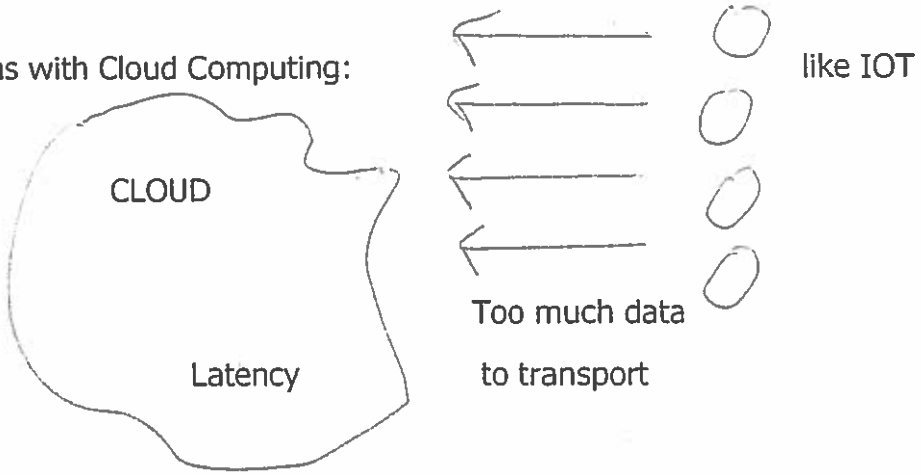
Fog Computing

Problems with Cloud Computing:



Solution: Distribute computing, storage, networking and management services closer to end users in a continuum. "Fog" is like cloud close to ground.

How is Fog Computing different from Edge Computing?: Fog computing is an architecture which includes cloud, core, metro, edge, clients and things (i.e. IOT). Edge as in edge computing often associated with a network at the edge only.

Is the Fog the same as the Internet of Things?: Fog is an architecture and the IOT is a set of services and applications. Similar to the relation between the Internet architecture and web applications.

Fog is an architecture for computing, communications, storage and control (control of net itself and control of cyber-physical systems).

Advantages of Fog Computing:

1. Security: Reduces distance information travels. But has unique security challenges as well as traditional distributed system security challenges.

2. Cognition: Client centered/aware. Can do what is best locally.

3. Agility: Don't have to wait for deployment of large cloud systems. Cheaper and faster to work with client and edge devices. Particular advantage in undeveloped regions of the world.

4. Latency: Real-time processing and cyber-physical system control. Target: milli-second reaction time.

5. Efficiency: Pooling resources along cloud to thing continuum. Leverages idle computing/networking/storage resources.

From Wikipedia: "Mist Computing: a lightweight and rudimentary form of computing power that resides directly within the network fabric at the extreme edge of the network fabric using microcomputers and microcontrollers to feed into Fog Computing nodes and potentially onward towards the Cloud Computing platforms. [3]"

From:

[1] M. Chang, S. Ha, C.L. I, F. Risso and T. Zhang, "Clarifying Fog Computing and Networking: 10 Questions and Answers," IEEE Communications Magazine, April 2017, pp. 18-20.

[2] S. Chen, T. Zhang, W. Shi, "Fog Computing," special issue introduction, IEEE Internet Computing, April 2017, pp. 4-5.

[3] "Fog Computing", Wikipedia, May 12, 2017.