CPET 581/499 Cloud Computing: Technologies and Enterprise IT Strategies
Assignment 1

Assigned date: 1/22/2015
Due Date: 1/29/2015, before 5 PM, as an email attachment.
Questions from Chapter 1. Distributed System Models and Enabling Technologies, pp. 58-63

Question 1. (20 points)
Briefly define the following basic techniques and technologies that represent recent related advances in computer architecture, parallel processing, distributed computing, Internet technology, and information services:
   a. High-performance computing system
   b. High-throughput computing system
   c. Peer-to-peer network
   d. Computer cluster versus computational grid
   e. Service-oriented architecture (SOA)
   f. Pervasive computing versus Internet computing
   g. Virtual machine versus virtual infrastructure
   h. Public cloud versus private cloud

Question 2. (20 points)
An increasing number of organizations in industry and business adopt cloud systems. Answer the following questions regarding cloud computing:
   a. List and describe the main characteristics of cloud computing systems.
   b. Discuss key enabling technologies in cloud computing systems.
   c. Discuss different ways for cloud service providers to maximize their revenues.

Question 3. (25 points)
Compare the similarities and differences between traditional computing clusters/grids and the computing clouds launched in recent years. Consider all technical and economic aspects as listed below. Answer the following questions against real example systems or platforms built in recent years. Also discuss possible convergence of the two computing paradigms in the future.
   a. Hardware, software, and networking support
   b. Resource allocation and provisioning methods
   c. Infrastructure management and protection
   d. Support of utility computing services
   e. Operational and cost models applied

Question 4. (15 points)
Characterize the following three cloud computing models:
   a. What is an IaaS cloud? Give one example system.
   b. What is a PaaS cloud? Give one example system.
   c. What is a SaaS cloud? Give one example system.

Question 5. (20 points)
Briefly explain each of the following cloud computing services. Identify two cloud providers company name in each service category.
   a. Application cloud services

b. Platform cloud services
c. Compute and storage services
d. Collocation cloud services
e. Network cloud services