# **Cloud Computing**

#### **Chapter 1: Introduction**

- 1.1 Introduction to Cloud Computing
- 1.2 Definition of Cloud Computing
- 1.3 Evolution of Cloud Computing
- 1.4 Underlying Principles of Parallel and Distributed Computing
- 1.5 Cloud Characteristics
- 1.6 Elasticity in Cloud
- 1.7 On-demand Provisioning
- 1.8 Challenges in Cloud Computing

### **Chapter 2: Cloud Enabling Technologies**

- 2.1 Service Oriented Architecture
- 2.2 REST and Systems of Systems
- 2.3 Web Services
- 2.4 Publish-Subscribe Model
- 2.5 Basics of Virtualization
- 2.6 Types of Virtualization
- 2.7 Implementation Levels of Virtualization
- 2.8 Virtualization Structures
- 2.9 Virtualization Tools and Mechanisms
- 2.10 Virtualization of CPU
- 2.11 Virtualization of Memory
- 2.12 Virtualization of I/O Device
- 2.13 Virtualization Support and Disaster Recovery

# Chapter 3: Cloud Architecture, Services and Storage

- 3.1 Cloud Architecture Design
- 3.2 NIST Cloud Computing Reference Architecture
- 3.3 Cloud Deployment Models
- 3.4 Cloud Service Models
- 3.5 Architectural Design Challenges
- 3.6 Cloud Storage
- 3.7 Storage as a Service
- 3.8 Advantages, Risks and Disadvantages of Cloud Storage
- 3.9 Cloud Storage Providers
- 3.10 Simple Storage Service (S3)

## Chapter 4: Resource Management and Security in Cloud

- 4.1 Inter Cloud Resource Management
- 4.2 Resource Provisioning and Resource Provisioning Methods
- 4.3 Global Exchange of Cloud Resources
- 4.4 Security Overview
- 4.5 Cloud Security Challenges
- 4.6 Software-as-a-Service Security
- 4.7 Security Governance
- 4.8 Virtual Machine Security
- 4.9 IAM
- 4.10 Security Standards

## **Chapter 5: Cloud Technologies and Advancements**

- 5.1 Hadoop
- 5.2 Hadoop Distributed File System (HDFS)
- 5.3 Map Reduce
- 5.4 Virtual Box
- 5.5 Google App Engine
- 5.6 Programming Environment for Google App Engine
- 5.7 Open Stack
- 5.8 Federation in the Cloud
- 5.9 Four Levels of Federation
- 5.10 Federated Services and Applications
- 5.11 The Future of Federation