

CompTIA Storage+ Powered by SNIA

Duration:40 Hrs

Course Description (Overview):

This course takes a top-down approach in examining the information flow requirements levied on a Storage Network and how various technologies meet those requirements. It identifies why organizations are increasingly adopting NAS and SAN. It provides a comprehensive technical examination of fibre channel, SCSI and IP Storage protocols, along with the role they play in a Storage Network.

The course examines the practical problems faced in the heterogeneous world where the "any to any" connectivity provided by SANs can present more problems than it solves. It identifies the techniques used to overcome these problems through the use of volume management, storage resource security and persistent binding. The course identifies the components and products that make up a NAS or SAN, examines the design and performance aspects of a SAN, and finally explores where Storage Networks are headed over the next few years

This course focuses on the latest storage network applications and technologies including:

- Course Introduction
- Certifications
- Basics
- **Basic Concepts**
 - Networks vs. Storage
 - Capacity
 - Network Links
 - Storage
 - Servers
 - Network Devices
 - DAS, NAS, SAN, FAN & Hybrids
 - External vs. Internal SANs
 - Blocks, Files & Objects Overview
- **Storage**
 - Storage Concepts
 - Hard Disk Drive (HDD)
 - Solid State Drive (SSD)
 - Tape
 - JBOD
 - Storage Arrays
 - LUN Presentation
 - LUN Aggregation
 - Dynamic LUN Expansion

- Thick & This Provisioning
- Persistent Binding
- RAID levels
- Combined RAID Levels
- MAID

– Storage Technologies

- SCSI Storage Overview
- P-SCSI
- SAS
- SATA

- Networks

– Fibre Channel Technologies

- FC Overview
- FC Topologies
- FC Names & Addresses
- FC Names & Addresses NPIV
- FC Architecture
 - FC Architecture Overview
 - FC-0
 - FC-1
 - FC-2
 - FC-Services
 - FC-3
 - FC-4 SCSI & IP

– Fibre Channel Components

- HBAs and CNAs
- FC Hubs & Loop Switches
- FC Bridges, Routers & Gateways
- FC Fabric Switches
 - Switches
 - Switch Fabric Design
 - Switch Fabric Pathing
 - Switch Fabric Zoning & LUN Masking
 - Switch Fabric Router
 - Switch Virtual Fabrics
- FC Animations

– IP Storage & iSCSI

Technologies

- Storage Networking & IP
- IP over FC (IPFC)

- Internet Fibre Channel Protocol (iFCP)
- Metropolitan Fibre Channel Protocol (mFCP)
- Fibre Channel over IP (FCIP)
- Internet SCSI Protocol (iSCSI)
- Data Center Networks – Converged Enhanced Ethernet and Data Center Bridging (

CEE & DCB)

- Data Center Networks – Fibre Channel over Ethernet (FCoE)

– Networking Concepts

- Introduction to Networking
- What is a layered stack?
- Data Structures
- Physical Transport Networks
- Simplex and Duplex
- Network Models
- Circuit & Packet Switch
- Bus, Loop & Expanse
- Connection-Oriented vs. Connectionless
- Bit Rate, Bandwidth, Latency and Throughput
- Ports and PHYs
- Names & Addresses
- Flow Control
- Segmentation & Offload

– System Interface Technologies

- PCIe
- InfiniBand

– Storage Network Performance

- Performance Prelude
- Flow Control
- FC Arbitrated Loop
- FC Fabric
- Fragmentation
- Tools

– Troubleshooting

- Storage Networking Troubleshooting
- Storage Networking Environmental
- Storage Networking Troubleshooting Tools
- Applications

– Data Protection

- Backup & Recovery Overview
- Technologies Overview
- Methods & Levels
- Snapshots & Replication
- Networking
- Virtual Tape Library (VTL)
- Continuous Data Protection (CDP)
- Data DeDuplication

– Information Lifecycle Management (ILM)

– Tiered Storage

– Storage Virtualization

– Storage Management

– Continuity Management & High Availability

– Storage Networking Security

– Storage Networking Applications

– Green Storage

– Green Data

– Cloud Storage

– Storage Network File Systems

• Additional Information

– Storage Networking Resources

- Futures
- Web Links
- Bibliography
- SearchStorage.Com online Quizzes
- Practice Test

– Storage Networking Lab

- Description
- Equipment
- FC Labs
- iSCSI Labs
- DAS Labs
- NAS Labs
- SAN Labs