand, self-service basis over the Internet, via web applications/web services, open API, from a third-party provider who bills on a utility computing basis.

Definition– Deployment Models

Private cloud

- A *private cloud* environment is often the first step for a corporation prior to adopting a public cloud initiative. Corporations have discovered the benefits of consolidating shared services on virtualized hardware deployed from a primary datacenter to serve local and remote users.

Definition– Deployment Models

Hybrid cloud

- A *hybrid cloud* environment consists of some portion of computing resources on-site (on premise) and off-site (*public cloud)*. By integrating public cloud services, users can leverage cloud solutions for specific functions that are too costly to maintain on-premise such as virtual server disaster recovery, backups and test/development environments.

NIST Cloud Deployment Models

- Private cloud
  - infrastructure is operated solely for an organization
  - managed by the organization or by a third party
- Public cloud
  - infrastructure is made available to the general public
  - owned by an organization selling cloud services

NIST Cloud Deployment Models

- Hybrid cloud

  - infrastructure is a composition of two or more clouds deployment models

  - enables data and application portability

Public Cloud

- Public cloud or external cloud describes cloud computing in the traditional mainstream sense
- Resources are dynamically provisioned on a fine-grained
- Self-services basis over the Internet
- The cloud infrastructure is made available to the general public or a large industry group
- The most popular public cloud: Amazon Web Services, Google Cloud Platform, Microsoft Azure

Public Cloud

Public Cloud Structure

Private Cloud

- Particular model of cloud computing that involves a distinct and secure cloud based environment.
- Only the specified client can operate.
- Provide computer power as a service within a virtualized environment using an underlying pool of physical resource.
- Allow organization to host applications.
- Good starting point cloud computing for many companies.

Private Cloud

Private Cloud Structure

Hybrid Cloud

- The combination of two more public and private cloud.
- Sometimes, public and private cloud are bound to achieve both cost-efficiency and on-demand computing power.
- Enterprises can utilize the eternal private cloud resources without paying for the third party cloud providers.

Hybrid Cloud

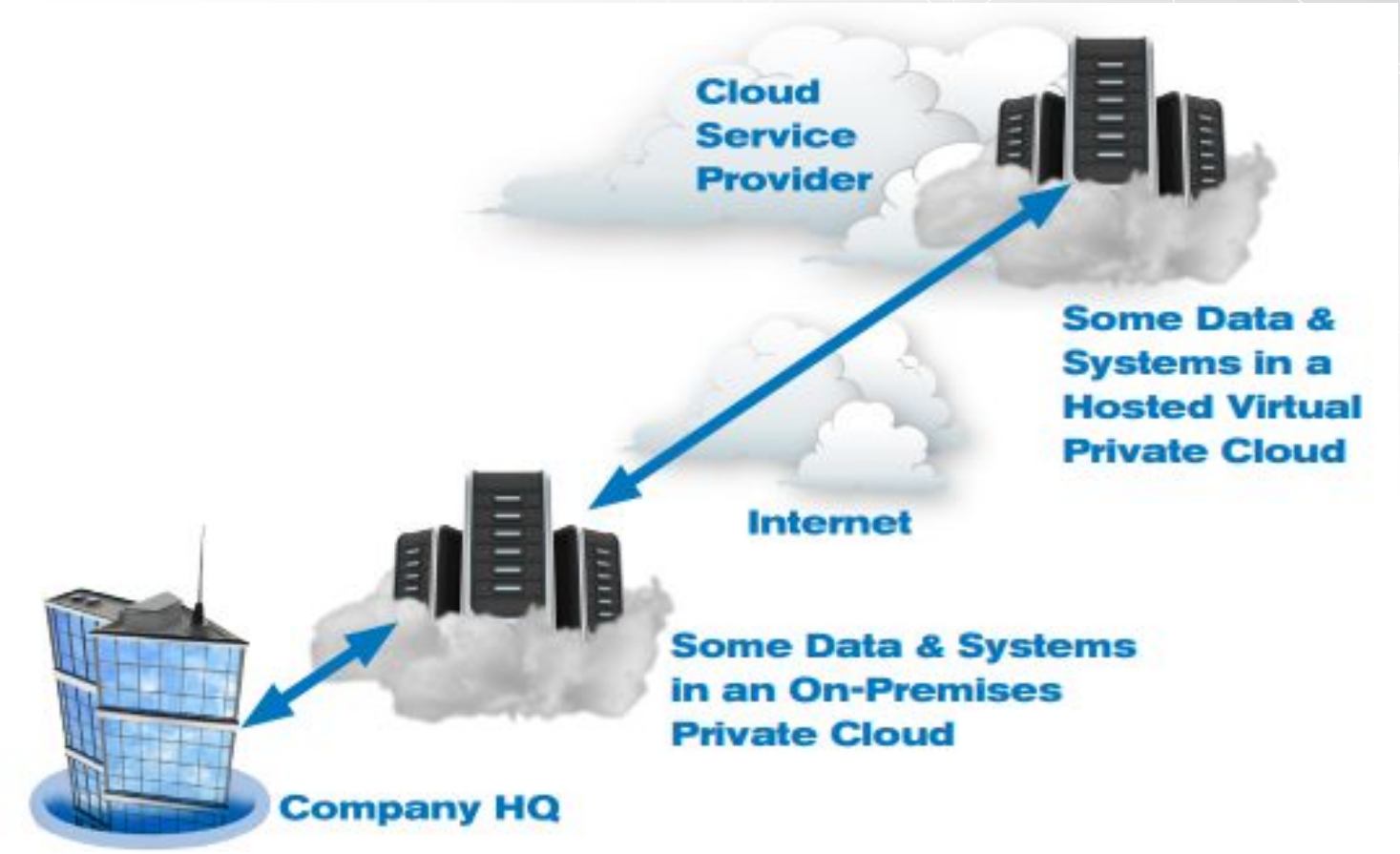
- Usually built to meet specific concern or needs.
- An organization may choose to continue to use their existing data center equipment and keep sensitive data secured on their network.

Hybrid Cloud

A hybrid cloud requires availability of:

- A Public Infrastructure as a Services (IaaS), such as Amazon Web Services, Microsoft Azure and Google Cloud Platform.
- The construction of a private cloud, either on premises or through a hosted private cloud provider.
- An adequate Wide Area Network (WAN) connectivity between those environment

Hybrid Cloud



Hybrid Cloud Structure

Advantages and Disadvantages

Advantages of Public Cloud:

- Simple and Easy

  Public clouds are available as a service in the internet, they are easy to deploy.

- Cost

  Initial investment is very low or nil.

- Less Time

  The IT resources and services are available immediately saving time for the company.

Advantages and Disadvantages

- No Maintenances

  The hardware and networks are maintained by the cloud services provider. Internal IT staffs have no responsibility in maintaining the infrastructure.

- No Contract

  No long term commitment with service provider because public clouds are usually pay-as-you-go models.

Advantages and Disadvantages

Disadvantages of Public Cloud:

- Lacks proper controls

  The client has no control of data or infrastructure.

- Performances

  The performance of the network depends on the speed of the internet connectivity.

Advantages and Disadvantages

- Weak on Security

  Since the hardware resource is shared between multiple users, IT security issues are more profound and data is vulnerable to thefts.

- Customization

  Customization of resources or services is not possible.

Advantages and Disadvantages

Advantages of Private Cloud:

- Controls

  Better controls for data, users and information assets.

- Cost

  Initial investment for hardware is very high in case of an on-premise infrastructure.

- Security

  Normally private clouds are deployed inside the firewall of the organization's intranet which ensures efficiency and good network performance.

Advantages and Disadvantages

- Superior Performance

  The hardware and other resources can be customized easily by the company.

- Easy Customization

  Compliance is achieved easily in private clouds.

Advantages and Disadvantages

Disadvantages of Private Cloud:

- Cost

  Costs are substantial in the case of building an on-premise private cloud. The running cost would include personnel cost and periodic hardware upgrade costs.

- Under-Utilization

  In some instances the resources subscribed can be under-utilized. Hence, optimizing the utilization of all resources is a challenge.

Advantages and Disadvantages

- Capacity Ceiling

  Due to physical hardware limitations with the service provider, there could be a capacity ceiling to handle only certain amount of servers or storage.

- Vendor Lock-in

  This can be a major impediment in private cloud adoption especially when the hardware and infrastructure is outsourced.

Advantages and Disadvantages

Advantages of Hybrid Cloud:

- Saving

  The hybrid cloud helps organizations save costs, both in infrastructure and in application support. It presents a more moderate initial investment.

- Scalability

  The hybrid cloud is a system capable of adapting to the demands that each company needs, for space, memory, and speed.

Advantages and Disadvantages

- Security

  Having the most critical data stored in the private cloud not only ensures that they are well protected but also provides that company information is stored according to the parameters established by current data protection regulations.

Advantages and Disadvantages

Disadvantages of Hybrid Cloud:

- Reliability

  The reliability of the services depends on the technological and financial capacity of the cloud service providers.

Advantages and Disadvantages

- Information

  The separated information of the company must travel through different nodes to reach their destination, each of them is a source of insecurity.

- Centralization

  The centralization of the applications and the storage of the data creates an interdependence of the service providers.