



# **SNS COLLEGE OF TECHNOLOGY**

**Coimbatore-35**

**An Autonomous Institution**



Accredited by NBA – AICTE and Accredited by NAAC – UGC  
with 'A++' Grade

Approved by AICTE, New Delhi & Affiliated to Anna  
University, Chennai

## **DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

### **19ECE308- WIRELESS TECHNOLOGIES FOR IOT**

III ECE / VI SEMESTER

UNIT 3 – DATA COLLECTION, STORAGE AND COMPUTING USING A CLOUD

PLATFORM

TOPIC –Data Centers



# Data Centers

- The key infrastructure piece that enables CC
- Everyone is building them
- Huge amount of work on deciding how to build/design them



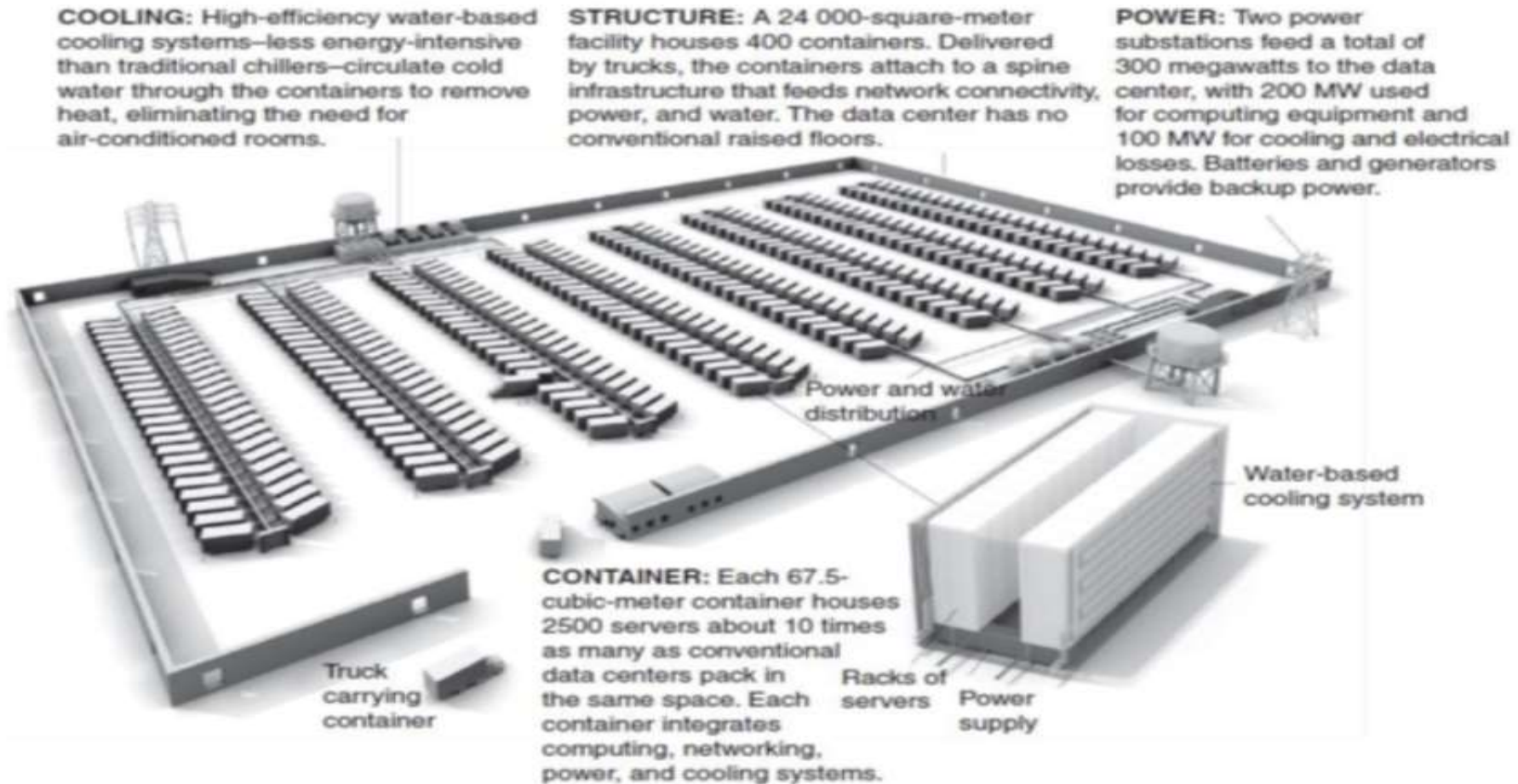


# Data Centers





# Data Centers

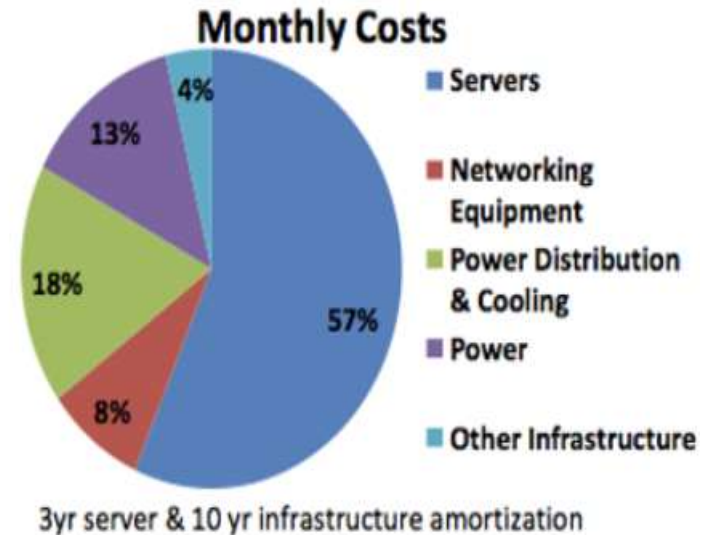




# Amazon Data Center



- Amazon data centers: Some old data
  - 8 MW data center can include about 46,000 servers
  - Costs about \$88 million to build (just the facility)
  - Power a pretty large portion, but server costs still dominate







# Power Distribution



- Power distribution
  - Almost 11% lost in distribution – starts mattering when the total power consumption is in millions
- Modular and pre-fab designs
  - Fast and economic deployments, built in a factory



Microsoft ITPAC



Amazon Perdix





# Features of data centers



- Networking equipment
  - Very very expensive: server/storage prices dropping fast
  - Networking frozen in time: vertically integrated ecosystem
  - Bottleneck – forces workload placement restrictions
- Cooling/temperature/energy issues
  - Appropriate placement of vents, inlets etc. a key issue
    - Thermal hotspots often appear and need to be worked around
  - Overall cost of cooling is quite high
    - So is the cost of running the computing equipment
      - Both have led to issues in energy-efficient computing
  - Hard to optimize PUE (Power Usage Effectiveness) in small data centers
    - → may lead to very large data centers in near future
    - Ideally PUE should be 1, currently numbers are around 1.07-1.22
      - 1.07 is a Facebook data center that does not have A/C



# Assessment



## Analyze about energy issues

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**Thank You**