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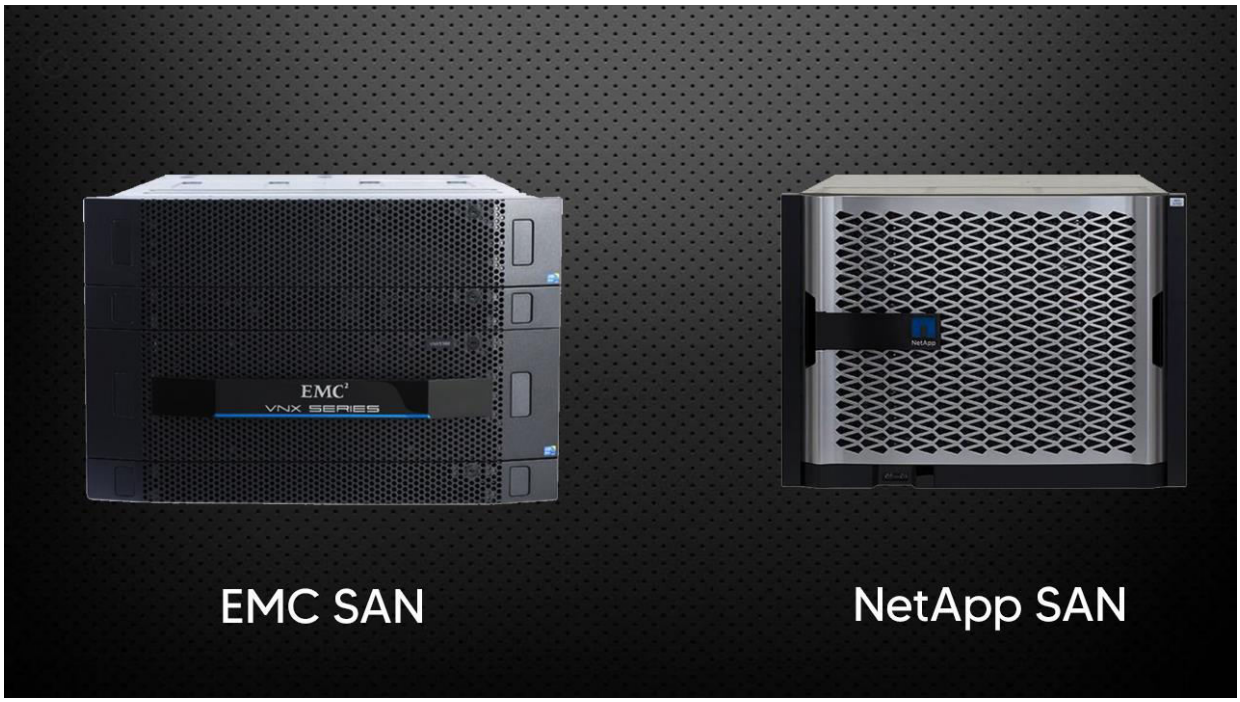

EMC SAN + NetApp SAN

9032803832

9032803832

contact@techyedz.com

www.techyedz.com

EMC SAN + NetApp SAN Combo Course

Course Overview:

EMC SAN is a Storage Area Network offered by EMC Corporation. SAN (Storage Area Network), a high-speed and secure network that is used for secure data transmission and storage. By comprising diversified products and services, EMC SAN is engaged in giving access to storage devices to a number of requested servers. EMC SAN covers network operations of a complete storage area based-on a Connectrix family of switches. It comprises various operations like performance levels monitoring operations, determining security as well as troubleshooting. It supports SMEs as well as organizations in Managing IT expenses, data availability, consolidated infrastructure storage, data backup services, business continuity, direct and network attached storage.

Learn how to configure the basic technologies of the NetApp Data ONTAP® operating system—clustered Data ONTAP and Data ONTAP operating in 7-Mode. Through lectures and hands-on exercises, learn how to create aggregates, storage virtual machines (SVMs), virtual interfaces (VIFs), FlexVol® volumes, qtrees, Snapshot® copies, and more.

Course Outline:

EMC SAN

VMware VSphere VCenter:

- Install and configure VMware ESX™/ESXi, vCenter™ Server, vCenter Converter, vCenter Server Heartbeat, Data Recovery, and vCenter Update Manager
- Configure and manage vSphere networking and storage from both graphical and command-line interfaces
- Create, configure, migrate, convert, monitor, patch, and back up virtual machines and virtual appliances

- Use VMware Distributed Resource Scheduler (DRS) to automate resource management
- Implement high availability and fault-tolerance solutions

Storage Basic & Advanced Concepts:

- Explain Storage Fundamentals
- Describe Network Attach Storage (NAS)
- Describe Network Attached Storage (NAS)
- Compare Direct Attach Storage (DAS) to Network Attach Storage (NAS)
- Identify the components and uses of a Storage Area Networks (SAN)
- HBA vs NIC.
- Hub/Loop Switches, Fabric Switches, Directors.
- FLOGI, SCN, RSCN, SNS.
- JBOD, Tape Libraries, Storage Drives, Storage Arrays.
- Classify SAN Applications
- Explanation & Implementation of Fibre Channel (FC) Protocol?
- Explanation & Implementation of iSCSI protocol.
- FCoE vs FCIP.
- Categorize Storage Networking Issues

Brocade & Cisco Switch Management

- Introduction To Brocade And Cisco Switches And Various Models
- Installation Of New Switches
- Overview Of Fabric Topologies
- Overview Of Fabric Components, Switch Firmware Upgrade
- User Account Management, Fabric-Wide Settings & Local Switch Settings
- Zoning & Types Of Zoning (Port Zoning And WWN Zoning) Along With Practical Explanation

- Using CLI And Web Tools Gui
- Using Dcfm
- Generating Reports
- Monitoring Switch Logs
- Inter-Switch Linking (Isl) And Trunking
- Inter Chasis Linking (Icl)
- Merging Fabrics Along With Practical Explanation
- Multipathing Software Overview – Powerpath Explanation With Commands
- Access Gateway Mode, N-Port Id Virtualization – Npiv

EMC CLARiiON:

- CLARiiON 200/300/400/500/600/700
- EMC CLARiiON Management
- CLARiiON internals and architecture
- CLARiiON Host Integration & Management
- CLARiiON Management Utilities
- OS Integration
- LUN Management
- Access Logix
- SAN Copy
- Mirrow View
- Snap View
- Navisphere/Unisphere
- EMC PowerPath
- General administration concepts
- Day to day Troubleshooting Techniques.

EMC Unified VNX (EMC's SAN+NAS Storage Array):

- Provision storage to VNX Data Movers
- Implement advanced storage features
- Navigate the Unisphere interface
- Implement Data Mover failover
- Setup basic IP network functionality
- Create and Manage VNX file systems
- Provide file system access to NFS users and applications
- Provide file system access to CIFS users and applications
- Manage permissions for CIFS
- Set up and manage file system quotas
- Implement CIFS features
- Describe Usermapper operations
- VNX hardware and software architecture
- Configuring Pools, Thin and Thick LUNs
- Cisco MDS & Brocade DCX Switches.

EMC Enterprise Symmetrix VMAX:

- EMC Symmtrix internals and architecture
- Symmetrix configuration using Solutions Enabler and ECC
- Meta creation, mapping and masking
- Allocation, deallocation of LUNs through SYMCLI.
- Thick & Thin Provisioning.
- FAST, FAST VP, FAST Cache & Flash Cache.
- Capacity/Performance/Monitoring Management
- Enginuity/Microcode
- Cache utilization
- SMC/ECC/SYMCLI
- TimeFinder (Snap/Clone/Mirror), SRDF (Sync/Async) Concepts & Practical Demonstration.

- General administration concepts
- Known problems and resolutions
- DMX & VMAX internals and architecture
- PowerPath
- Day to day troubleshooting technique.

EMC Isilon (Scaleout NAS Product):

- Isilon cluster Architecture & other features.
- Cluster layout and access & other features.
- File access, permission & Identity management.
- Storage management

Cluster arrangement:

- File pools
- SmartQuotas
- SnapShotIQ
- SyncIQ
- NDMP
- SmartLock

Application integration:

- Isilon VMware support
- VAAI and VASA
- Database and anti-virus
- Monitoring (InsightIQ & SupportIQ)

Basic NetApp Configuration and Administration (BNCA)

Course Outline:

1: ONTAP Cluster Fundamentals: Clusters

- Cluster components
- ONTAP 9 software
  - Cluster
  - Nodes
  - High-Availability pairs
  - Networks
  - Ports and logical interfaces
- ONTAP storage architecture
  - Physical Storage
  - Aggregates
  - Logical storage
  - SVM with FlexVol volumes
- Cluster configurations
- ONTAP 9 software deployments
  - All Flash FAS and FAS
  - FlexPod solution
  - FlexArray virtualization
  - ONTAP Select
  - NetApp Provate Storage (NPS)
  - ONTAP Cloud
- Supported cluster configuration
  - Single node
  - 2-note switchless
  - Multimode switched
  - MetroCluster
- Create a cluster

2: ONTAP Cluster Fundamentals: Management

- Administrators
  - Cluster administrators
  - SVM administrators
- Accessing the cluster
  - Command line interface (CLI)
  - OnCommand System Manager
- Managing clusters
- Clustershell
- System manager dashboard
- OnCommand Management portfolio
- Configuring clusters
- Managing cluster access
  - User accounts
  - Access method
  - User role
- Predefined SVM roles
- Monitoring clusters
  - AutoSupport
  - OnCommand portfolio

3: ONTAP Cluster Fundamentals: Networking

- Management and data networks
- Ports and logical interfaces
  - Physical ports
  - Interface groups
  - VLANs
  - Network ports
- IPspaces
  - Components
  - Broadcast domains
  - Subnets
- Network interfaces
  - Data LIFs

4: ONTAP Cluster Fundamentals: Storage Virtual Machines

- Data SVM
  - Benefits
  - Considerations
  - SVM with FlexVol volumes
  - FlexGroup volume
  - Root volume
  - Administration
- FlexVol volumes
- Snapshot technology
- Volume efficiency
  - Deduplication
  - Data compression
  - Inline data compaction
- Moving volumes
- Cloning volumes
- SVM setup workflow
- Editing an SVM
- Configuring SVMs

5: ONTAP NAS Fundamentals

- NAS
  - Overview
  - FlexVol volme
  - Controlling file acess
- SVM namespace
  - Root volume and junctions
  - Namespace architecture
  - Namespace protection
- NFS protocol
  - Overview
  - Configure NFS file access
  - UNIX file permissions
- SMB protocol
  - Overview
  - Configure SMB file access

6: ONTAP SAN Fundamentals

- SAN
  - Overview
  - Protocols: FC, iSCSI FCoE
- SCSI concepts
- LUN
- IP SAN nodes and ports
- Implementing a SAN
  - Steps
  - Interoperability matrix tool
  - Host utilities
- IP SAN
  - Architecture
  - Configurations
- IP SAN target configuration
- IP SAN initiator configuration
- LUN access steps
  - Preparation
  - Thick provisioning
  - Thin provisioning
  - Configuration decision
  - Create a LUN
  - Initiator group
  - Map a LUN
  - Verification
- Window multipath driver overview

Labs:

- Navigating the NetApp OnCommand System Manager
- Updating NetApp Oncommand System Manager administration settings
- Synchronize the system time for Windows domain
- Assign an NTP server to the cluster
- Networking ports
- IPspaces
- Network interfaces
- Components and features

- FlexVol volumes
- Volume move
- Creating and managing SVMs
- Explore ONTAP NAS configuration
- Explore SMB client configuration
- Explore the NFS client configuration
- Explore ONTAP IP SAN configuration
- Explore the iSCSI client configuration

Prerequisites:

- Basic knowledge of storage area networks and the candidate are suggested to have an idea of network installation and configuration.

Who Can attend:

- Unix System Administrators working on Enterprise servers
- Customer Support Engineer
- Technical Consultant
- Fresher's with Computer Science Background

Number of Hours: 70hrs

Certification:

Dell EMC Proven Professional certification program overview

- Information Storage Associate (EMCISA)
- Data Scientist Associate (EMCDSA)
- Data Scientist (EMCDS)
- Cloud Infrastructure and Services Associate Version 2 (EMCCIS)
- Cloud Architect (EMCCA)
- Data Protection and Management Associate (EMCDPM)
- **BNCA**

Key Features:

- One to One Training
- Online Training
- Fastrack & Normal Track
- Resume Modification
- Mock Interviews
- Video Tutorials
- Materials
- Real Time Projects
- Virtual Live Experience
- Preparing for Certification