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**Learning Style:** Virtual Classroom

**Technology:** NetApp

**Difficulty:** Intermediate

**Course Duration:** 1 Day

## ONTAP NFS Administration (NFSAD)



## About this Course:

The ONTAP NFS Administration course provides in-depth knowledge and understanding of NFS information. You will study NFS-V3 while exploring in more detailed NFS-V4 and ONTAP-9-V4.1 and its equivalent NFS (pNFS) features. The lab sessions are based on ONTAP 9.

The Systems Administrator can earn an average salary of \$72,762 per annum.

## Course Objectives:

- Explain the differences between the NFS protocol and SAN protocols
- List NAS namespace architectures and namespaces
- Summarize client access to NFS data in ONTAP software
- List the NFS enhancements for different releases of ONTAP software
- Describe the implementation of NFSv3 on NetApp storage
- Describe the implementation of NFSv4 on NetApp storage
- Demonstrate a multiprotocol configuration that supports SMB and NFS access
- Illustrate techniques for collecting NFS statistics and data

## Audience:

- Channel Partners
- Engineers
- NetApp Employees

## Prerequisites:

Candidates are required to have following prerequisites and knowledge for appearing in this exam:

- Understanding of Linux and UNIX operating systems
- ONTAP-Cluster-Fundamentals WBT
- ONTAP Cluster-Administration 9.6

## **Course Outline:**

### **Module 1: NFS Overview**

- Data fabric layers
- NFS
- NFS protocol versions
  - NFSv2 and NFSv3
  - Ancillary protocols
  - NFSv4
- ONTAP 9 NFS enhancements
- ONTAP 9 configuration
- SVM with Infinite Volume

### **Module 2: NFS Version 3**

- Capabilities
- Features
- Client support
- NFSv3 implementation
- NFSv3 export policy
- Export policies and volumes
- Access cache
- Mounts
- User authentication
- Accounts
- Auxiliary GIDs
- ANON setting
- UNIX permissions

### **Module 3: NFS Version 4**

- Features
- NFSv4 connection
- Mount process
- Referrals
- Delegation and usage
- NFSv4 Implementation
- Security
  - RPCSEC\_GSS
  - Key distribution center
  - Kerberos authentication
  - Access control lists
  - ACE permissions
- NFSv4 infrastructure
- UID and GID
- Snapshot directories

## **Module 4: NFS Version 4.1**

- Connection
- Reliable callbacks
- Sessions
- Layouts
- pNFS
- pNFS vs. referrals
- ONTAP 9 support
- NFSv4.1 implementation
- pNFS status

## **Module 5: Performance and Basic Troubleshooting**

- Performance management
- Performance issues
- Factors that affect NFS performance
- RAID factors
- NFS data collection
- Performance and statistic collector (Perfstat)
- Recommended statistics
- The SIO utility
- Multiprotocol
- Security style interaction
- UNIX user access
- Storage system configuration
- Linux client troubleshooting
- NFS troubleshooting
- Network troubleshooting
- Check access command

### **Labs:**

- Adding a cluster
- Configuring a storage virtual machine for NFSv3
- Configuring a storage virtual machine for NFSv4
- Configuring a storage virtual machine for NFSv4.1
- Configure clustered ONTAP for NFS active directory authentication
- Configuring Windows for NFS active directory authentication
- Configuring Linux for NFS active directory authentication