

Advantages of the land technology

Cloud computing is economy

Cost efficiency → Ne kadar kılınırın o kadar "ödersin"

You don't need to invest expensive hardware, storage devices and software

Elasticity & Felexibility → Server Kapasitelerini degistirebilirsiniz

- > Helps you to reduce your resource demands and increase them according to your needs.
- > Gives you the flexibility to work anywhere you want, and all you need is an internet connection whenever you want.

Reliability → Güvenlilik

- > CC is reliable as the stored data is secured and can't be manipulated.
- > If the database fails, the data from other side can be recovered.

Increased Security

- > The providers of the service pick the highest level of data protection.
- > If a laptop is lost or damaged another computer can access the company GUI.

Manageability

- > Many items are handled by cloud computing. The only this the user has to do is get an internet connection and laptop.

Availability → Data Center

- > Cloud service providers offer up to 99.99% uptime to ensure that business operations and executions continue flow.

Centralization → 100 den fazla servis

- > All data are stored in one location.
- > So that multiple remote locations can be reached.

Auto-Updating

- > Software updates can be painful but cloud so putting simplifies for you.
- > Cloud derive provider look after and controls all software maintenance and upgrades.

No Maintenance

- > CC solution eliminates the need for any maintained evidence.
- > Not only does it increases work efficiency, but also reduces costs of operations in

Disadvantages of Cloud

Internet Dependency

- > CC requires internet connectivity.
- > There is no way to access your data.
- > Low-speed internet connections makes difficult.

Downtime

- > Cloud providers may face power loss, low internet connectivity, service maintenance etc.
- > Downtime is affect to working cloud.

Loss of Control

- > It still requires attention.
- > You trust another party to take care of your data.
- > Once you accept cloud tech you should know that you will share all the sensitive information.

Lack of Support

- > Sometimes fail to provide customer support.
- > If you have any problem, you have no choice but to call the technical support.
- > You can't fix the cloud computing problems.

~ Parts of Cloud Computing Architecture ~

Front end

- > Is the end which is used by the user.
- > Includes; the user interface and applications which are required to access the cloud computing platforms.
- > Example; Web Browser.

Back end

- > Is managed by the host.
- > Consists of all resources which are necessary to provide cloud computing services such as VM, data storage, deployment models, services models, security system etc.
- > Built-in security mechanism, traffic control and protocol is responsibility of BE.

Sınır Sorusu
Enterprise network
için IS datika support
saglayıcı or.

~ Actor/Role Based Model ~

- > A cloud consumer is an individual or organization that uses cloud products and services.
- > The purveyor(saglayan kimse) of products and services is the Cloud Provider.
- > Cloud Broker
- > Cloud Auditor
- > Cloud Carrier

History of Cloud Computing

- > 1960 John McCarthy- Introduces mainframe time sharing
- > 1969 Licklider- Enabling the development of ARPANET
- > 1970 VMware launched
- > 1997 Cloud Computing defined by Ramnath
- > 1999 Arrival of sales force.com
- > 2003 Create Virtual Machine Monitor
- > 2006 Amazon launched EC2 and S3 - EC2= Elastic Compute cloud S3= Simple Storage Service
- > 2013 \$131 million worldwide public cloud services Market
- > 2016 \$203.9 billion worldwide Public Cloud Services Market.

Cloud Deployment Models

5 key Traits

- > Broad Network Access
- > Self Service
- > Measured Service
- > Shared resources
- > Elastic

4 Deployment Model

1. Private Cloud

- > Exclusive use by a single organization.
- > It may exist on or off premises.

2. Public Cloud

- > General public
- > It may be owned, managed and operated by a business.

3. Community Cloud

- > Limited shared community
- >

4. Hybrid Cloud

- > Two or more distinct cloud infrastructure(private, community, or public)

Public Cloud

- > Owned and operated by cloud service providers

> Users don't have to purchase or update hardware or software

Examples of Public Cloud Services:

- Amazon Elastic Compute Cloud (EC2)
- Google AppEngine
- Windows Azure Services Platform
- IBM Blue Cloud

Advantages of Public Cloud

- > Using latest technologies
- > Renting resources or applications at more reasonable prices.
- > Achieving high uptime.

6/13/2021

AWS EC2 (Elastic Compute Cloud)

What is EC2?

→ EC2 is a web service that provides secure, resizable compute capacity in the cloud.

> Allows to you run application programs

EC2 Features & Advantages

Features =

→ EC2 provides you to pay only for resources.
Creating server is 2 second.

Advantages =

→ Elasticity = Capacity needs can be arranged minutes.

Control = Create, stop or terminate.

Reliability = 99.99 %

Ec2 Basic Components

Instances = Virtual computing

Amazon Machine Images (AMI) = pre-configured templates.

Amazon EBS volumes - Instance Block Storage = Ec2 storage components.

Security Groups = Firewall enables, protocols, port and source IP ranges.

Ec2 is virtual Machine

We can adjust capacity

We pay as much as we use

Types of Instances

1. Pricing Model

On demand - Reserved - Spot - Dedicated Host - Saving Plans.

On Demand = hourly charged

→ Pay as you go - price is fixed and pre-determined.

Short terms need - testing and temporary needs.

Reserved Instance (RI)

→ 1-3 year commitment. 30% - 75% price advantage.

Spot Instance

→ Cost advantage up to 90%.

- The machine runs when the price falls below the target price.
- The machine automatically shuts down if the price exceeds that target price.

Dedicated host

- Physical layer
- Thes can help you reduce costs by using existing server.
- Your instances are reserved also physically separated from other servers.

Example= Oracle requires the use of dedicated host in order to use some programs on AWS so that they can track and calculate the license usage.

Saving plans

- Flexible pricing model
- Provide lower prices

2. Purpose Model

General Purpose

- WEB servers, microservices, cache fleets, distributed data stores and development environments.
- There are T, M, A options
- Most commonly used.

Compute Optimized

- High performance web servers - scientific modeling - batch processing - machine learning.
- There are C-type servers that require CPU power.

Memory Optimized

- High performance database, real time large data analytics
- There are R, X, Z and D type instances.

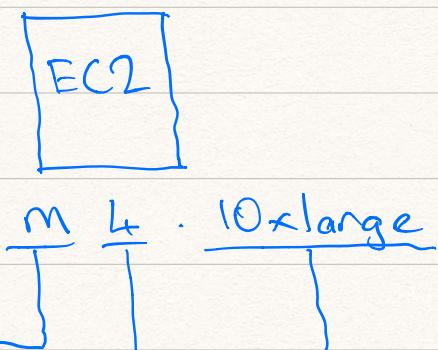
Storage Optimized

- There are D, H and I type of instances.
- Best used fast disk - data warehouse.

Accelerated Computing

- Machine learning - deep learning calculation - fluid dynamics.

Code Definition of Instance Types



Purpose

Generation

Dimension

M = Its purpose. It means EC2 is General purpose.

L = Instances Generation. The last generation M family is M5

10xlarge = Dimension of instance.

Choosing an Instance

- choose pricing
- Right model for our job.
- Which generation we use.
- What size virtual machine we need.

EC2 Volumes

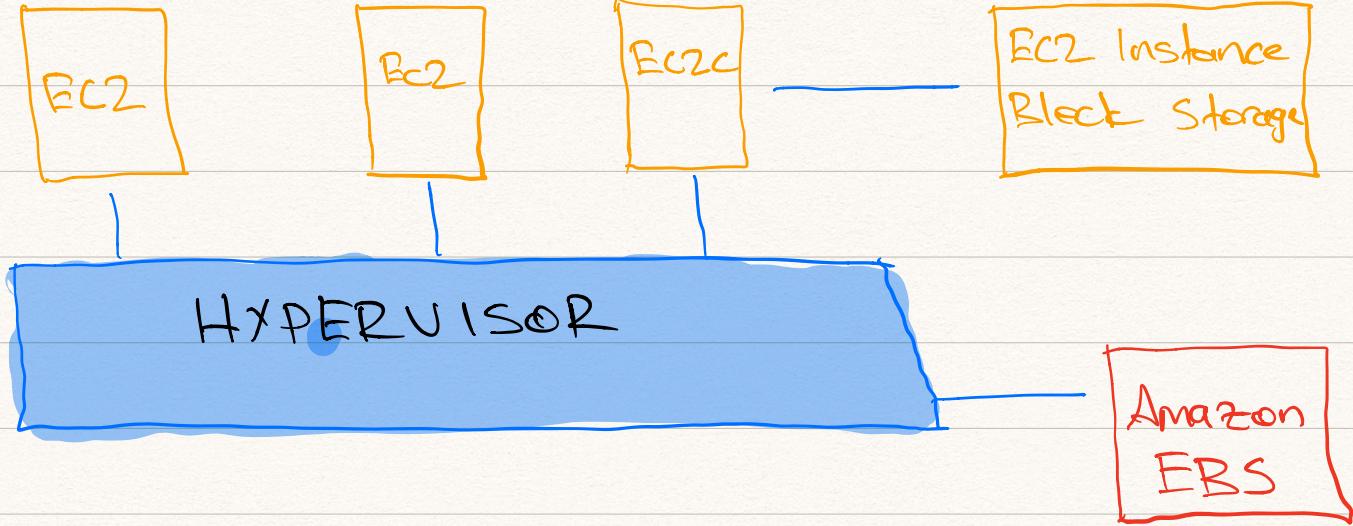
EC2 Block-Based Virtual disks

- You can attach to instances.
- It is kind of virtual disk.

There are 2 basic volume options for customer:

- Instance store (Ephemeral)
- Elastic Block Storage (EB)

Virtualization in EC2



- Driver and software layer "Hypervisor"
- Hypervisor ensures all information within its body.
- Systems connected directly to the hypervisor. "EBS - Elastic Block Storage"
- One physical servers fail, configurations pass the other physical server and continue to run.

EC2 Instance Block Storage (Ephemeral)

- Directly connected physical server on which the virtual machine is running.
- It may have SSD or magnetic HDD.

Advantage

- High access speed and very low latency.

Disadvantage

- If the VM shuts off, all data here is lost.
- If something happens physical machine or you turned off

the virtual machine, these disks can't be accessed.

EBS (Elastic Block Storage)

- EC2 is virtual server in cloud, EBS is a virtual disk in a cloud.
- It can be attached virtual machine and installed in operating systems/application.
- Provides 99.999% accessibility guarantee and replicates data to multiple physical devices.
- If you create a Windows or Linux EC2 instance EBS volume can be attached as Root device of volume automatically.

EBS Volumes

1 Solid State Drives (SSD)

- Optimized for transactional workloads involving frequent read/write operations.

2 Hard Disk Drives (HDD)

- Optimized for large streaming workloads.

IOPS and Throughput

IOPS

- stands for Input/Output Operations Per Second.
- How many reads and writes can be made to a

disk per second.

Throughput

→ How many MB of data transfer per second is allowed to a storage system.

IOPS is related to the functional speed of disk.
Throughput is related to processing capacity.

* Amazon Machine Image (AMI)

→ It is important component for operating system.
→ It is VM template containing operating system and application files.

AMI Types

Public

→ AMIs managed by the Amazon itself.
→ This package covers common server features.

Paid

→ Created by various companies or independent developers
→ For example Linux creates server image and put the AWS store sets price. You can buy it by accepting price.

Private

→ We can create and manage with AWS Marketplace
and Private Image Build Service.