

**CS622 STORAGE AREA NETWORKS**

(Elective –III)

**Objective of the Course:**

- To understand the necessity for storage area networks
- To understand the appropriateness of the different networked storage options for different application environments
- To understand the architecture of backup/recovery and virtualization technology

**UNIT - I**

## Introduction to Storage Technology

Review data creation and the amount of data being created and understand the value of data to a business, challenges in data storage and data management, Solutions available for data storage, Core elements of a data center infrastructure, role of each element in supporting business activities

**UNIT - II**

## Storage Systems Architecture

Hardware and software components of the host environment, Key protocols and concepts used by each component, Physical and logical components of a connectivity environment, Major physical components of a disk drive and their function, logical constructs of a physical disk, access characteristics, and performance Implications, Concept of RAID and its components, Different RAID levels and their suitability for different application environments: RAID 0, RAID 1, RAID 3, RAID 4, RAID 5, RAID 0+1, RAID 1+0, RAID 6, Compare and contrast integrated and modular storage systems, High-level architecture and working of an intelligent storage system

**UNIT - III**

## Introduction to Networked Storage

Evolution of networked storage, Architecture, components, and topologies of FC-SAN, NAS, and IP-SAN, Benefits of the different networked storage options, Understand the need for long-term archiving solutions and describe how CAS fulfills the need, Understand the appropriateness of the different networked storage options for different application environments

**UNIT - IV**

## Information Availability &amp; Monitoring &amp; Managing Datacenter

List reasons for planned/unplanned outages and the impact of downtime, Impact of downtime, Differentiate between business continuity (BC) and disaster recovery (DR), RTO and RPO, Identify single points of failure in a storage infrastructure and list solutions to mitigate these failures, Architecture of backup/recovery and the different backup/recovery topologies, replication technologies and their role in ensuring information availability and business continuity, Remote replication technologies and their role in providing disaster recovery and business continuity capabilities

Identify key areas to monitor in a data center, Industry standards for data center monitoring and management, Key metrics to monitor for different components in a storage infrastructure, Key management tasks in a data center

## **UNIT - V**

### Securing Storage and Storage Virtualization

Information security, Critical security attributes for information systems, Storage security domains, List and analyzes the common threats in each domain, Virtualization technologies, block-level and file-level virtualization technologies and processes

### Case Studies

The technologies described in the course are reinforced with EMC examples of actual solutions.

Realistic case studies enable the participant to design the most appropriate solution for given sets of criteria.

### **TEXT BOOKS :**

1. EMC Corporation, Information Storage and Management, *G. Somasundaram, A. Shrivastava*, Wiley Publishing.
2. Robert Spalding, "Storage Networks: The Complete Reference", *Tata McGraw Hill*, Osborne, 2003.
3. *Marc Farley*, "Building Storage Networks", *Tata McGraw Hill*, Osborne, 2001.
4. *Meeta Gupta*, Storage Area Network Fundamentals, Pearson Education Limited, 2002.