Cloud Services and Service Providers

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Outline

- Service Oriented Architecture (SOA) Overview
  - Cloud Services
- Major Cloud Service Providers

Service Oriented Architecture (SOA) Overview

- Service Oriented Architecture (SOA)
  - An architectural approach to designing applications around a collection of independent services
  - Four main components:
    - Service
      - Service implementation, contract, interface
    - Service Provider
      - Creates, maintains, and provides one or more services that others can use.
    - Service Consumer
      - Requests the service provider to run a specific service.
    - Service Registry
      - A network-accessible directory of available services

Service Oriented Architecture (SOA) Overview

- Communication protocols
  - SOAP, REST API, etc.
- An enterprise service bus (ESB)
  - A centralized software component performs integrations between applications
  - Connectivity/messaging, routing, conversion for compatibility

Service Oriented Architecture (SOA) Overview

- Web Service
  - A software service that is available over a network (intranet/Internet)
  - Uses standard messaging system(XML/JSON)
  - Platform independent

Service Oriented Architecture (SOA) Overview

- Cloud Services
  - Services are made available to users on demand via the Internet from servers fully managed by a cloud computing provider
  - Example
    - Google
      - Cloud platform, app engine, cloud print, cloud connect.
    - Microsoft
      - Windows Azure Cloud Services
    - Amazon
      - Amazon Web Services (AWS)

Cloud Service Providers

- Major commercial cloud providers:

  - Amazon Web Service (32%)

  - Microsoft Azure (20%)

  - Google Cloud (9%)

  - Alibaba Cloud (6%)

  - IBM Cloud

Amazon Web Services (AWS)

- Cloud infrastructure provider from Amazon
  - Founded in 2006

- The leading cloud provider in the world

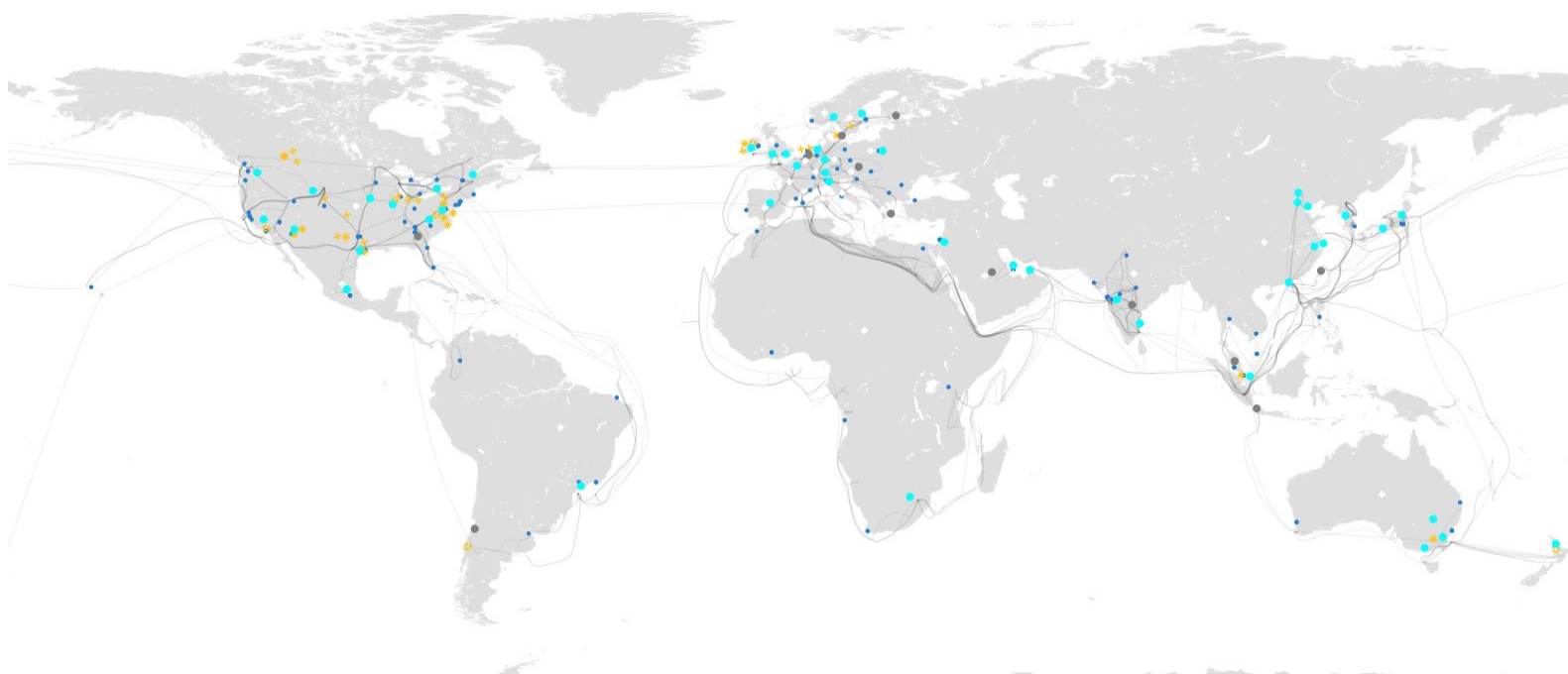- 200 data centers
  - 36 regions

Amazon Cloud Infrastructure

Microsoft Azure

- Microsoft Corporation
  - First launched in 2010
- The second-largest cloud provider in the global cloud market
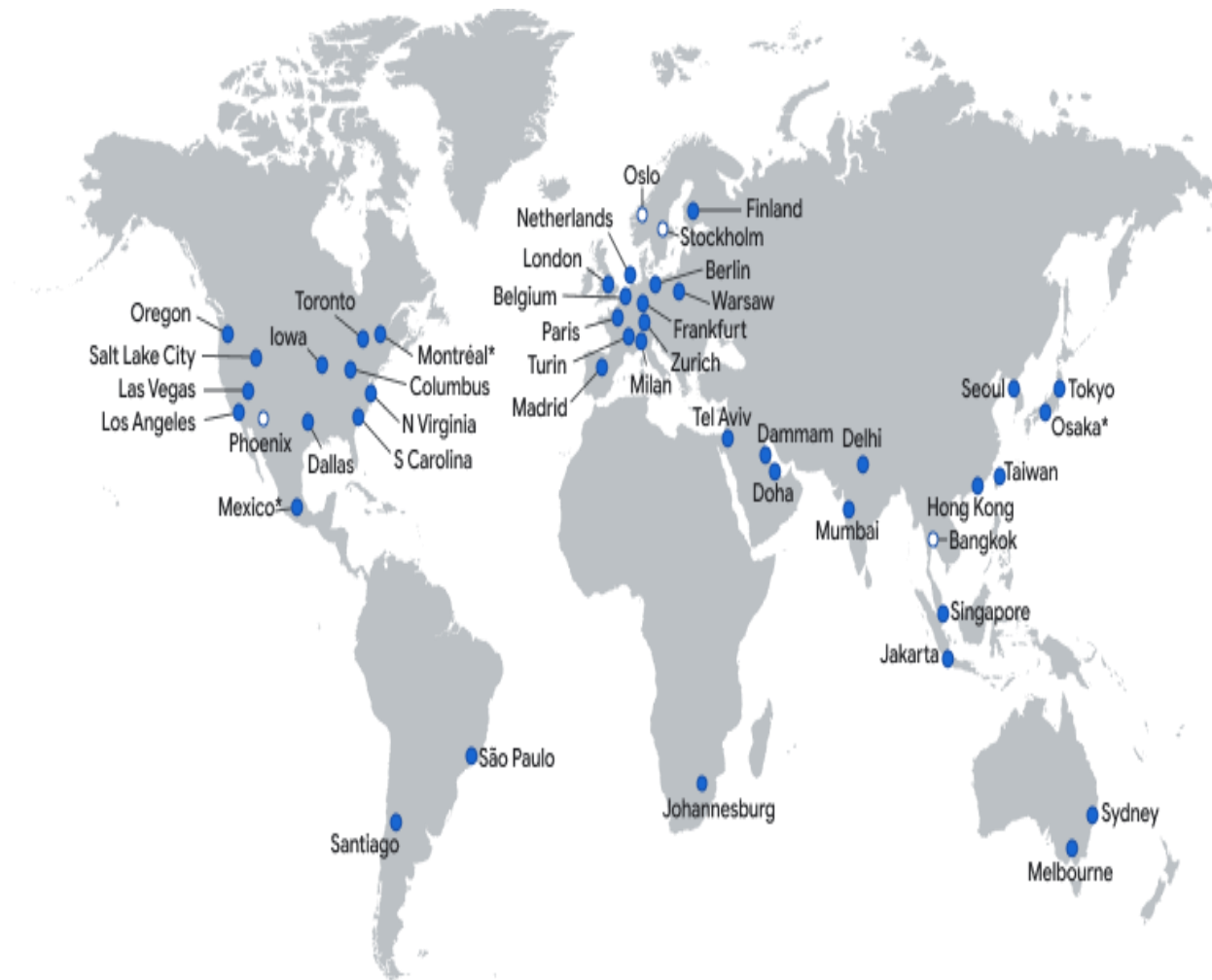- 300+ Datacenters
  - Organized into 60+ Azure regions

Microsoft Azure
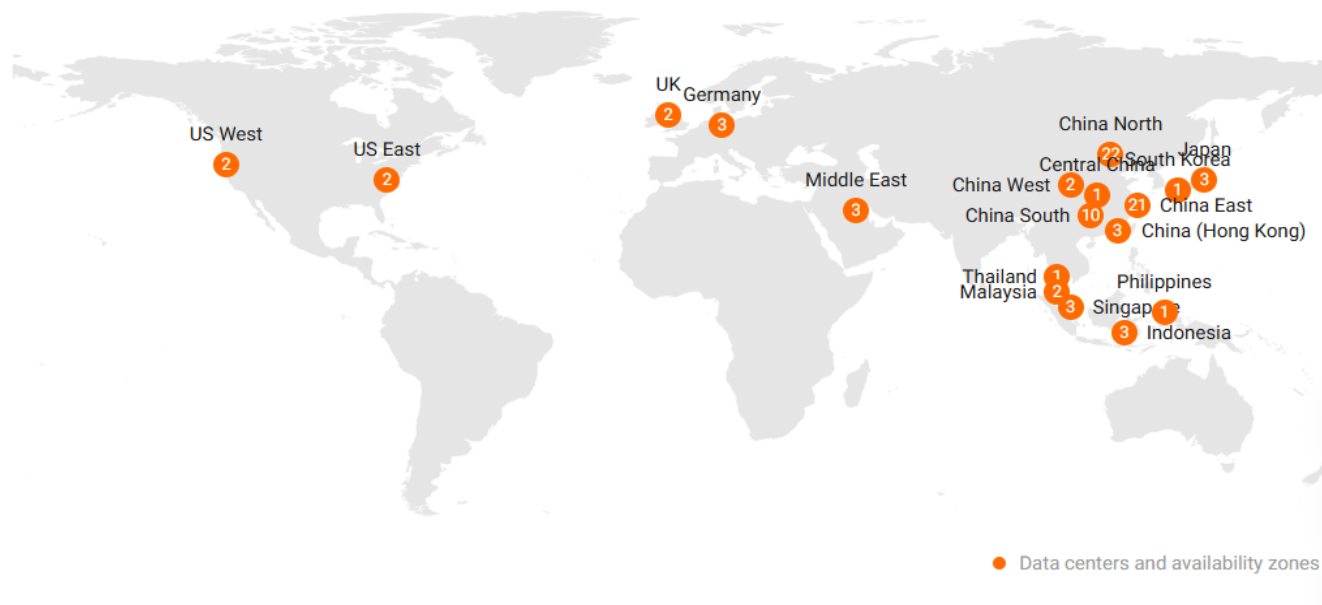
Google Cloud Platform (GCP)

- Started by Google in 2011
- The third-largest cloud provider in the world
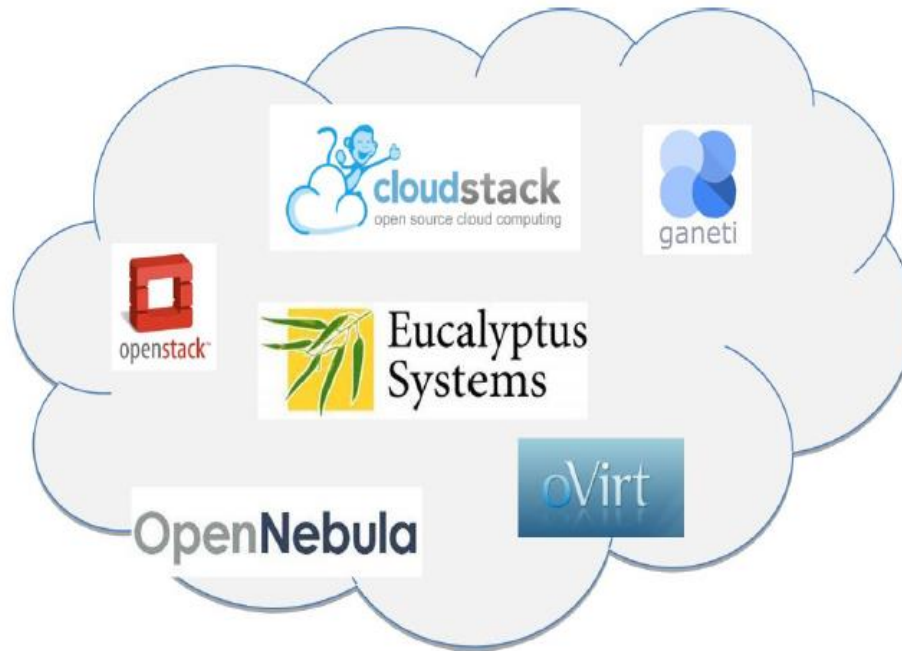- 41 regions

Google Cloud Platform (GCP)

Alibaba Cloud

- 28 Regions

Cloud Service Providers
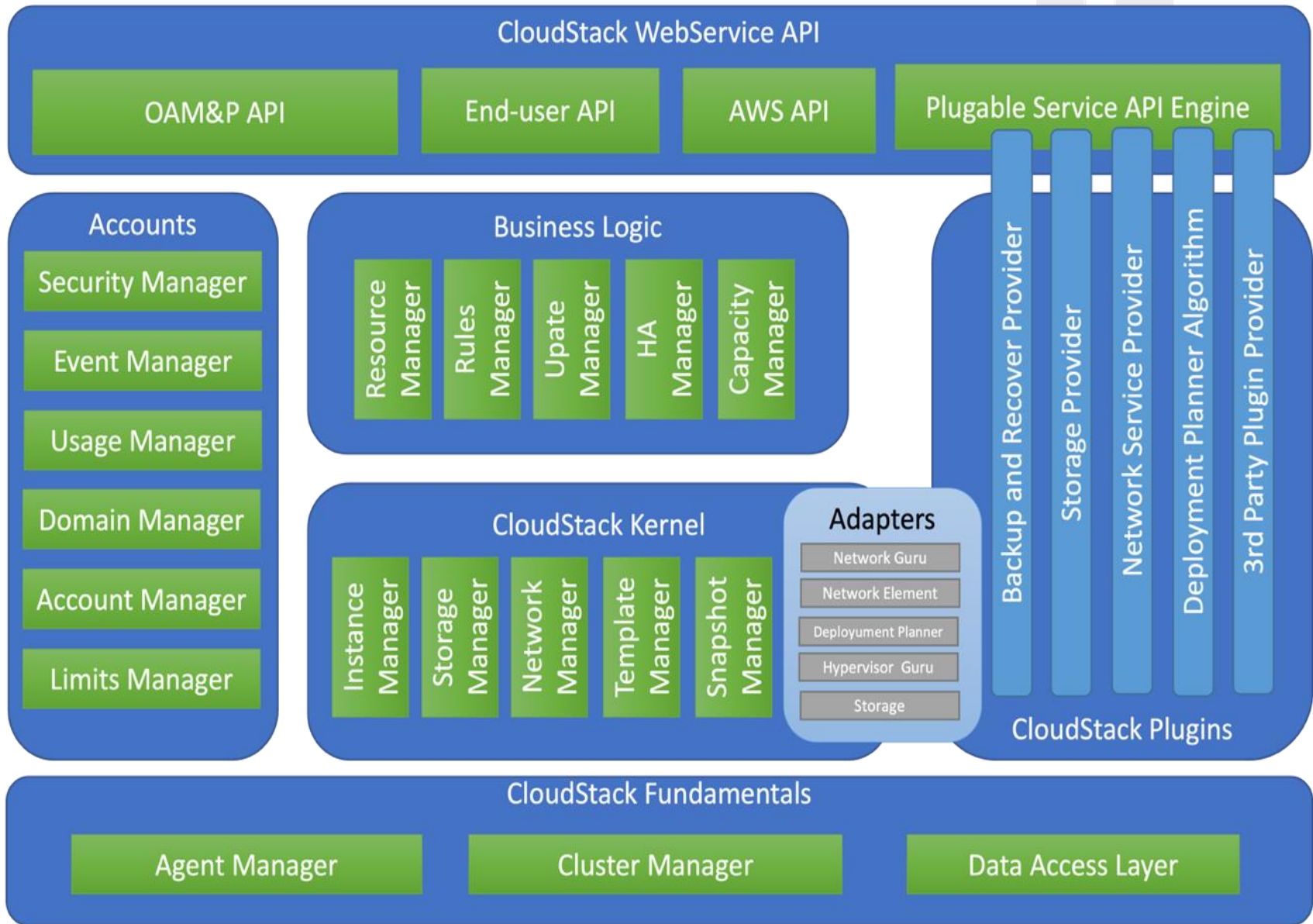
• Open-source cloud platforms:

What is CloudStack?

- An open-source software platform that pools computing resources
  - Public or private Infrastructure-as-a-Service (IaaS) clouds
- Manages the network, storage, and compute nodes that make up a cloud infrastructure
- Multiple Hypervisor Support
  - KVM, XenServer, Hyper-V, etc.
- Massively Scalable Infrastructure Management
  - Tens of thousands of physical servers in geographically distributed datacenters
- Automatic Cloud Configuration Management
- Written in Java
- Example deployment: AT&T, British Telecom

Architecture Management Server

apachecloudstack
open source cloud computing
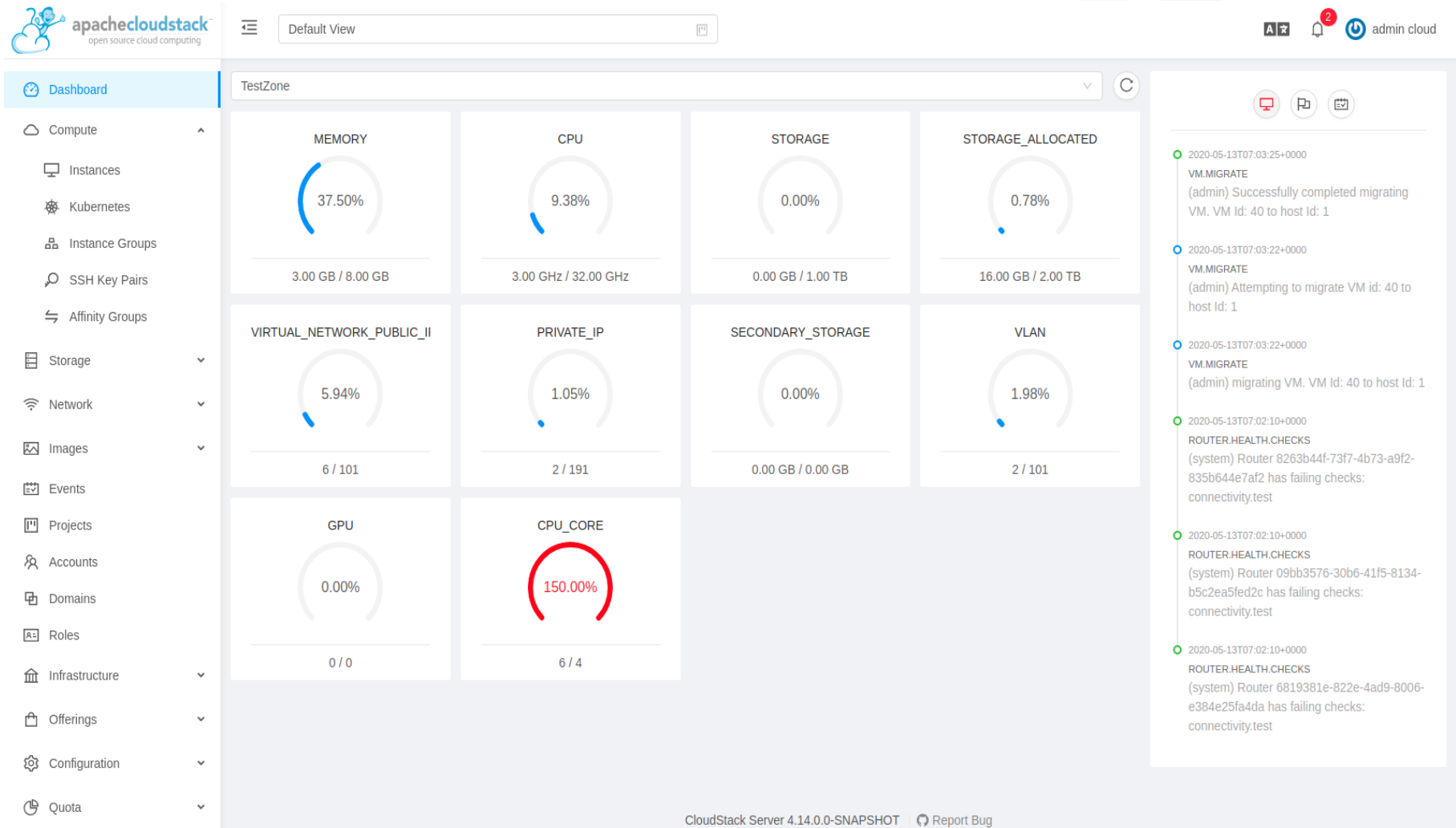
CloudStack WebService API

OAM&P API

End-user API

AWS API

Plugable Service API Engine

Accounts

Security Manager

Event Manager

Usage Manager

Domain Manager

Account Manager

Limits Manager

Business Logic

Resource Manager

Rules Manager

Upate Manager

HA Manager

Capacity Manager

CloudStack Kernel

Instance Manager

Storage Manager

Network Manager

Template Manager

Snapshot Manager

Adapters

Network Guru

Network Element

Deployument Planner

Hypervisor Guru

Storage

CloudStack Plugins

Backup and Recover Provider

Storage Provider

Network Service Provider

Deployment Planner Algorithm

3rd Party Plugin Provider

CloudStack Fundamentals

Agent Manager

Cluster Manager

Data Access Layer

CloudStack Infrastructure

- Admin GUI

https://docs.cloudstack.apache.org/en/4.20.0.0/
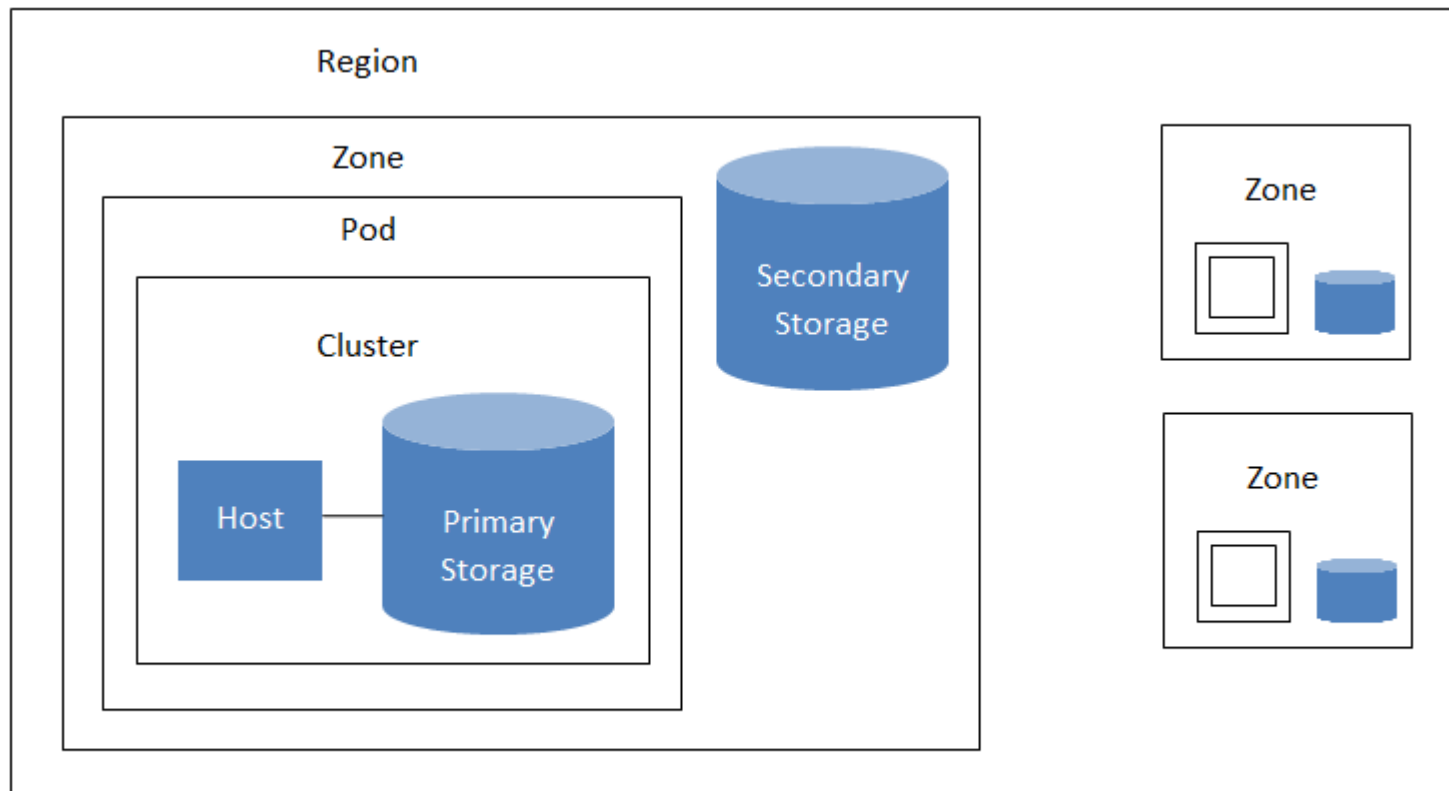
Cloud Service Providers

- Factors for choosing service providers
  - Services
  - Region coverage
  - Pricing
    - Instance costs, storage costs, data transfer fees
  - Latency*

www.cloudping.info