

Cloud Data Centers and Management



Kontents

- Cloud Management 3030246
- [Nick Antonopoulos]
- [30301313]
- Resource management [Wnhong tian]
- Data Center
- OpenStack
- Apache Mesos

Karakteristik Cloud

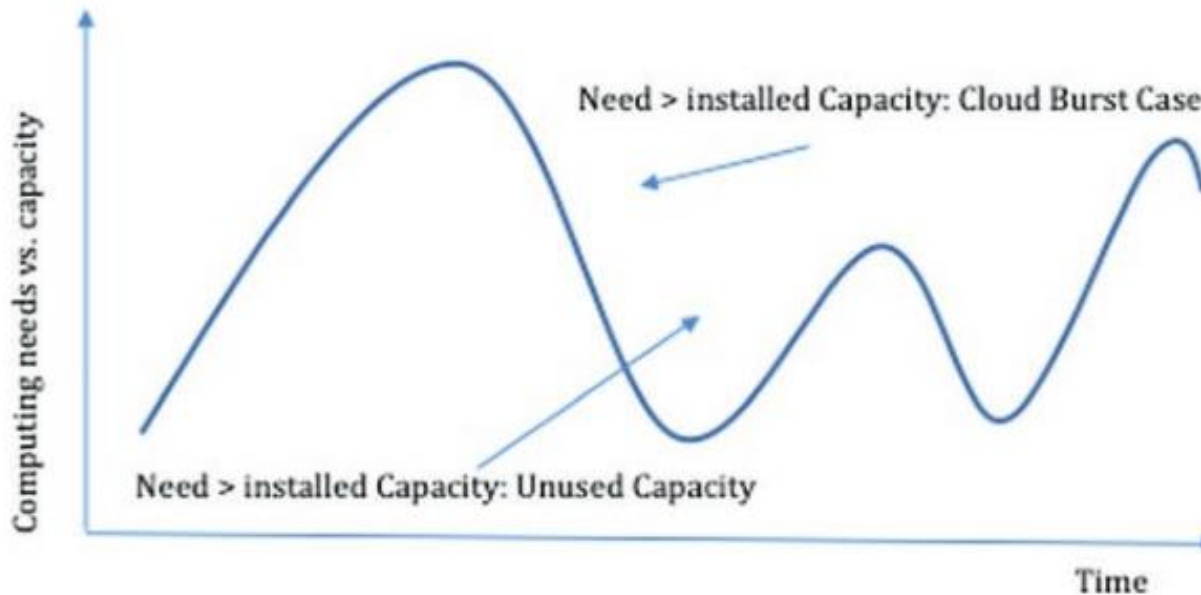
- Rapid elasticity
- Measured Service (adanya sistem Billing)
- On-demand
- Ubiquitous Network Access
- Resource pooling

Karakteristik



Interoperability Pada Cloud

- Organisasi besar biasanya sudah memiliki fasilitas komputasi berupa server + storage (DB)
- Ada kondisi dimana kebutuhan komputasi melonjak



Cloud Bursting

- Jobs that were running in an internal data centers but are moved out to public cloud
- Then return back to private cloud when internal capacity is available
- **Challenges :**
- Interoperabilitas : format data dan interface komputasi berbeda-beda Private vs Public
- Kedua sisi cloud harus sinkronisasi

System Failure

- Sistem cloud computing terdiri dari banyak komponen yang heterogen dan tersebar
- Secara umum disebut Distributed System (computing)
- Sistem harus memastikan ketika suatu node gagal maka komputasi pada node itu dipindah ke resource lain yang tersedia

Availability

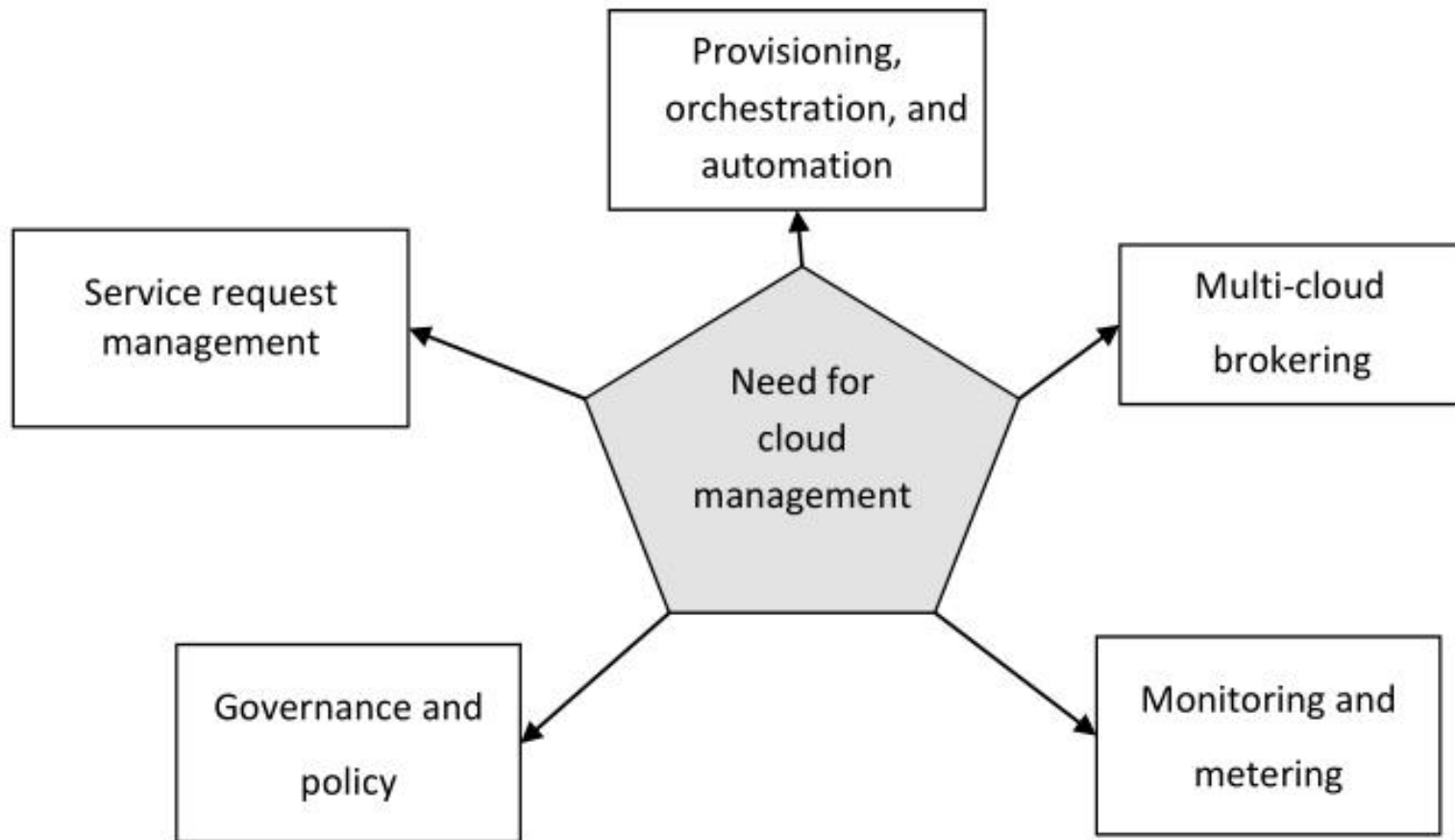
- Layanan harus terjamin ketersediaannya
- Ratio uptime / total time
- Diukur dengan istilah nine (9)

| 9 s | Availability | Downtime per year | Examples |
|-----|--------------|-------------------------|---------------------------|
| 1 | 90.0% | 36 days 12 hours | Personal computers |
| 2 | 99.0% | 87 hours 36 minutes | Entry-level business |
| 3 | 99.9% | 8 hours 45.6 minutes | ISPs, mainstream business |
| 4 | 99.99% | 52 minutes 33.6 seconds | Data centers |
| 5 | 99.999% | 5 minutes 15.4 seconds | Banking, medical |
| 6 | 99.9999% | 31.5 seconds | Military defense |

Cloud Management

- **Definisi** : teknologi dan software yang didesain untuk mengoperasikan dan memonitor aplikasi, data, dan layanan yang ada pada sistem cloud
- Sistem cloud lebih dinamik dari pada sistem IT tradisional
- VM dan kontainer dapat di provisioned dan decommisioned secara rutin
- (Mesin dan kontainer dapat ditarik dan diserahkan kepada customer secara dinamik)
- Performance scalability dan availability dimonitor dan diukur

Kebutuhan Cloud Management



Cloud Management Platform (CMP)

- **Definisi** : a suite of integrated software tools that an enterprise can use to monitor and control its cloud computing resources
- CMP contains policy-aware management capabilities to reduce any kind of human intervention instruction and interpretation
- CMP provide depth broad automation, monitoring, and analytics
- CMP provide reporting engines, visualization, query language, etc
- CMP menyediakan discovery services dan predictive analytics

CMP [2]

- CMP memastikan SLA (service level agreement)
memantau QoS, scalability, fault tolerance, dll
- Cloud Migrations: migrasi data jika terjadi bencana pada infrastuktur lokal
- Dynamic capacity planning: merespon ketika customer membutuhkan lebih banyak resource
- Resource allocation : alokasi resource SW / HW

Contoh CMP

- vRealize produk VMware
- IBM cloud orchestrator
- Cisco CloudCenter
- Scalr
- Red Hat CloudForms
- Embotics vCommander
- CloudBolt
- CloudCheckr
- CloudFoundry (open source) CMP ???

GCP Console



Status uji coba gratis: Masih ada sisa kredit senilai Rp4,251,750.00 dan waktu 343 hari - dengan akun penuh, Anda akan mendapatkan akses tidak terbatas ke semua layanan Google Cloud Platform.

TOLAK

AKTIFKAN

Google Cloud Platform

My First Project

Beranda

Marketplace

Penagihan

API & Layanan

Dukungan

IAM & admin

Mulai

Keamanan

KOMPUTASI

App Engine

Compute Engine

DASBOR

AKTIVITAS

SESUAIKAN

Project

ect

roject

-254401

ject

0298

lan project

ce

tidak memiliki resource

API API

Permintaan (permintaan/dtk)

0,0175

0,017

0,0165

0,016

0,0155

8:30 8:45 9 AM 9:15

Permintaan: 0,02

Buka ringkasan API

Status Google Clou

Semua layanan normal

Buka dasbor status Cloud

Error Reporting

Tidak ada tanda-tanda errc

Anda menyiapkan Error Rej

Pelajari cara menyiapkan E

Berita

New geospatial data come

public datasets with CARTI

Core Functionality of CMP

- Service Request Management
Menyediakan interface kepada user dalam mendapatkan layanan
- Provisioning : menyediakan resource dan menyerahkannya kepada user
- Orchestration : kerja sama dua atau lebih node komputasi (kontainer / VM)
- Monitoring, measurement, metering (billing)
- Multicloud brokering : kerja sama dan interaksi antar penyedia cloud
- Security: user identification, authentication

Data Center

- Definisi

A data centre is a physical space that is environmentally controlled with clean electrical power and network connectivity that is optimized for hosting servers. The temperature and humidity of data centre environment are controlled to enable proper operation of the equipment and the facility is physically secured to prevent deliberate or accidental damage to the physical equipment. This facility will have one or more connections to the public Internet, often via redundant and physically separated cables into redundant routers. Behind the routers will be security applications, like firewalls or deep packet inspection elements, to enforce a security perimeter protecting servers in the data centre. Behind the security appliances are often load balancers which distribute traffic across front end servers like web servers. Often there is one or two tiers of server behind

- Contoh : Data center Telkom University
- Contoh : Data center Google

Satu Data Center Google

- Satu data center bisa mengoperasikan puluhan ribu node server



Council Bluf, Iowa



Cloud based Data Center

