

Cloud Computing Technology

The Architecture Overview

Danairat T.

Certified Java Programmer, TOGAF – Silver
danairat@gmail.com, +66-81-559-1446

Agenda

- **What is Cloud Computing?**
- **Case Study**
- **Service Model Architectures**
- **IT Shared Services Stack**
- **Clouds: services**
- **Cloud Deployment Models**
- **Cloud Concerns/Issues**
- **The NIST Cloud Computing Reference Architecture**

NIST Definition of Cloud Computing



Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

This cloud model promotes availability and is composed of:

5 Essential Characteristics

- On-demand self-service
- Resource pooling
- Rapid elasticity
- Measured service
- Broad network access

3 Service Models

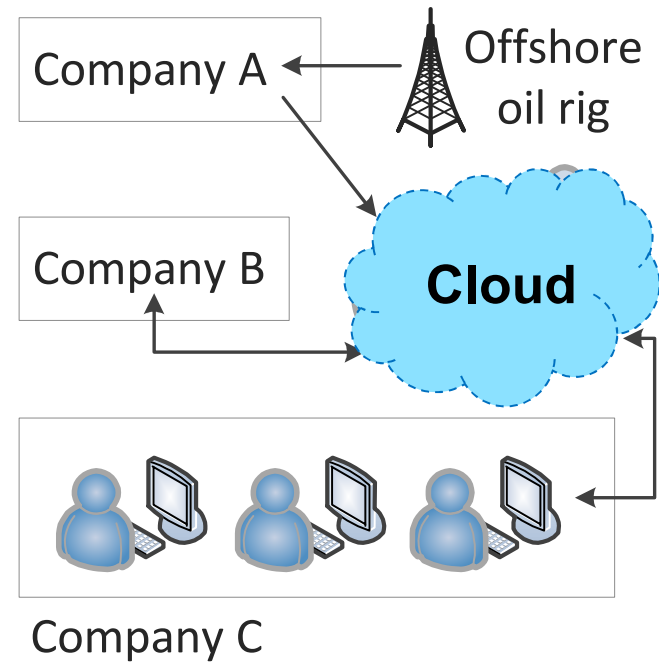
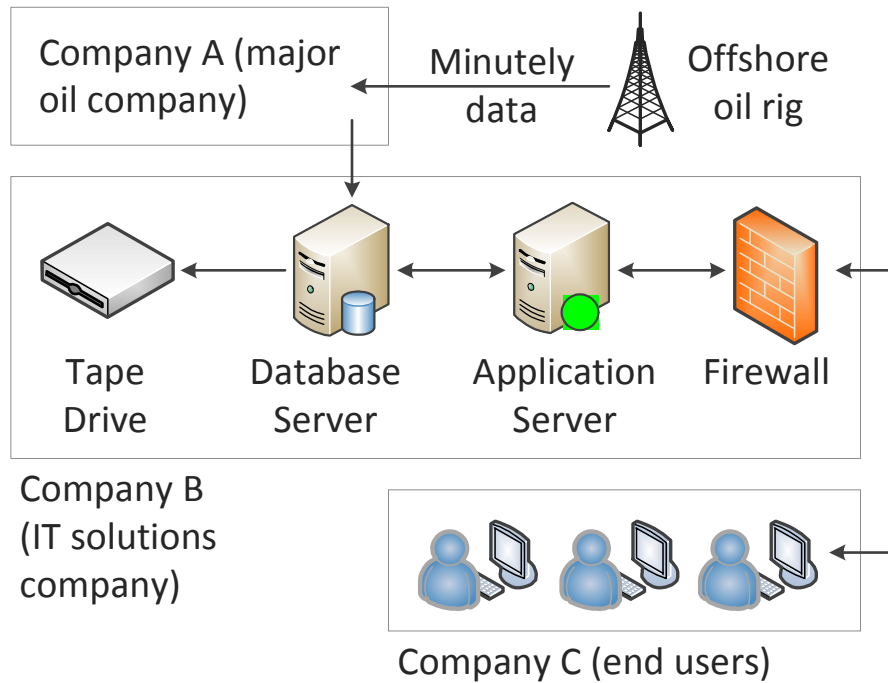
- SaaS
- PaaS
- IaaS

4 Deployment Models

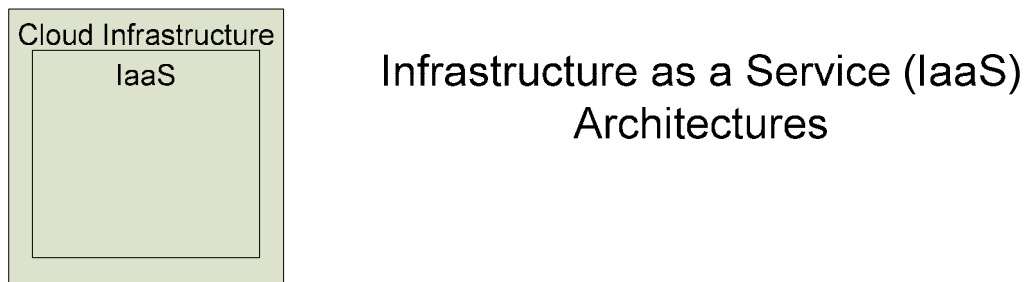
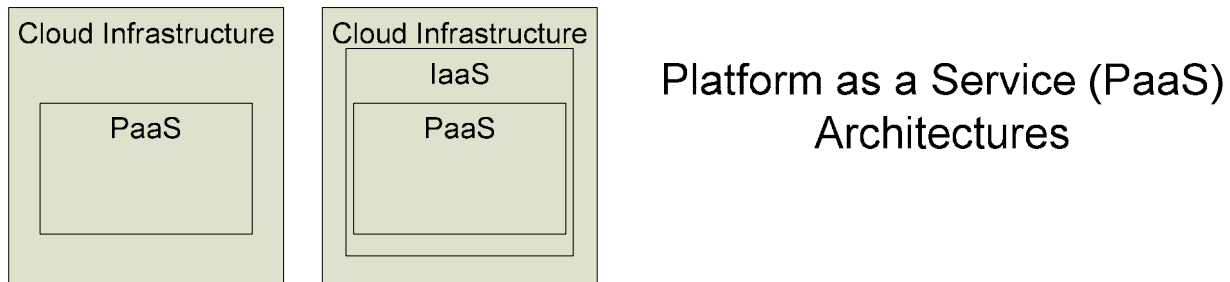
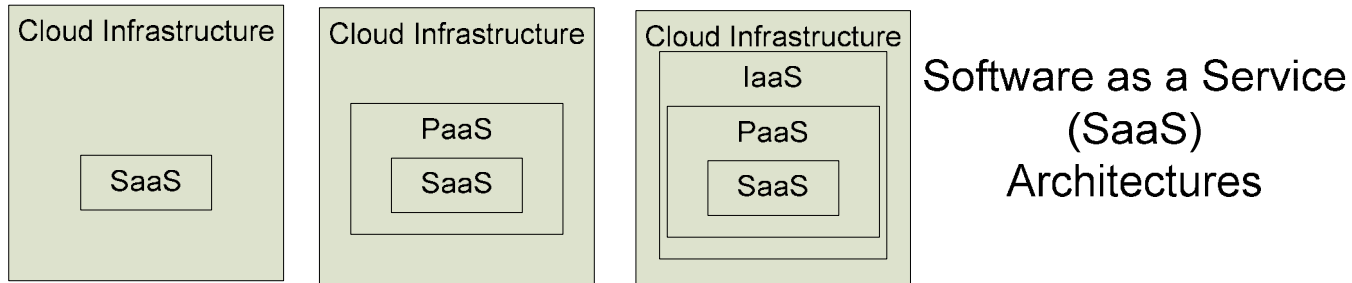
- Public Cloud
- Private Cloud
- Community Cloud
- Hybrid Cloud

Source: [NIST Definition of Cloud Computing v15](#)

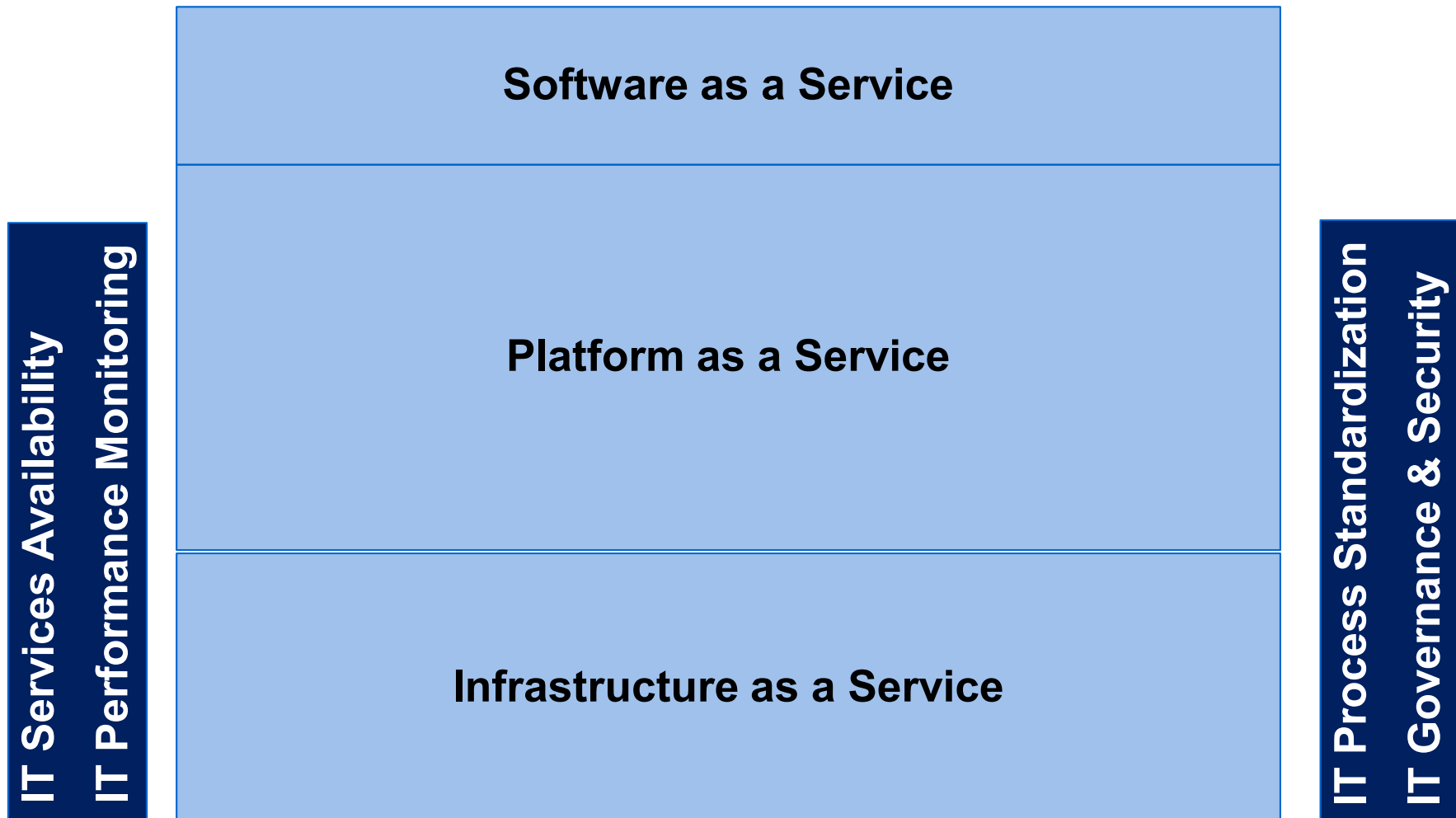
Case Study



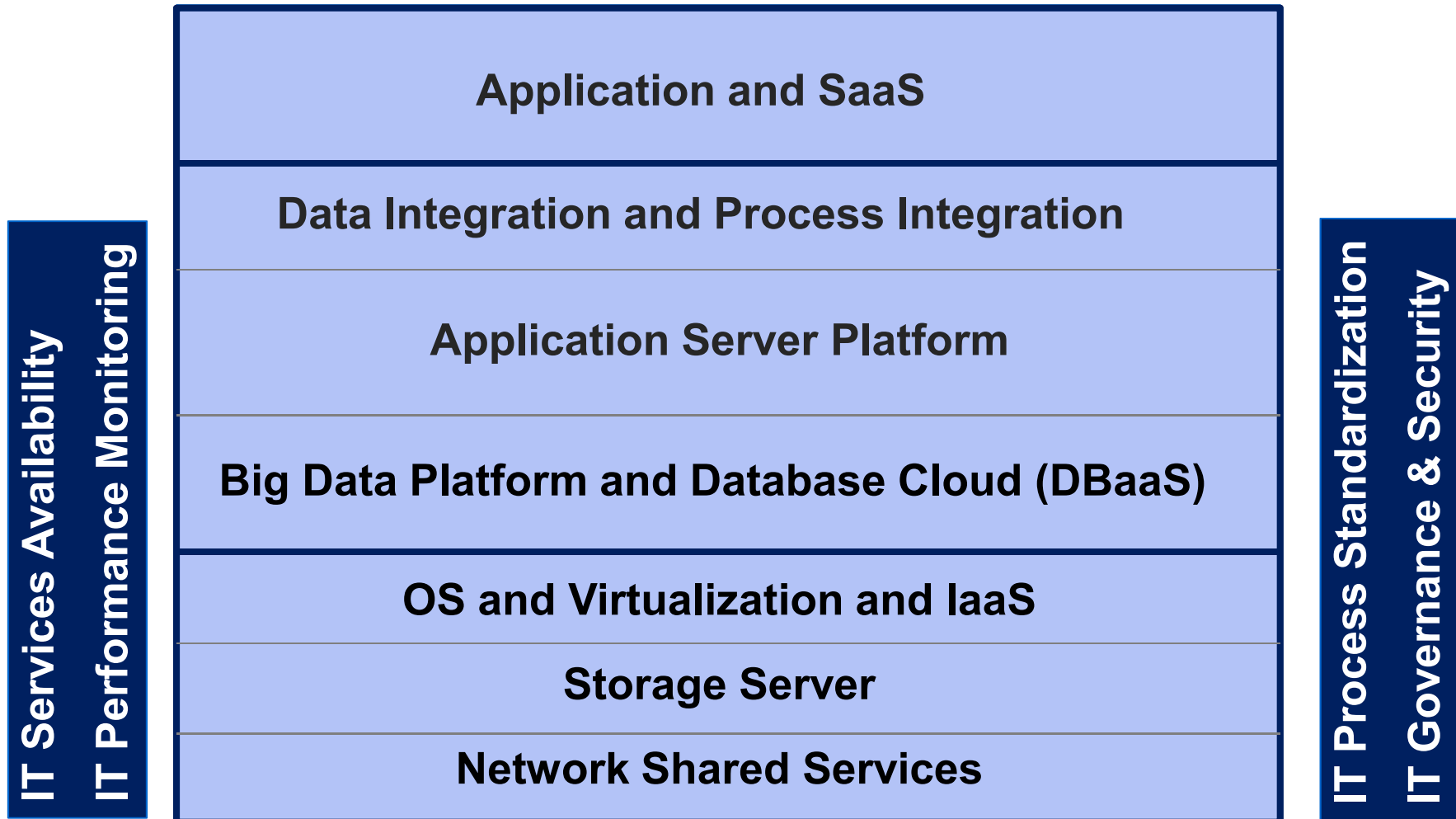
Service Model Architectures



IT Shared Services Stack



IT Shared Services Stack



Clouds: services

- **Infrastructure as a Service (IaaS):** hw, sw, equipments, can scale up and down dynamically (elastic). E.g.:
 - Amazon Elastic Compute Cloud (EC2) and Simple Storage Service (S3)
 - Eucalyptus: open source Cloud implementation compatible with EC2 (allows to set up local cloud infra prior to buying services)

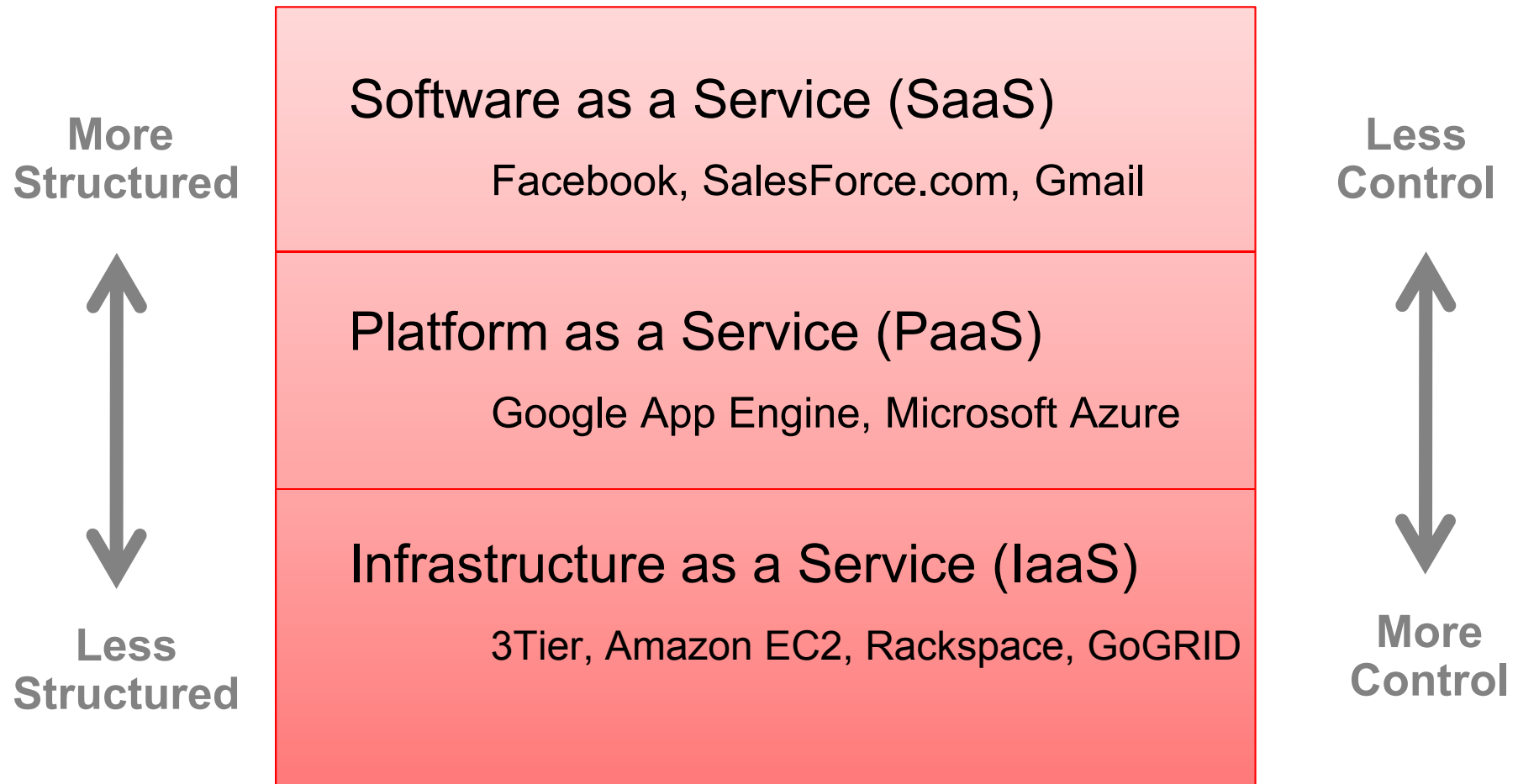
Clouds: services

- **Platform as a Service (PaaS)**: offers high level integrated environment to build, test, and deploy custom apps.
 - Restrictions on sw used to develop apps in exchange for built-in scalability. E.g.: Google App Engine

Clouds: services

- **Software as a Service (SaaS)**: delivers special purpose software that is remotely accessible. E.g.: Google Maps, Live Mesh from Microsoft etc

Cloud Offerings by Service



Cloud Deployment Models

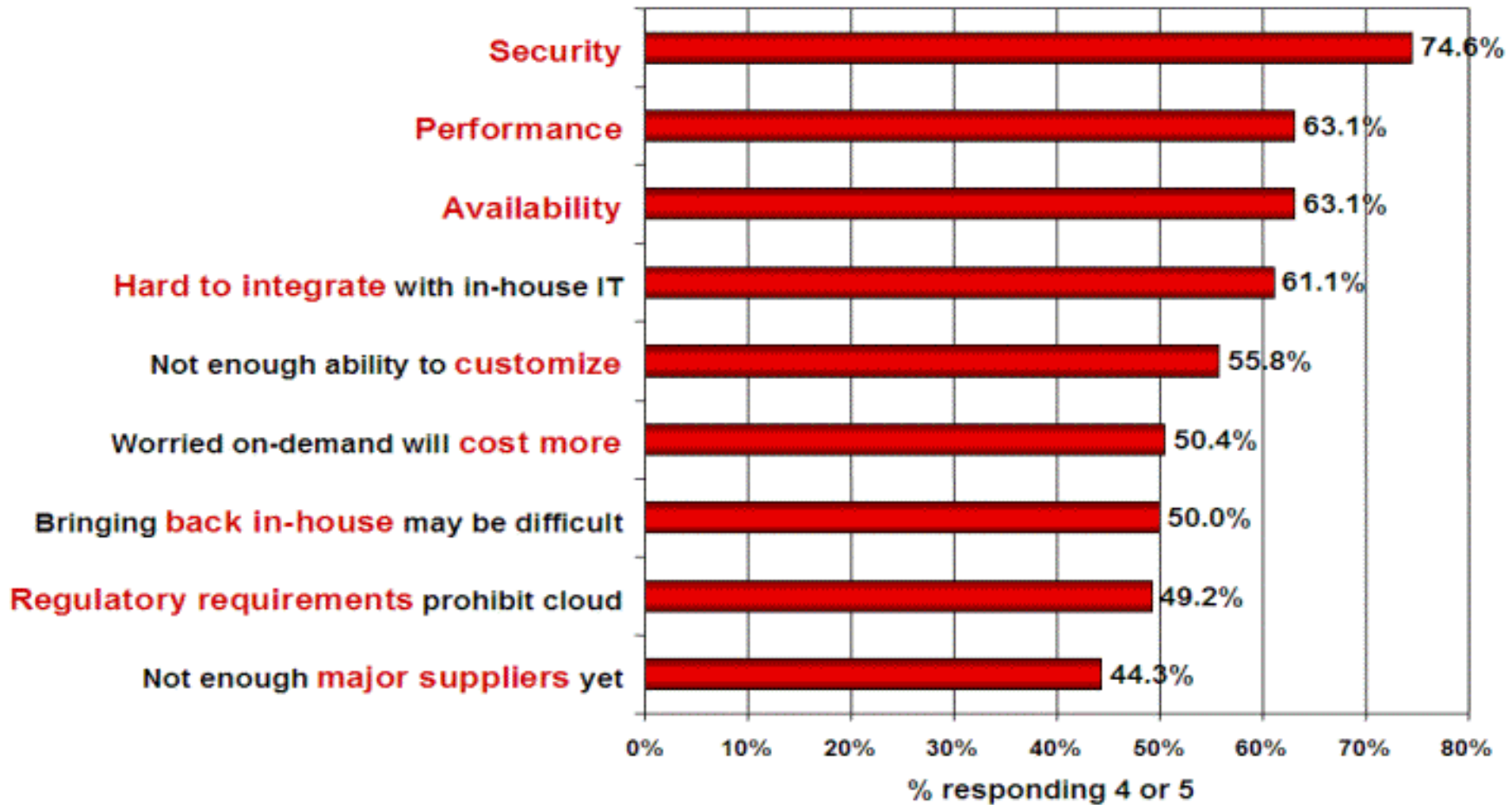
- Private
 - Uses cloud technologies to expose services across a private enterprise.
- Public
 - All information access is housed in the public domain.
- Hybrid
 - A combination of public and private services.

Cloud Concerns/Issues

- Security - #1 concern
- Availability (mission critical vs. not)
- Compliance
- Price
- Training
- User Experience (UI design, Speed)
- Data Ownership

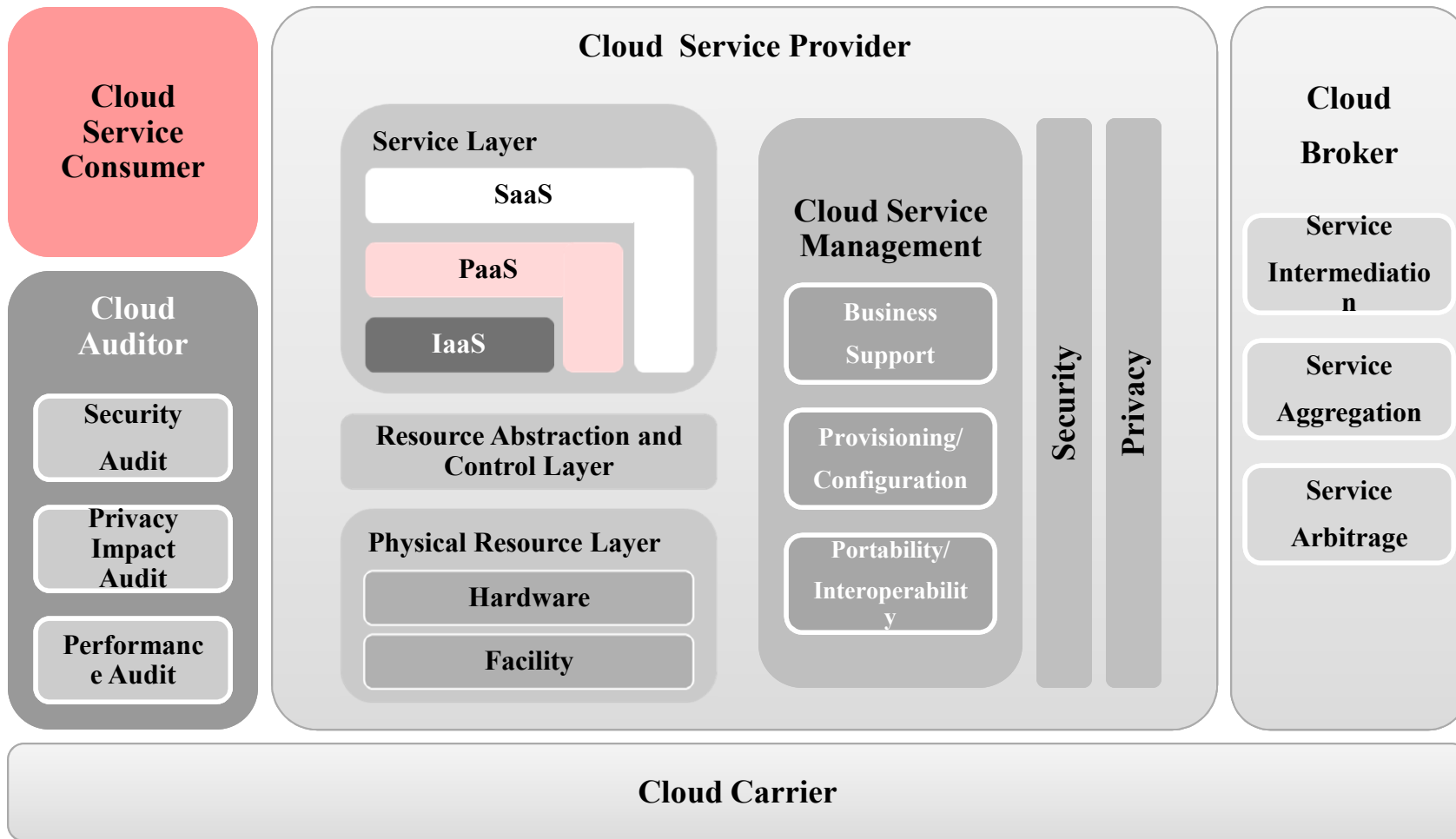
Cloud Concerns/Issues

Q: Rate the **challenges/issues** ascribed to the 'cloud'/on-demand model
(1=not significant, 5=very significant)



Source: IDC Enterprise Panel, August 2008 n=244

The NIST Cloud Computing Reference Architecture



Thank you very much.