SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

Re-accredited by NAAC with A+ grade, Accredited by NBA(CSE, IT, ECE, EEE & Mechanical)

Approvedy by AICTE, New Delhi, Recognized by UGC, Affiliated to Anna University, Chennai

DEPARTMENT OF COMPUTER APPLICATIONS

COURSE	UNIT I	TOPIC	Semester
23CAE717 Cloud Computing	Cloud Architecture and Model	NIST Cloud Computing Reference Architecture	II Semester / I MCA

UNIT I NETWORK TECHNOLOGIES

- Technologies for Network-Based System
- System Models for Distributed and Cloud Computing
- NIST Cloud Computing Reference Architecture
- Cloud Models:- Characteristics – Cloud Services Cloud models (IaaS, PaaS, SaaS)
- Public vs Private Cloud –Cloud Solutions
- Cloud ecosystem
- Service management
- Computing on demand

National Institute of Standards and Technology
U.S. Department of Commerce

National Institute of Standards and Technology (NIST) has been designated by Federal Chief Information Officer (CIO) Vivek Kundra with technical leadership for US government (USG) agency efforts related to the adoption and development of cloud computing standards.

The primary focus is a more economic method of providing higher quality and faster services at a lower cost to the users.

NIST Provides

01

Taxonomy for Service Models

- Software as a Service (SaaS)
- Platform as a Service (PaaS)
- Infrastructure as a Service (IaaS)

02

Taxonomy for Deployment Models

- Public cloud
- Private cloud
- Hybrid Cloud

NIST Working Groups

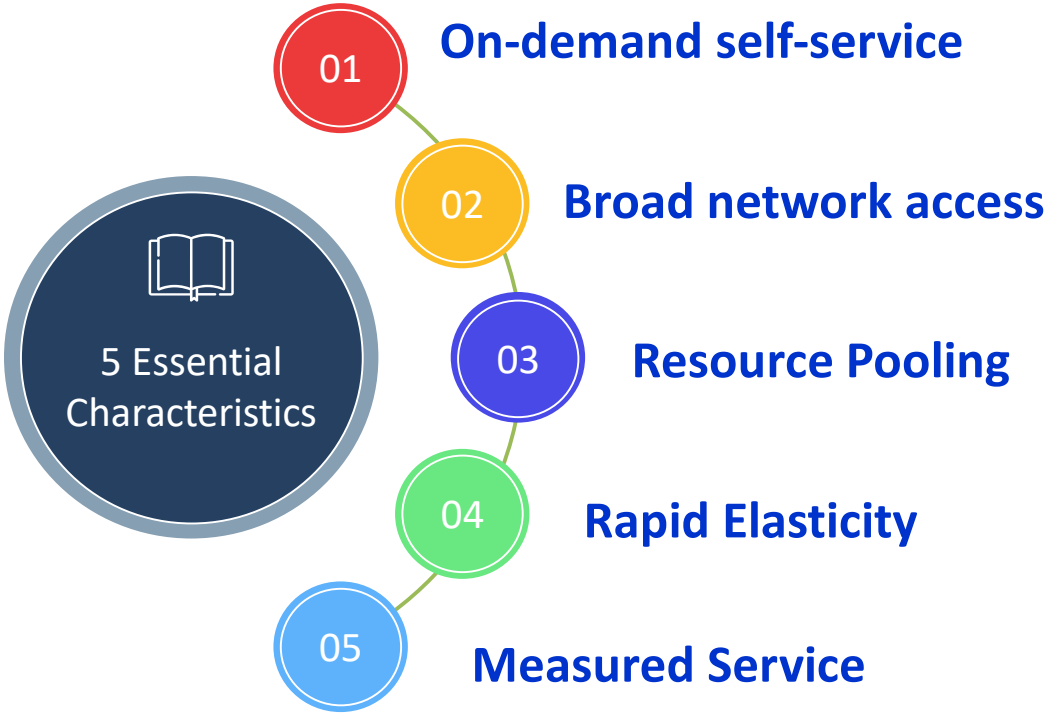
01 CC Target Business use cases

02 CC security

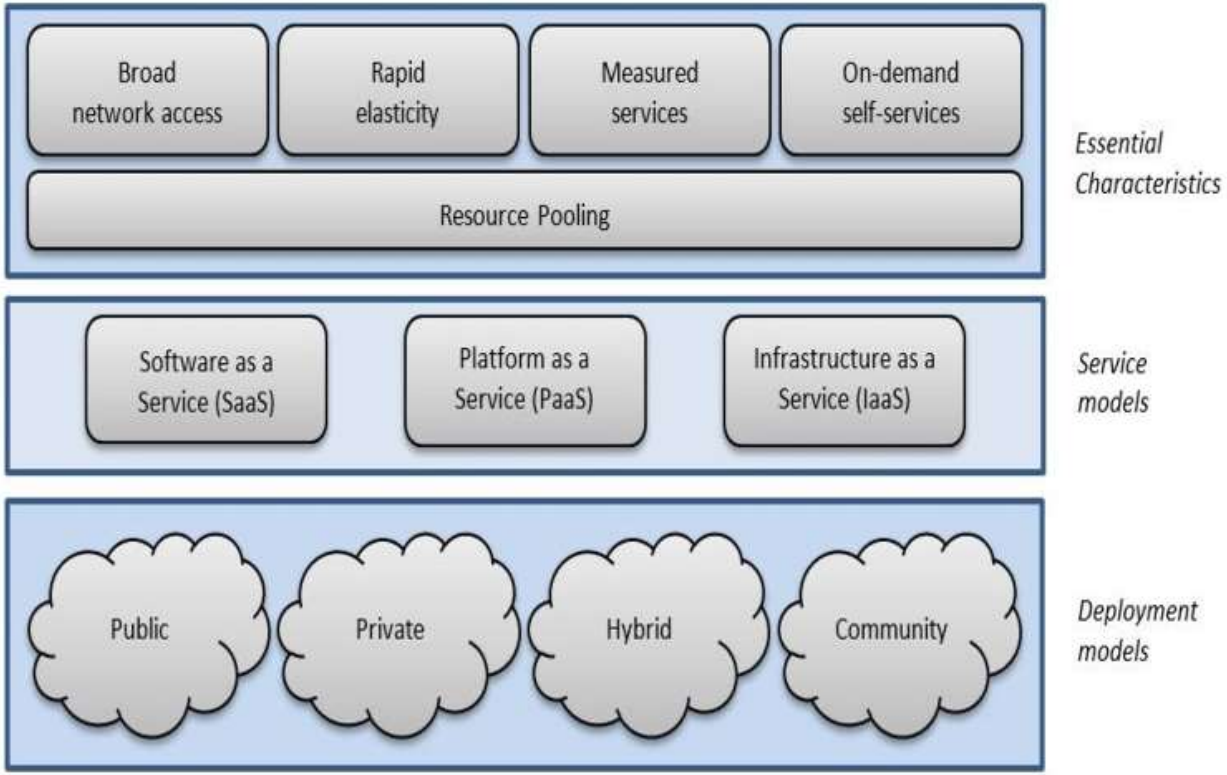
03 CC standards roadmap

04 CC Standards acceleration to jumpstart adoption of CC

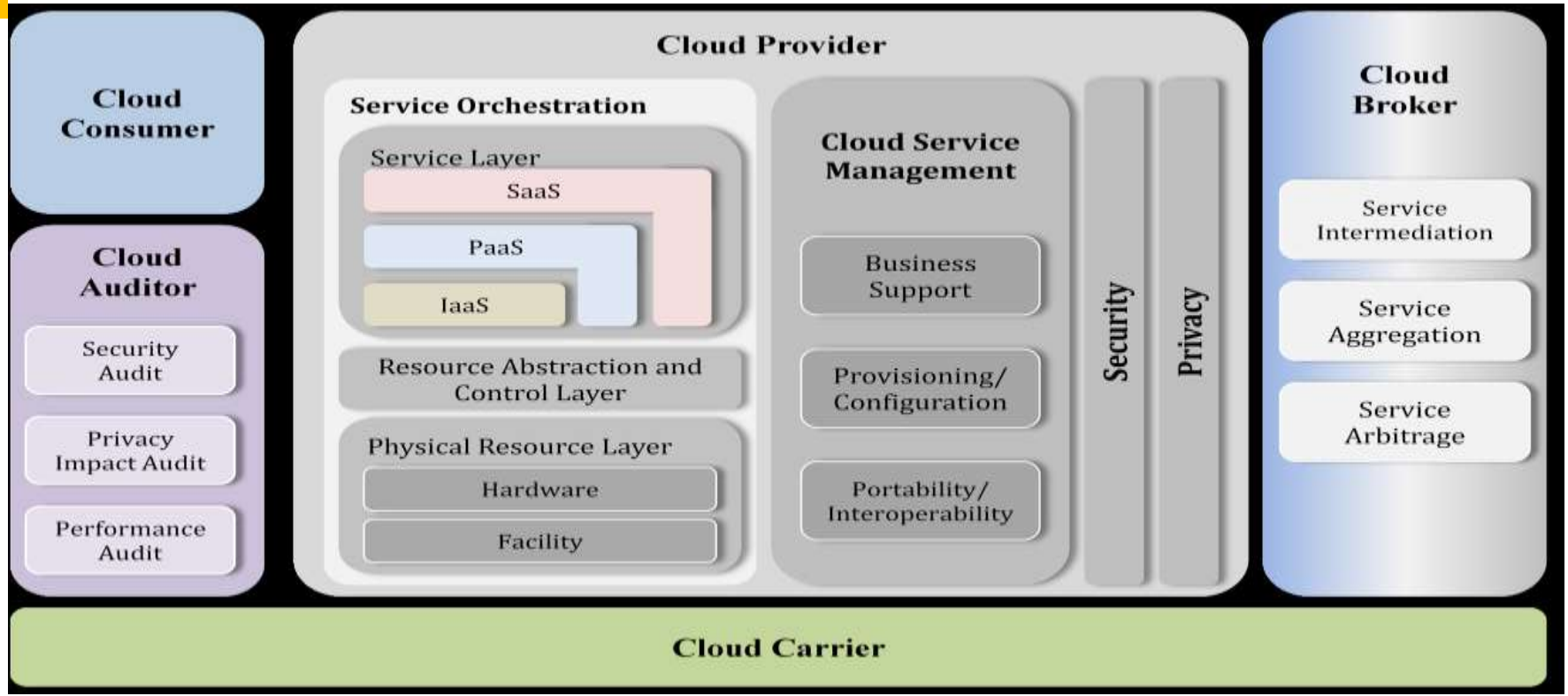
NIST Characteristics



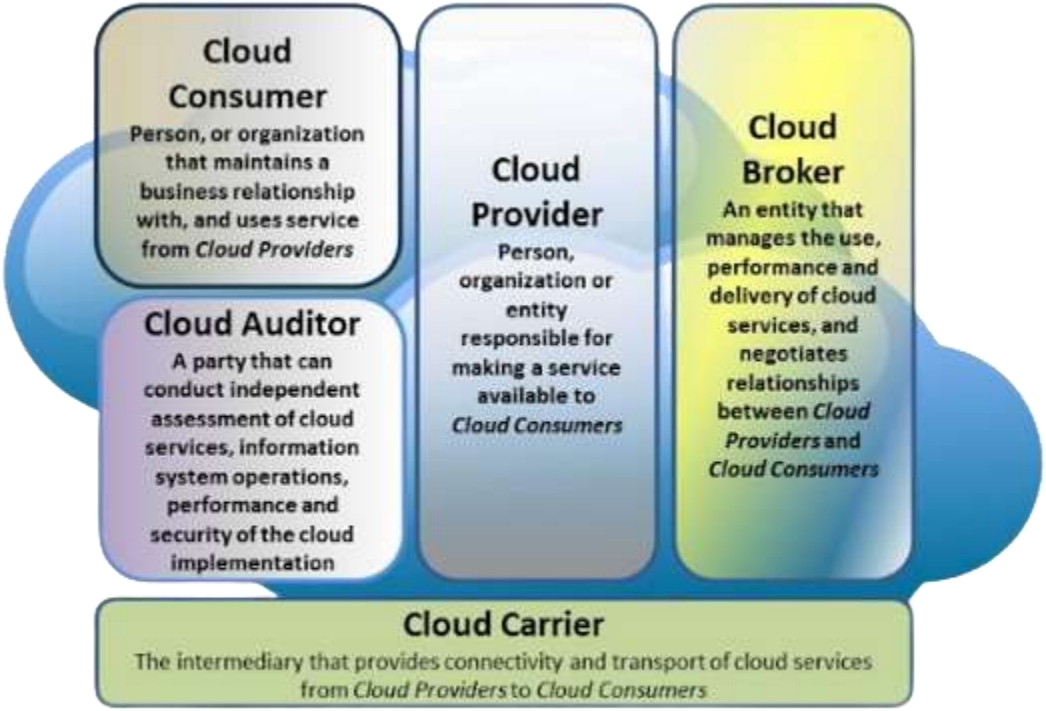
Visual Model of NIST working definition of cloud computing



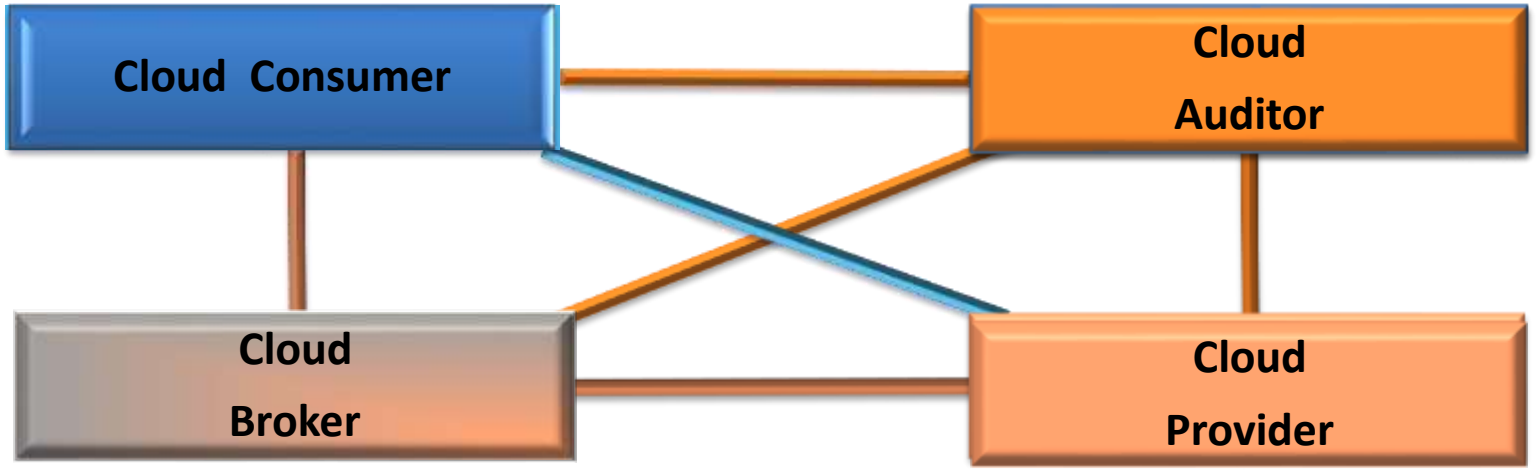
NIST Architecture



NIST Players



Interaction between Actors



SCENARIO

1

2

3

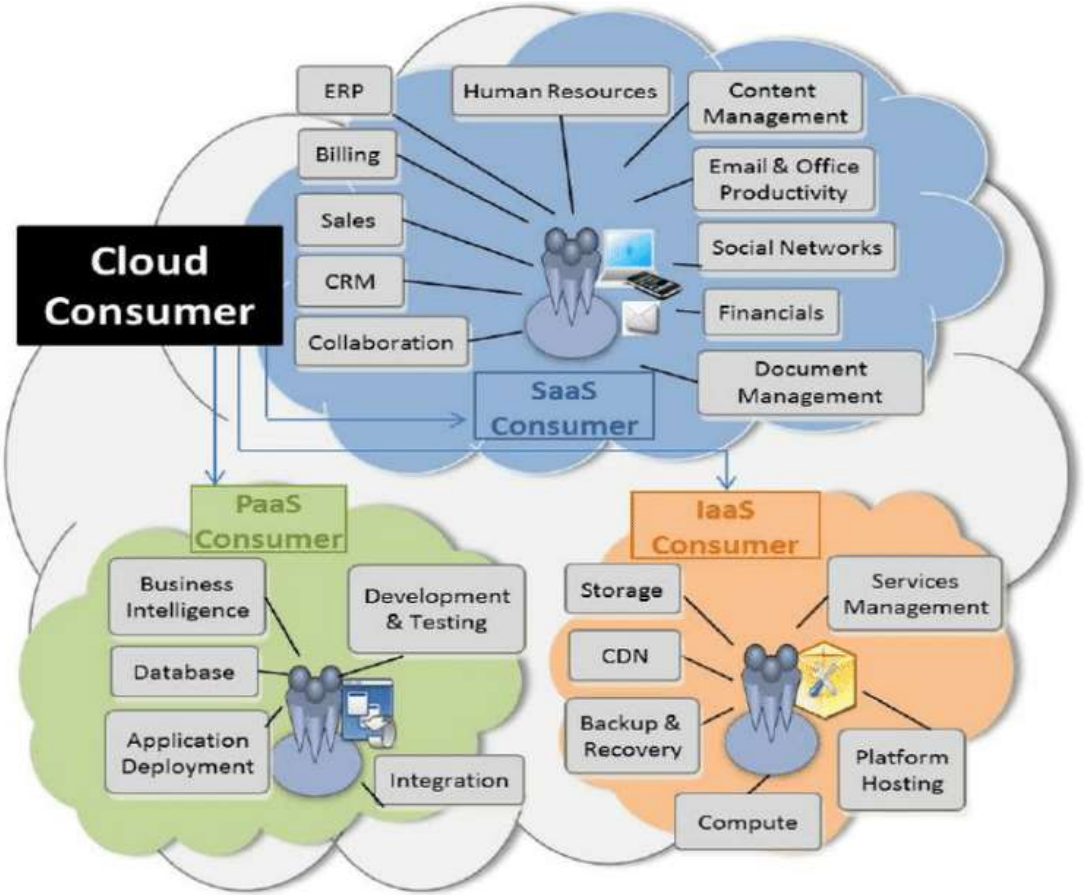
CLOUD CONSUMER

- A person or organization that maintains a business relationship with, and uses service from, Cloud Providers
- In SaaS, consumer can access software applications
- In PaaS, can be application developers, tester, deployer or administrator
- In IaaS, access to virtual computers, network-accessible storage, network infrastructure components, and other fundamental computing resources
- Consumer can be system developers, system administrators and IT managers who are interested in creating, installing, managing and monitoring services

WHAT CLOUD CONSUMER DOES?

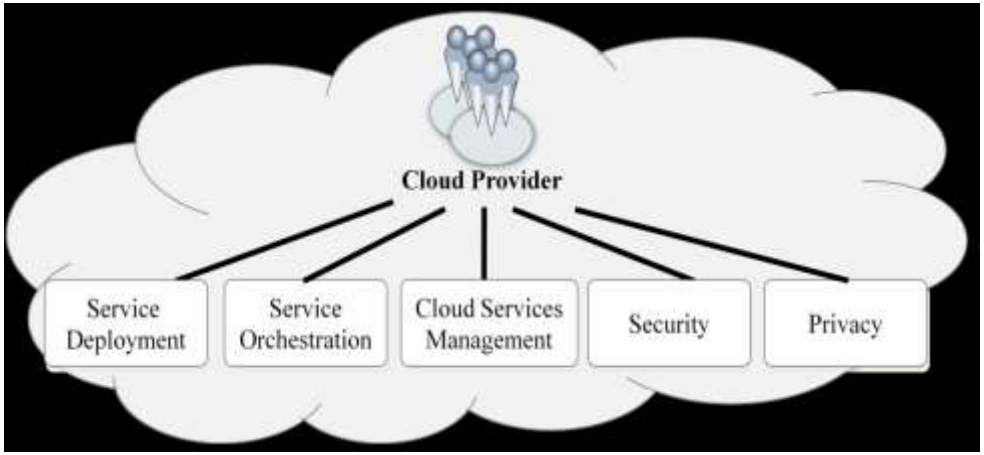
- Browses the service catalogue offered by the provider and requests services depending on need, usage scenarios
- Sets up Service Level Agreement (SLA)contracts with the provides
- Billed for the service (may be)
- SaaS consumers may be billed based on number of users, time of use, net bandwidth, storage volume
- IaaS, PaaS consumers may be billed according to processing, storage, network resources, number of VMs, http calls, number of IPs used, net bandwidth, storage volume
- Consumers need SLAs to specify their performance requirements to be fulfilled by the provider

Cloud Consumer



Cloud Provider

- A person, organization, or entity responsible for making a service available to interested parties
- In PaaS, It manages the computing infrastructure for the platform and runs the cloud software that provides the components of the platform
- Makes SLA with consumers
- Responsibilities are



CLOUD BROKER

- An entity that manages the use, performance and delivery of cloud services, and negotiates relationships between Cloud Providers and Cloud Consumers
- **Service Intermediation**: enhances a given service by improving some specific capability and providing value-added services to cloud consumers
- **Service Aggregation**: combines and integrates multiple services into one or more new services
- **Service Arbitrage**: broker has the flexibility to choose services from multiple agencies.

CLOUD CARRIER

- An intermediary that provides connectivity and transport of cloud services from Cloud Providers to Cloud Consumers

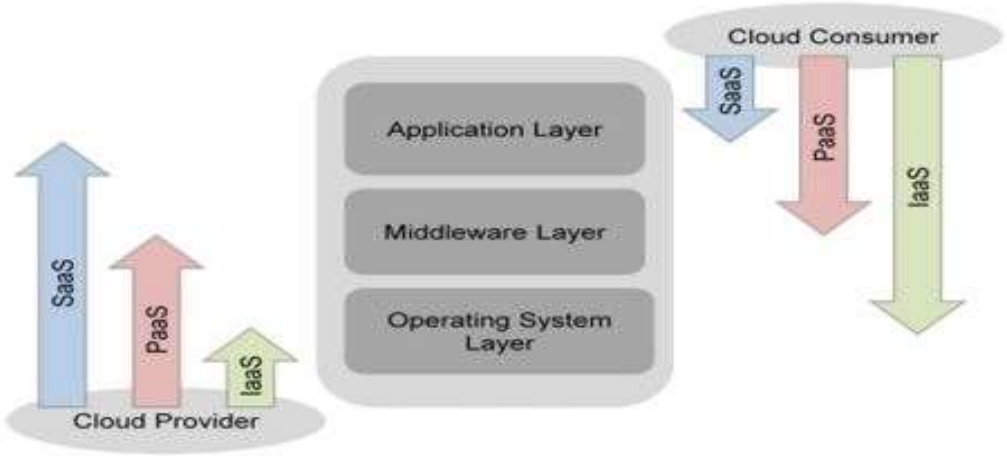


Figure 8: Scope of Controls between Provider and Consumer

CLOUD AUDITOR

- Performs independent examination of cloud service controls and express opinion / issues evaluation
- objective is to verify conformance to standards or to security, privacy controls, performance, conformance to SLAs etc

REFERENCES

- Kai Hwang, Geoffrey C Fox, Jack G Dongarra, “Distributed and Cloud Computing, From Parallel Processing to the Internet of Things”, Morgan Kaufmann Publishers, 2012
- James E. Smith, Ravi Nair, “Virtual Machines: Versatile Platforms for Systems and Processes”, Elsevier/Morgan Kaufmann, 2005.
- Kumar Saurabh, “Cloud Computing – insights into New-Era Infrastructure”, Wiley India,2011.
- Toby Velte, Anthony Velte, Robert Elsenpeter, “Cloud Computing, A Practical Approach”, TMH, 2009.
- John W.Rittinghouse and James F.Ransome, “Cloud Computing: Implementation, Management, and Security”, CRC Press, 201

ANY
QUERIES ?