### Definition

- remote on-demand servers to host, store, manage and process data
  - stored as [[Distributed Data Storage]] in [[Data Center]] instead of own locally hosted servers

### Service Models

**IaaS: Infrastructure as a service** (e.g., storage/compute nodes)
**PaaS: Platform as a service** (e.g., distributed systems/frameworks)
**SaaS: Software as a Service** (e.g., email, databases, office, github)

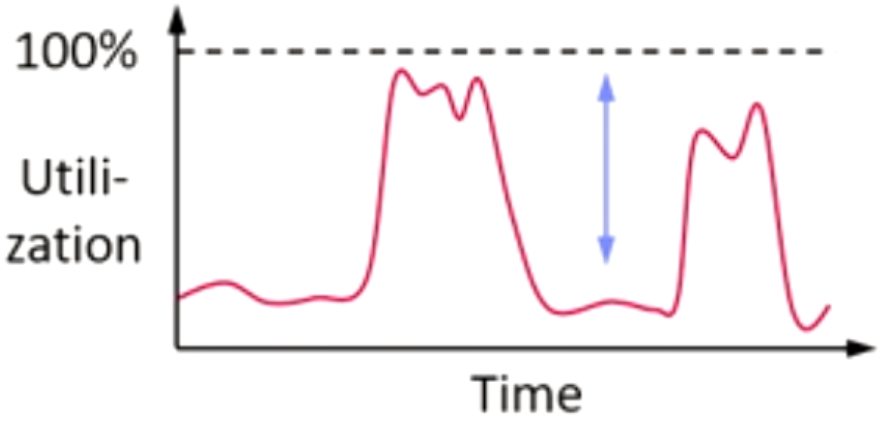
### Cloud Industry

**Transforming IT Industry/Landscape**

- Since ~2010 increasing move from on-prem to cloud resources
- System software licenses become increasingly irrelevant
- Few cloud providers dominate IaaS/PaaS/SaaS markets (w/ 2018 revenue):
  Microsoft Azure Cloud ($ 32.2B), Amazon AWS ($ 25.7B), Google Cloud (N/A),
  IBM Cloud ($ 19.2B), Oracle Cloud ($ 5.3B), Alibaba Cloud ($ 2.1B)

### Benefits

- pay as you go
  - no upfront cost
  - pay per use or aquired resources
  - variable utilization
    - prevents having too many/not enough ressources

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- economies of scale
  - purchasing IT infrastructure at scale ==> lower cost
    - hardware as well as IT infrastructure know-how
  - focus on scale-out HW over scale-up ==> lower cost
- elasticity

- flexiblity on resource demand
- work for 10 days on 1 nodes ==> 1 day on 10 nodes


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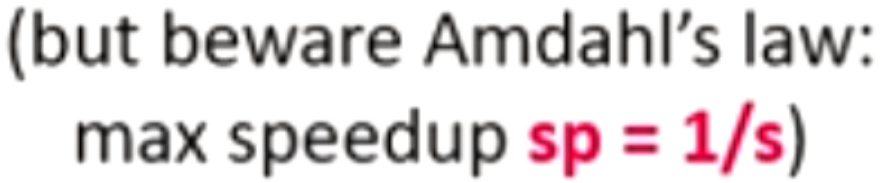
- assuming perfect scalability

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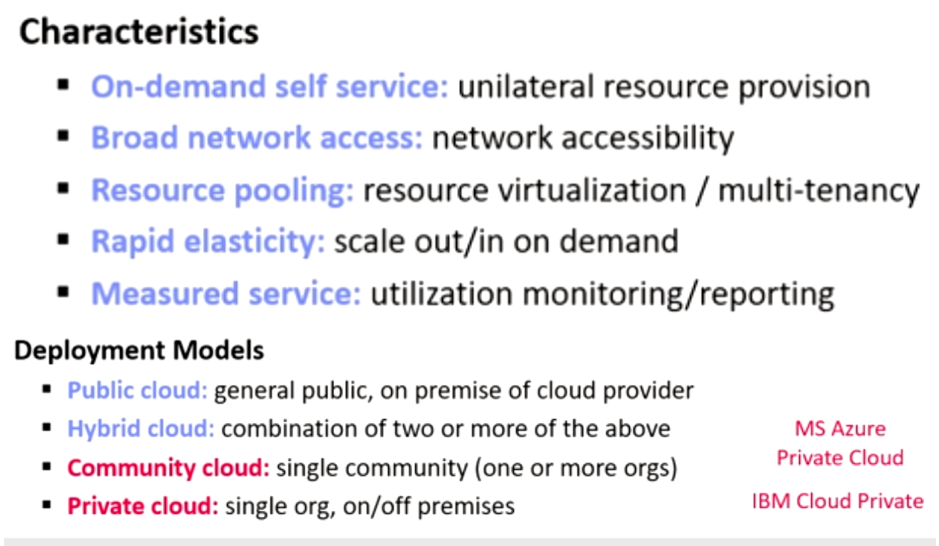
* 5% not parallelizable ==> max speed up 20x
* 25% not parallelizable ==> max speed up 4x

**Characeristics and Deployment Models**




[[Data Management]]