

## **SNIA Storage Networking Management & Administration (Hands-On)**

### **Course Summary**

#### **Description**

This course highlights storage administration in vendor neutral terms. It covers best practices across storage capabilities and disciplines. Using a recipe format, it discusses the rationale of tasks, decisions and sequence from an operations and emergency context. It integrates them to help you support real solutions. The setting is practical and applied with the goal of helping students do their tasks within the IT or storage team.

#### **Objectives**

At the end of this course, students will be able to:

- Develop technical knowledge and skills required to understand, manage and use storage infrastructure technologies
- Ask the right questions of others with storage responsibilities

#### **Topics**

- Storage Interfaces (SCSI, FC, iSCSI)
- DAS, SAN, NAS, CAS, IP Storage
- Data Protection (RAID)
- Replication (Clone, Snap, Local, Remote)
- SNIA Shared Storage Model
- Fibre Channel Protocol, Administration, Security
- Backup and Recovery
- Data Management
- Business Continuity and D/R
- Virtualization
- Performance
- Lab

#### **Audience**

Everyone responsible for storage service delivery and support for new and existing storage products and services; this typically includes new and experienced development, administration, implementation, delivery, and support and management staff. Staff members required to complete the internationally recognized SNIA S10-101 Storage Network Foundations and SNIA S10-200 Storage Networking Management and Administration examination will find this course essential.

#### **Prerequisites**

- SNIA Storage Network Foundations or
- A basic level of IT literacy including at least six (6) months experience in IT and/or Storage Networking Operations. Advanced computer skills and knowledge in at least one operating system. Technical skills as a team member to develop complex solutions. A course specific non-disclosure agreement is required to attend this course. Both a non-disclosure agreement and license agreement are required.

#### **Duration**

Five days

Due to the nature of this material, this document refers to numerous hardware and software products by their trade names. References to other companies and their products are for informational purposes only, and all trademarks are the properties of their respective companies. It is not the intent of ProTech Professional Technical Services, Inc. to use any of these names generically

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### **Course Outline**

- I. Fibre Channel (FC-SAN)**
  - A. Concepts and components including switches, bridges, hubs, channel extension, cabling, and host bus adapters. FC protocol information relevant to administrative operations.
  - B. Topologies.
  - C. Planning for growth and redundancy.
  - D. Process for adding hosts, arrays, tape, and fabric components.
  - E. Zoning and LUN masking.
  - F. Troubleshooting. Distance solutions.
  - G. Security.
- II. Storage Arrays**
  - A. Concepts and components, parameters, architectures and their relationship to hosts and fabrics.
- III. IP Storage**
  - A. Describe IP networking storage general concepts including protocol differentiation.
  - B. Identify advantages and disadvantages of using IP Storage Networking.
  - C. Describe iSCSI implementation concepts.
  - D. Demonstrate understanding of IP Storage Networking enabled technologies.
  - E. Identify risks.
  - F. Describe selection criteria for IP Storage Networking solutions.
- IV. Network Attached Storage (NAS)**
  - A. Describe NAS concepts.
  - B. Identify advantages and disadvantages of using NAS technology. Compare and contrast NFS and CIFS protocols.
  - C. Describe NAS operating system characteristics.
  - D. Identify NAS backup and recovery risks.
- V. Backup and Recovery**
  - A. Concepts and components.
  - B. Identify backup methods and their impacts.
  - C. Identify performance bottlenecks and how to correct them.
  - D. Analyze backup configurations to identify potential problems.
  - E. Determine database components and configurations to satisfy backup/recovery scenarios.
  - F. Apply special data management capabilities including local and remote replicas to backup and recovery.
- VI. Business Continuity**
  - A. Identify methods of implementing business recovery solutions using Fibre channel extension.
  - B. Describes component used as part of a business continuance solution.
  - C. Select information protection solutions using Fibre Channel.
  - D. Identify the steps required to implement clustering, in particular, preventing single points of failure.
  - E. Demonstrate how to perform data transfers, migrations and replication.
- VII. Storage Management**
  - A. Describe storage management components and the relationship of device and network management. Identify performance management risks created by management infrastructure.
  - B. Describe common elements; their instrumentation points and the relationship to SMI-S enabled products.
  - C. Identify SMI-S components and relationships.
  - D. Describe the SMI-S product certification process.
- VIII. Performance**
  - A. Describe methods of assessing the performance of a storage network.
  - B. Develop and follow steps leading to problem resolution.
  - C. Identify capacity and throughput problems.
  - D. Demonstrate understanding of performance considerations of the fabric when used to interconnect arrays (internal and external) and the impact on caching, connectivity, and bandwidth.
  - E. Establish performance baselines.
  - F. Describe monitoring for storage device ports and ISLs.
  - G. Determine the bandwidth requirements, impact of local and remote replication techniques on local and extended fabrics.