Table of Contents

Clouds constitute the primary outcome of cloud computing.

Clouds build the infrastructure on top of which services are implemented and delivered to customers.

According to the administrative domain, clouds are classified.

Cloud type identifies the boundaries within which cloud computing services are implemented.

There are four different types of cloud:

1. Public clouds
2. Private clouds
3. Hybrid or heterogeneous clouds
4. Community clouds

1. Public clouds:

1. The cloud is open to the wider public.
2. In public cloud the services offered are made available to anyone, from anywhere, and at any time through the Internet.

3. From a structural point of view they are a distributed system.
4. In public clouds one or more datacenters connected together.
5. On these data centers services are implemented.
6. Customer may required his/her credentials or billing details to access the offered services.
7. Small enterprises prefere public couds due to its less cost.
8. Public clouds offers renting the infrastructure or subscribing to application services.
9. Customer can use on demand services.
10. Public cloud keeps monitoring of services used by users to provide billing as per the uses.
11. Public clouds offer any kind of services like,
    - IaaS by Amazon EC2 is a public cloud
    - PaaS by Google App Engine is a public cloud
    - SaaS by SalesForce.com is a public cloud
12. At the same time large quantity of users can access the public cloud.

2. Private clouds:

1. The cloud is implemented within the private premises of an institution and generally made accessible to the members of the institution or a subset of them.
2. When customers privacy in important private clouds are preferable over public clouds.
3. Instead of pay-as-you-go model as in public cloud, there could be other scheme in private clouds.
4. In private cloud sensitive informations are kept in house.
5. Private cloud provides customer information protection better than public lcouds.
6. Private clouds can be implemented on more heterogeneous hardware.
7. Some of the options available for private deployment of clouds we can consider are

DataSynapse, Zimory Pools, Elastra, and Aneka.

8. DataSynapse provides a flexible environment for building private clouds on top of datacenters.
9. Elastra Cloud Server is a platform for easily configuring and deploying distributed application infrastructures on clouds.
10. Zimory provides a software infrastructure layer that automates the use of resource pools based on Xen, KVM, and VMware virtualization technologies.
11. Aneka is a software development platform that can be used to deploy a cloud infrastructure on top of heterogeneous hardware: datacenters, clusters, and desktop grids.

3. Hybrid clouds:

1. Hybrid clouds are the combinations of private clouds and public clouds.
2. Private clouds stand alone are sometimes not scalable so here advatages of public clouds are taken.
3. Public clouds suffer with security threats and administrative pitfalls sor advantages of private clouds are taken.
4. When advantages of public clouds and private clouds are taken together thats known as hybrid clouds.
5. Hybrid cloud allowed the services to be taken from public clouds wen needed and keep the sensitive informations within private clouds.
6. Hybrid clouds uses cloudbursting, in which services are taken when required and released wheb not in use.
7. Dynamic provisioning refers to the ability to acquire on demand virtual machines in order to increase the capability of the resulting distributed system and then release them.

4. Community clouds:

1. Community clouds are distributed systems created by integrating the services of different clouds to address the specific needs of an industry, a community, or a business sector.
2. Sectors for community clouds are as follows:
    1. Media industry
    2. Healthcare industry
    3. Energy abd other core industries
    4. Public sector
    5. Scientific research
3. Community clouds can provide a shared environment where services can facilitate business-to-business collaboration.
4. Benefits of the community clouds:
    1. Openness
    2. Community
    3. Gracefull failures
    4. Convenience and control
    5. Environmental sustainability
5. Openness: By removing the dependency on cloud vendors, community clouds are open systems in which fair competition between different solutions can happen.
6. Scalable: Scalable because the system can grow simply by expanding its user base.
7. Gracefull failures: Since there is no single provider or vendor in control of the infrastructure, there is no single point of failure.
8. Convenience and control: The cloud is shared and owned by the community, which makes all the decisions through a collective democratic process.
9. Environmental sustainability: Hybrid clouds tend to be more organic by growing and

shrinking in a symbiotic relationship to support the demand of the community, which in turn sustains it.