- Cloud computing is the model from enabling ubiquitous, convenient, on-demand network access to a shared pool of resources that can be rapidly provisioned and released with minimal mgmt effort or service provider mgmt.

- 2011, Timothy Grance and Peter Mell,

  DropBox, G Drive

SAAS To view/os	PAAS S dep design, dev dep	IAAS S+P

SAAS → maintenance by CSP, no install, and users

3 Service Models

PAAS → develop,use, use, platform, no control on inf. Azure

IAAS → System arch +

4 Deployment Models

PUBLIC → gen public, subscription, NI GRAWS
PRIVATE → single org   gov't public G NIC,
Azure, IBM
HYBRID → Google Anthos
COMMUNITY → GCC

5 Characteristic features
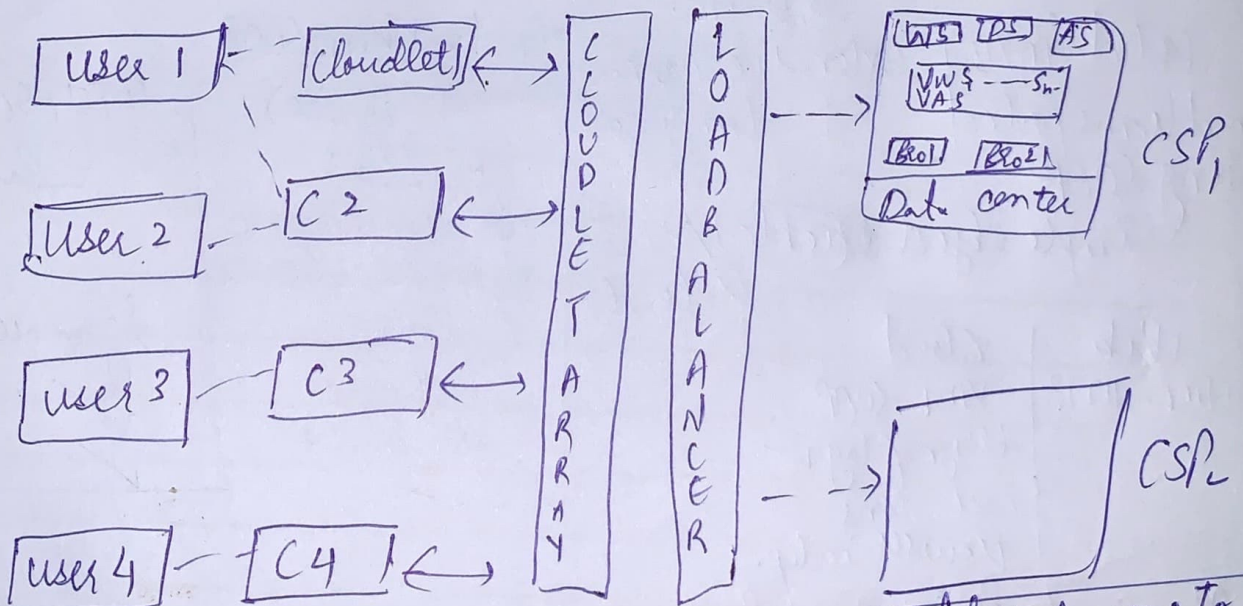
↓

on demand self service

broad access n/w → any loc

(Resource) pooling → multi customer from same physical
Rapid elasticity → quick provision and release resources

Storage, Measured service → managed, tracked & controlled
mem,
n/w, bandwidth,
db.

User 1	Cloudlet	
User 2	C2	
User 3	C3	
User 4	C4	

CLOUDLET ARRAY

LOAD DB ALANCER

WS DS AS
VW$ --- Sn-
VA S
B201 B20E1
Data center   CSP₁

CSP₂

Virtualisation logical name to physical resource & returns a pointer → multi os to share n/w
Cloudlet
1. located at edge   2. Provides cc features close to user   Hypervisor → s/w that helps to achieve Vi
intermediary cluster   3. real-time processing   isolation, Resource Allocation
of comp. b/w user & cloud   AR, IOT

Virtualisation Parameters
Types.
OS, WS,
AS, DS
AS

1. Equivalence
2. Security 3. Performance.
logical → guest entity
host
or → host

```
┌─────────┐
│HYPERVISOR│
│   OS    │
│HARDWARE │
└─────────┘
```

Cloud Enabling Tech.
① Virtualization
② Service Oriented Arch
③ Grid computing.
④ Utility computing.

Service oriented tech Architecture

Grid computing

comp res₁ → 4
CR₂ → L₂
CR₃ → L₃

common goal

G C vs C C
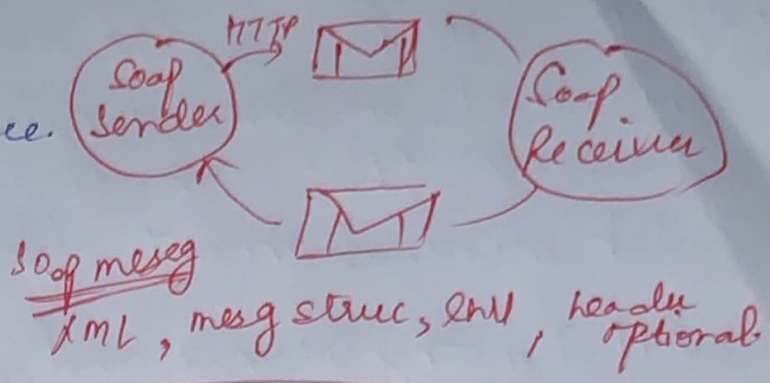
Dist c. | Client Server
decents | scalable
        | flexible
        | centrali.

Web Services
services pro
by one CSP to another
CSP or CSR over
web, on demand
elastic.

Coded in XML (Extensive Markup Language)
and transported
using SOAP
(Simple Object Oriented Access Protocol)

	Web	Cloud
	HTML - HTTP	XML SOAP
		design of tag ✓
		case - sens
		browser indep.

SOAP → Simple Object Access Protocol.
n/w plat used in a web service to
comm data b/w 2 diff machines.
XML → messg format
HTTP → data trans.

SOAP
Sender

📧 HTTP 📧

📧

Soap
Receiver

Soap mssg
XML, mssg struc, env, header optional.

RESTAPI & Mashup

Mashup is a web application f/w
that fetches info about
configurable computing resources
from the virtualized pool of CSP
and provides to CSR,

• SOAP, stateless & statefull
                        comm
• Restful API web
         services

REST (Representational State Transfer)
• arch style
  for designing n/w appli
• set of constraints used to create a
  light weight, scalable &
         maintable web serv
• faster than SOAP

HTTP (80)	HTTPS (443)
s less	s ful
creation & maintce	
of state at server.	
static	dynamic
cookies ✗	✓
sessions ✗	✓

MICEF   (Edge or Mist)

Mist
IOT
Edge → processing cloud
    data
Elastic at   filtering
Fluid   edge   up
        of n/w
fog
}

| cloud |
| fog |
| Edge |

[Mist]
loca

even
closer.
to user.
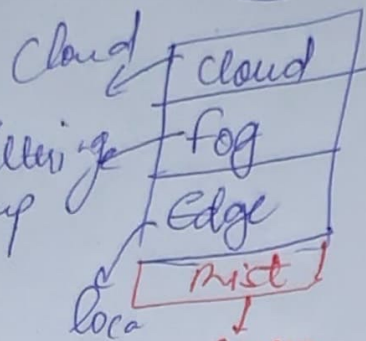
extends
CC capability to
edge of n/w

Data Center → n/w of comp

Broker → negotiate comp resources

Cloudlet → small scale data
            center located at
            edge of n/w

Non-power
Aware Data Centre → Run a power
                   for tension

Power aware DC → optimize for
                 energy & power
                     consump

Actuators → action based on
              input

uplink : user → data center

downlink: data center → user

Panel → lightweight container
        used to group other components.
frame No. window all ation
        organizing layout within frame.

FOG extension
    of cloud
+   computing
    that brings
    storage, computork
    closer to the
         user

1. Decentralization
2. fog nodes → devices
                routers, switch

frame → A top level
         container that
         represents a window
         → device
         → [] frame.

eg JPanel.