

SNIA Storage Networking Management & Administration Exam (S10-201) Exam Description & Preparation Guide

The SNIA Storage Networking Management & Administration (S10-201) exam will certify that the successful candidate has vendor-neutral knowledge of general storage networking management and administration. Validation of the basic ability to configure storage networks, monitor components of storage networks, restore and backup files, and uses industry established protocols, standards and processes.

Test Parameters

- ✓ The delivery channel for this test is Prometric testing centers worldwide.
- ✓ The exam format is multiple-choice with multiple-responses and/or exhibits where appropriate and noted.
- ✓ The maximum testing time allowed for the exam is 90 minutes worldwide and 15 additional minutes for a survey that precedes the actual exam.
- Reference materials or other tools will not be allowed nor made available to the client at the testing center.
- ✓ The exam language is currently English.

Prerequisite Exam for SNIA SCSE Credential: SNIA Storage Network Foundation Exam (S10-101)

Passing Score: 65%

Number of Exam Items: 60

SNIA Storage Networking Management & Administration (SCSE) Audience Expectations

- mastery of basic storage networking components and concepts
- provides day-to-day management and security of a storage network environment
- implements upgrades and/or modifies storage network configurations
- administers and monitors all components of storage networks
- demonstrates working knowledge of protocols, standards, operation, and implementation considerations
- demonstrates knowledge of administration and configuration management tools
- recovers data at the application and recovery concepts of database retrieval

SNIA Storage Networking Management & Administration Exam (S10-201) -**Topics to Study**

Please note there will NOT be exam items corresponding to EVERY topic. However, the exam items will be drawn from this blueprint and study material. If numbers are skipped or appear missing, this is intentional. We are only showing information relevant to this exam.

1. Explain and recognize basic Storage Networking Technology Components and Concepts

- (9%) 1.1 Compare and contrast how the disk technologies of Fibre Channel, ATA, SATA, SCSI, and
 - ✓ Define differences between serial and parallel approaches within a configuration
 - 1.2 Describe Array Technology/Virtualization
 - ✓ Describe virtualization implementation techniques and management strategies
 - (e.g., in-band and out-of-band)
 - 1.3 Define SAS and SATA technology
 - ✓ Identify a legal vs. illegal SAS topology layout
 - Explain the routing mechanism that occurs in a SAS expander topology

2. Perform Storage Networking Administration (24%)

- 2.1 Optimize redundancy within a switched environment; adapt to changing needs and demands
- 2.2 Explain HBA configuration parameters; justify the reasons for each parameter setting
- 2.3 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
- 2.4 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
- 2.5 Identify results of ISL oversubscription
- 2.6 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
- 2.7 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
- 2.8 Identify best practices for storage allocation in Fibre Channel SAN
 - ✓ Adding storage to a new host
 - ✓ Upgrading

3. Manage Storage Networks (21%)

- 3.1 Compare Storage Device Management to Storage Network Management
 - ✓ Discriminate among the components, characteristics and functions
 - ✓ Create volumes in NAS environment
 - ✓ Contrast scalability issues between SAN and NAS
 - ✓ Identify business context for NAS (e.g., email repository, content archiving)
 - ✓ Identify business context for SAN (e.g., database repository, data replication)
- 3.2 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
- 3.3 Explain Change Management Process (ITIL)
 - Identify steps needed to bring environment back to a controlled situation (e.g., host is swapped out or a device is changed)
 - Implementing decommission of hardware (e.g., classify information to understand proper disposal methods, erasure of passwords, configs and zone sets, disk, tape, and data
- 3.4 Optimize redundancy within a switched environment
- 3.5 Apply steps to add a configured switch to an existing fabric (e.g., verify that domain ID is unique, insure zone names are unique, backup existing zone before changes, validate existing admin account has unique username/password on new switch)
- 3.6 Using scenarios, illustrate reasons to add or remove ISLs (Inter Switch Links)
 - Determine impact of adding an ISL (e.g., more options for SAN expansion, allows configuration to take full advantage of ports)
 - ✓ Determine impact of removing an ISL (e.g., degraded performance)
- 3.7 Identify processes that occur on a switch during a fabric merge (e.g., name services, protocol sequence, and principle switch selection)
- 3.8 Using scenarios, illustrate common blocking problems to fabric merge
 - ✓ Selection of switch as primary (e.g., lowest worldwide name)
 - ✓ Awareness of fabric behavior upon merge (e.g., takes 5-10 minutes to stabilize because of background processes)
 - ✓ Activation of new production zone sets once the merge is complete (e.g., two switches on Fabric A, and one HBA going to each fabric)
- 3.9 Using scenarios, determine appropriate methodologies and tools for troubleshooting zone sets
 - ✓ 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
- 3.10 Predict the symptoms when the distance limitations between long-wave and shortwave fiber has been exceeded
 - ✓ Explain why there is excessive SCSI re-transmit errors (e.g., intermittent loss of signal)
- 3.11 Create or modify zone sets using best practices
- 3.12 Using scenarios, illustrate additional conflicts that could cause fabric segmentation (see initial reasons in 2.7)
 - ✓ Validate switch modes are set to be the same
 - ✓ Verify ISLs are working correctly

4. Perform Data Protection and Recovery (14%)

- 4.1 Describe the different back-up and restore configurations
 - Describe the technical advantages and disadvantages of each configuration (i.e., performance)
 - Identify external requirements that are uniquely satisfied by serverless backup or thirdparty copy
- 4.2 Analyze potential backup problems (e.g., open file, out of space, virus scanner)
 - Using scenarios, analyze the trade-offs with disk-to-tape, back-up window, media, silo (e.g., low cost, portable, but slow)
 - Using scenarios, explain advantages of disk-to-disk method (e.g., physical space, space on media, security and access to data)
 - Using scenarios, explain the advantages of off-host (e.g., dedicated back-up server, speed vs. cost)
 - Using scenarios, explain advantage of LAN-free (e.g., tapes and disks on a dedicated fabric)
 - ✓ Explain ways to maximize user time and minimize back-up window
- 4.3 Ensure Fibre Channel Security
 - ✓ Show how to implement port authentication protocols
 - ✓ Perform processes to secure a fabric
 - ✓ Compare the difference between hard and soft zoning regarding security
 - Explain the process to configure secure management access to Fibre Channel switches
- 4.4 Explain how to recover a clustered storage configuration

5. Implement Storage Networks (17%)

- 5.1 Define the role of bridges and the differences between PCI-X and PCI-e
- 5.2 Compare the RAID levels and implementation (e.g., hardware, software, host-based)
 ✓ Describe technical benefits and limitations of the different RAID levels
- 5.3 Implementing Switch Technology
 - ✓ Differentiate among Core/Edge, Cascaded and Mesh designs
 - ✓ Explain fan-in and fan-out ratios
 - ✓ Identify the slot to place the HBA for maximum performance and reliability
- 5.4 Implementing Virtualization
 - Explain the reasons for virtualizing servers (e.g., ability to failover, load balance, fully utilize physical assets)
- 5.5 Implementing NAS
 - List NFS/CIFS common parameters (e.g., which OS, journaling level, statefull/ stateless)
 - ✓ Explain when "no block" level access is significant or insignificant (e.g., FSCK-CHKDSK, forensics)
 - ✓ Compare NDMP with standard NAS file level back-up (e.g., scalability, block vs. file, offloading of work to NAS unit)

6. Monitor Storage Networking Performance (9%)

- 6.1 Use tools to access the performance of a network storage environment for analysis
 - ✓ Establish baselines (e.g., performance-based, trending, configuration, as built)
 - Use a time server across environments for log correlation, security, discovery process and troubleshooting
 - Analyze performance implications on the fabric involving RAID, caching and connectivity configurations (i.e., identifying potential bottlenecks among these indicators)
 - Monitor, collect, and analyze trending information to avoid bottlenecks or resource constraints on the system architecture
- 6.2 Develop and follow steps for problem resolution
 - ✓ Analyze Resolve problem; document problem tracking, root cause analysis, problem resolution, problem prevention timeline
 - Analyze and document compliance/non-compliance to customer Service Level Agreement

6.3 Asses methods to reduce performance impacts when adding long distance connections

- ✓ Analyze when an increase in buffer-to-buffer credit is necessary
- ✓ Use LSANs or VSANs to isolate traffic such that only required traffic is transferred
- ✓ Explain when to use compression/encryption and in which sequence

7. Provide Storage Networking Business Continuance (6%)

- 7.1 Describe archiving/nearline
 - ✓ Define Content Addressable Storage (CAS) (e.g., hand-offs)
- 7.2 Identify protocols and technologies best used for implementing business recovery solutions
- 7.3 Identify techniques and processes to be used as part of a business continuance solution
- 7.4 Explain how to perform data transfers, migrations, and replications

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