SNIA Storage Networking Management & Administration

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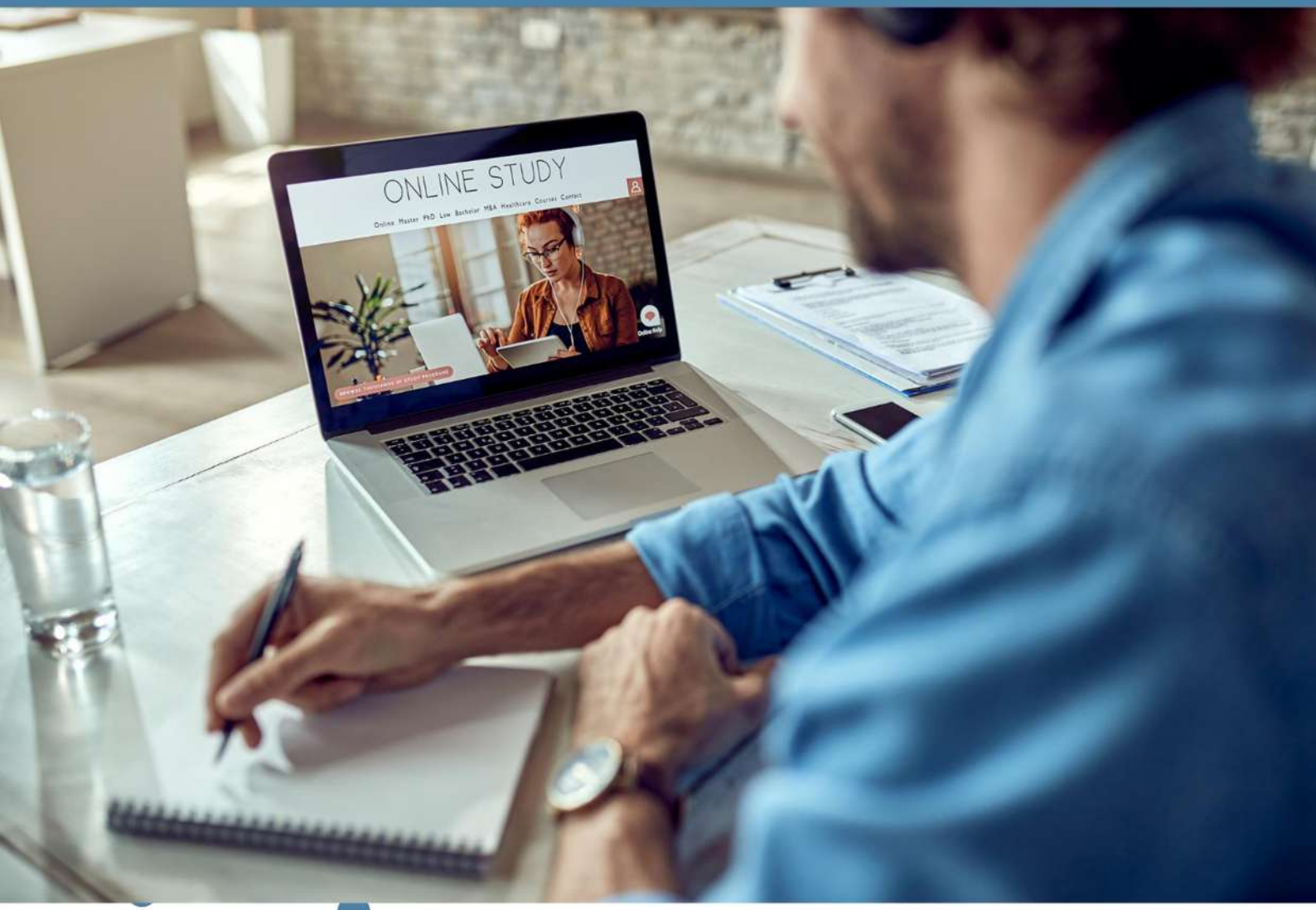

Online Course

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SNIA Storage Networking Management & Administration

Course Modules

1. **Recognize basic Storage Networking Technology Components**

- Compare & contrast how the disk technologies of Fibre Channel
  - Differences betwn serial and parallel approaches within a config
- Describe Array Technology/Virtualization
  - Describe virtualization implementation techniques & managmnt
- Define SAS and SATA technology
  - Identify a legal vs. illegal SAS topology layout
  - Routing mechanism that occurs in a SAS expander topology

2. **Perform Storage Networking Administration**

- Optimize redundancy within a switched envirnmnt; adapt to chng
- Explain HBA configuration parameters; justify the reasons
- Define troubleshooting methodologies and tools within scenarios
  - Explain reasons to add or remove Inter Switch Links (ISLs)
  - Analyze port log-in, fabric log-in and process log-in
  - Isolate bandwidth issues and errors related to time outs

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- Identify process to add a configured switch to an existing fabric
  - Set time out values, buffer-to-buffer settings
  - Set communications mode between two fabrics
  - Validate interoperability among vendors
  - Validate domain IDs on switches
  - Connect switch to a fabric
- Identify results of ISL oversubscription
- Create/configure and modify zone sets
- Implement zoning for single server and cluster applications
- Create backup of zone database prior to zone modification
- Configure zones within a redundant fabric
- Explain how zone is stored and distributed throughout the fabric
- Explain the possible zoning conflicts that cause fabric segmentation
  - Perform fabric merge without zoning conflict
  - Explain instances of zone name clash
  - Configure active zone sets
- Identify best practices for storage allocation in Fibre Channel SAN
  - Adding storage to a new host
  - Upgrading

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3. Manage Storage Networks

- Compare Storage Device Mangmnt to Storage Network Mangmnt
  - Discriminate among the components, characteristics & functions
  - Create volumes in NAS environment
  - Contrast scalability issues between SAN and NAS
  - Business context for NAS (e.g., email repository, content archivg)
  - Identify business context for SAN (e.g., database repository)
- Describe Configuration Management Elements
  - Explain HBA Configuration Management Elements
  - Construct host-side configuration of HBAs
  - Identify Virtual HBA (e.g., iSCSI, VN Port)
  - Define OS-based technology concepts
- Explain Change Management Process (ITIL)
  - Identify steps needed to bring envrnmnt back to a contrld situatn
  - Implementing decommissions of hardware (e.g., classify info)
- Optimize redundancy within a switched environment
- Apply steps to add a configured switch to an existing fabric
- Using scenarios, illustrate reasons to add or remove ISLs
  - Determine impact of adding an ISL (e.g., more options for SAN)
  - Determine impact of removing an ISL (e.g., degraded perfrmnce)

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- Identify processes that occur on a switch during a fabric merge
  - Usg scenarios, illustrate common blocking prblms to fabric merge
  - Selection of switch as primary (e.g., lowest worldwide name)
  - Awareness of fabric behaviour upon merge
  - Activatn of new productn zone sets once the merge is complete
- Using scenarios, determine appropriate methodologies & tools
  - Validation of host and LUNs
  - Validation of HBA logged into fabric
  - Validation of zone set
  - Validation of active zone library
  - Validation of storage subsystem being logged into the switch
- Predict the symptoms when the distance limitatns betwn long-wave
  - Explain why there is excessive SCSI re-transmit errors
- Create or modify zone sets using best practices
- Using scenarios, illustrate additnal conflicts that could cause fabric
  - Validate switch modes are set to be the same
  - Verify ISLs are working correctly

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4. Perform Data Protection and Recovery

- Describe the different back-up and restore configurations
  - Technical advantages and disadvantages of each configuration
  - Identfy external requirements that are uniquely satisfied by srvrls
- Analyze potential backup problems (e.g., open file, out of space)
  - Using scenarios, analyze the trade-offs with disk-to-tape, silo
  - Using scenarios, explain advantages of disk-to-disk method
  - Using scenarios, explain the advantages of off-host
  - Using scenarios, explain advantage of LAN-free (e.g., tapes)
  - Expln ways to maximize user time and minimize back-up window
- Ensure Fibre Channel Security
  - Show how to implement port authentication protocols
  - Perform processes to secure a fabric
  - Compare the diffrnc betwn hard & soft zoning regarding security
  - Explain the process to configure secure management access
- Explain how to recover a clustered storage configuration

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5. Implement Storage Networks

- Define the role of bridges and the differences betwn PCI-X & PCI-e
- Compare the RAID levels & implmentatn (e.g., hardware, software)
  - Describe technical benefits & limitatns of the differnt RAID levels
- Implementing Switch Technology
  - Differentiate among Core/Edge, Cascaded and Mesh designs
  - Explain fan-in and fan-out ratios
  - Identfy the slot to place the HBA for max performance & reliability
- Implementing Virtualization
  - Explain the reasons for virtualizing servrs (e.g., ability to failover)
- Implementing NAS
  - List NFS/CIFS common parameters (e.g., which OS)
  - Explain when "no block" level access is significant or insignificant
  - Compare NDMP with standard NAS file level back-up

6. Monitor Storage Networking Performance

- Use tools to access the performance of a network storage envirnmt
  - Establish baselines (e.g., performance-based, trending, config
  - Use a time server across envrnmnts for log correlation, security
  - Analyze performance implications on the fabric involving RAID
  - Monitor, collect, & analyze trending info to avoid bottlenecks
- Develop and follow steps for problem resolution
  - Analyze Resolve problem; document problem tracking, root cause
  - Analyze and document compliance/non-compliance to customer
- Asses methods to reduce perfrmnce impacts when addg long distnc
  - Analyze when an increase in buffer-to-buffer credit is necessary
  - Use LSANs or VSANs to isolate traffic such that only requird traffic
  - Explain when to use compression/encryption & in which sequence

7. Provide Storage Networking Business Continuance

- Describe archiving/nearline
  - Define Content Addressable Storage (CAS) (e.g., hand-offs)
- Identify protocols and technologs best used for implementg busins
- Identify techniques & processes to be used as part of a business
- Explain how to perform data transfers, migrations, and replications

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