CS 519: Cloud Computing (3-0-0: 3)

Introduction

Definitions, Characteristics of cloud computing, Advantages and disadvantages of cloud computing, Cloud computing Vs Grid computing, Cloud computing Vs Distributed computing, Cloud computing Vs Cluster Computing.

Virtualization

Basic concept– Hypervisor- Types of virtualization- hardware, operating system, server, storage- Features of virtualization- Advantages and disadvantages of different types of virtualization.

Cloud Architecture

Types of deployment models-Private, Public , Hybrid, Community, Types of service models-Iaas, PaaS, SaaS.

Cloud storage architecture

Data center architecture- Clos Network Topology:- Canonical topology, Fat-tree topology, Portland topology.

Cloud Security

Cloud vulnerabilities-Threats to cloud confidentiality-VM cross attack, Malicious Sys Admin- Defense mechanism-Co-residency detection, NoHype-Threats to cloud integrity-data loss/manipulation, dishonest computation- Defense Mechanism-Provable Data Possession (PDP), Proof of Retrievability, Dynamic PDP.

Text Books:

1. G. Reese , “Cloud Application Architectures: Building Applications and Infrastructure in the Cloud”, O’Reilly.

References:

1. P. Thakur, “Cloud Computing”, Tech India Publication Series.
2. Z. Xiao, Y Xiao, “Security and Privacy in Cloud Computing”, IEEE Communications Surveys & Tutorials, Vol 15, No 2, Second Quarter.
3. G. Ateniese et al., “Provable Data Possesion at untrusted stores”, ACM CCS..
4. A. Juels et al., “POR: Proof of Retrievability for large files”, ACM CCS.