STORAGE AREA NETWORKS AND MANAGEMENT (ELECTIVE-II)

Course Code: 13CS2114

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Prerequisites: Information Retrieval System, Computer Networks, Cloud Computing.

Course Educational Objectives:

The main objective of the course is to expose the students to different Backup, Archive and Replication, Business Continuity, Local Replication, Cloud Computing, Securing Storage Infrastructure.

Course Outcomes:

Upon completion of this course, the student should be able to:

- Describe about Information availability and Business continuity.
- Describe the backup/recovery topologies.
- Describe local replication and remote replication technologies and their operation.
- Describe processes and technologies for identifying, analyzing, and mitigating security risks in storage infrastructure.
- Students will demonstrate effective oral and writing communication skills necessary to be effective and to compete at global business environment.

UNIT – I

Introduction to Storage Technology Information storage, evolution of storage technology and architecture, data center infrastructure, key challenges in Managing information, information lifecycle. Storage system Environments: components of storage system environment, Disk Drive components, Disk Drive Performance, fundamental laws governing disk performance, logical components of the host, application requirements and disk performance.

UNIT – II

Data Protection: RAID: Implementation of RAID, RAID array components, RAID levels, RAID comparison, RAID Impact on disk performance, host spares. Intelligent Storage System: Components of an Intelligent Storage System, Intelligent Storage array, concepts in Practice: EMC CLARIION and Symmetric.

UNIT – III

Direct – Attached Storage and Introduction to SCSI :Types of DAS, DAS benefits and limitations, disk drive interfaces, introduction to parallel SCSI, SCSI command model. Storage Area Networks: fibre channel, The SAN and Its evolution, components of SAN, FC connectivity, Fibre channel ports, fibre channel architecture, zoning, fiber channel login types, concepts in practice: EMC Connectrix.

UNIT – IV

Network attached storage: general purpose servers vs NAS Devices, benefits of NAS, NAS file I/O, components of NAS, NAS Implementations, NAS file sharing protocols, NAS I/O operations, factors effecting NAS Performance and availability, concepts in practice: EMC Celerra.IP SAN: iscsi, fcip. Content – addressed storage: Fixed content and Archives, types of archives, features and benefits of CAS, CAS Architecture, object storage and retrieval in CAS, CAS Examples, concepts in practice: EMC Centera.

UNIT – V

Storage Virtualization: Formas of Virtualization, SNIA Storage virtualization taxonomy, storage virtvalization configurations, storage virtualization challenges, types of storage virtualization, concepts in practice: EMC Invista, Rainifinity. Introduction to business continuity: information availability, BC terminology, BC planning life cycle, Failure analysis, business impact analysis, BC technology solutions, concepts in practice: EMC Power path. Backup and recovery: backup purpose, backup considerations, backup granularity, recovery considerations, backup methods, backup process, backup and restore operations , backup topologies, backup in NAS environments, backup technologies, concepts in practice: EMC Networker, EMC Disk Library(EDL).

Text Books:

1. G. Somasundaram, A. Shrivastava, EMC Corporation : Information Storage and Management, 1st Edition, wiley publishing, 2009.
2. Robert Spalding, Storage Networks : The Complete Reference, 1st Edition,TMH, 2003.

Reference Books:

1. Marc Farley : Building Storage Networks, 2nd Edition, Tata McGraw Hill, Osborne, 2001.
2. Meeta Gupta : Storage Area Network Fundamentals, 2nd Edition, Pearson Education Limited, 2002.