



What is cloud?

- Scalable and elastic
- Shared
- Metered by use
- **Uses internet technologies**
- **Centralized**
- => performance problems.

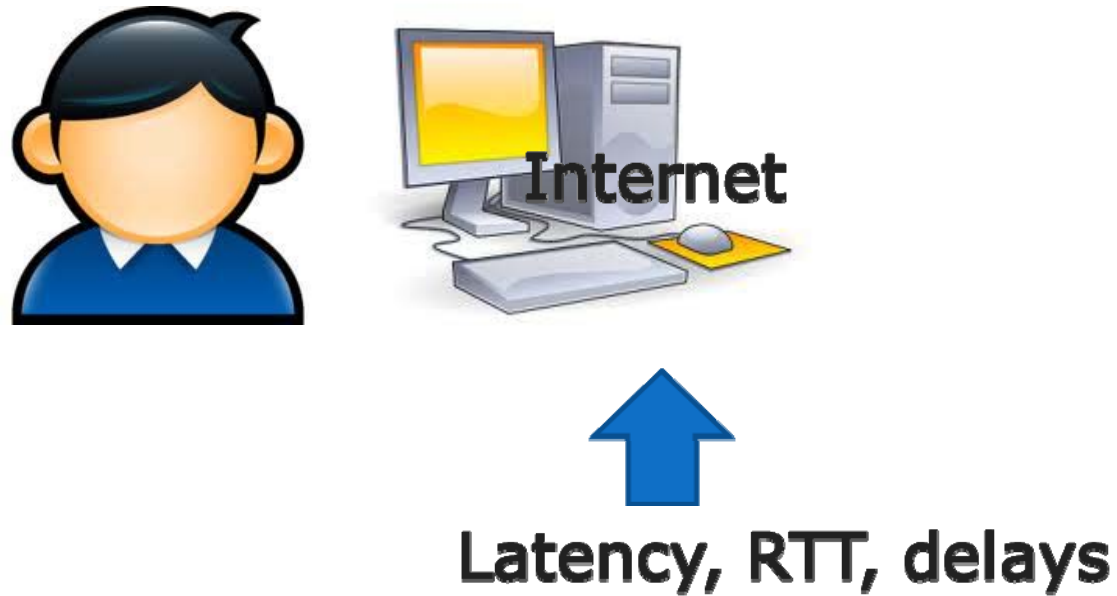


Moving back and forward I

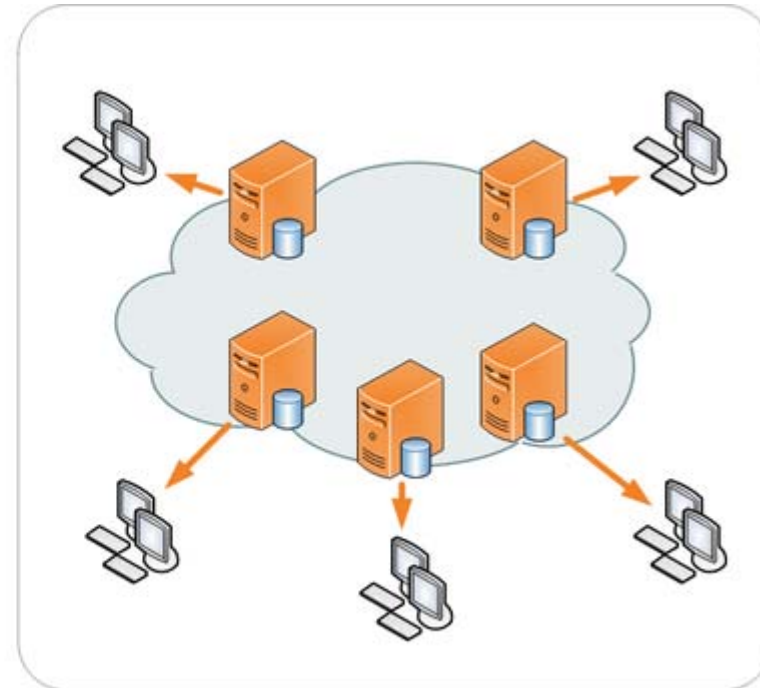
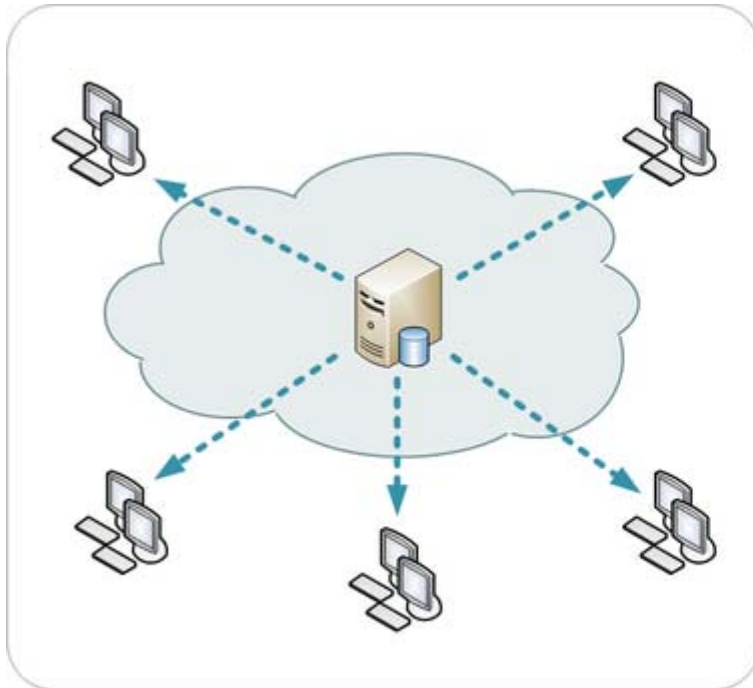
- Underlying concept of cloud from 1950's....multiple terminals sharing the same mainframe/resources
- But the PC became affordable...
- And now we are moving back again to share etc.



Moving back and forward II



Just been addressing: World wide waiting problem



One CDN: +100k servers,
70+ countries, 2k networks

How bad is it?



Gbps

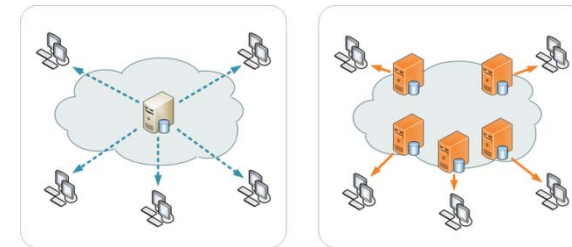
10
kbps



100
mbps



Distance=Latency=Less customers



One second delay reduces customer conversions by 7%.
One second delay decreases customer satisfaction by 16%.
One second delay decreases page views by 11%.

Sharing a line

Telco's need rapidly to build out
But business is going down.....
(still earning money)



E-G8, 2012



While end users and internet capacity is going rapidly up, we still have limited peering etc. resources

Scale as you like, when you like, and pay for use is still a dream

...and business owners should be aware



Many tricks and improvements going on

Large companies are trying to make TCP more modern
..... but

$$\text{Throughput} \leq \frac{\text{MSS}}{\text{RTT} \sqrt{P_{\text{loss}}}}$$



We need to address performance problems

Algorithms/SW can be helpful

