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EMC and SAN Technology

COURSE DESCRIPTION

This EMC and SAN Technology course focuses on the cutting-edge storage technologies: EMC Technology and Storage Area Networking (SAN) Technology. The course includes three parts:

- (1) EMC Core Technology. It covers Symmetrix/DMX internals, Symmetrix/DMX Configuration Manager, EMC Storage local replication – TimeFinder configuration and management, EMC Storage remote replication – SRDF configuration and management.
- (2) Storage Area Networks. It covers SAN configuration and Management. Including Brocade Switches, Mcdata Switches and Cisco MDS switches.
- (3) EMC enhanced Technology. It covers EMC Clariion Storage and EMC Control Center (ECC).

Students will expect 50% of Lectures and 50% of LAB. The lectures will emphasis a CLEAR understanding of Symmetrix/DMX internals, EMC Clariion Storage, SRDF, TimeFinder, ECC SAN foundations and other storage networking concepts. The LABs will train hands-on skills for Symmetrix management, Clariion configuration, ECC management, TimeFinder management, SRDF configuration and management, SAN configuration, Zoning and lun masking. The optional portion covers Clariion Storage management, EMC Control Center configuration and Management. LAB equipments include Sun/Solaris servers, Brocade Switches, Mcdata Switches, Cisco MDS switches, EMC symmetrix running SRDF, EMC Clariion Storage and EMC Control Center simulation environment.

Successful completion of this course will help students to master key storage technology concepts and hands-on skills. It will also help students to prepare the EMC certification, as well as Cisco CCIE Storage Networking.

Length of Program (Weeks/Hours)

Tuition Fees

7 Weeks /50hours

(\$ 4,900)

Week 1 – EMC symmetrix Internals

- Symmetrix Inside – Physical view
- Symmetrix Inside – Logical view
- FA, DA and Cache
- EMC physical disk and symmetrix device (logical volume)
- Read Hit/Miss, Write Hit/Miss
- EMC Symmetrix Solution Enabler
- Symmetrix/DMX Configuration Manager
- Lab 1
 - (1) Host HBA installation and configuration
 - (2) Solution Enabler to explore symmetrix internals.
 - A. How many FA, DA and cache
 - B. How many physical disks installed, why?
 - C. How the logical volumes are formed from physical disks?
 - D. How are the logical volumes mapped to FAs?
 - E. How I/O are performed in Storage Arrays

Week 2 – Storage Area Networks (1)

- Symmetrix review
- From HBA to Switch
- Switches forming Fabric
- From Initiator to Target: Zoning and Lun Masking
- Cisco MDS Switch Family
- VSAN Concept
- MDS zoning/zoneset
- Lab2:
 - (1) Cisco MDS VSAN configuration
 - (2) Cisco MDS Interface configuration
 - (3) Zoning and Lun-masking to Assign LUNs
 - (4) Build File Systems on LUNS

Week 3 – Storage Area Networks (2)

- SAN review
- FCID concepts
- Trunking
- Port Channel
- FC domain, Principle Switch
- FSPF and cost configuration
- Lab3
 - (1) Trunking configuration
 - (2) Port-channel configuration
 - (3) Persistent FCID configuration
 - (4) ISL and FSPF cost configuration
 - (5) Principle Switch configuration

Week 4 – TimeFinder configuration and Management

- Symmetrix TimeFinder
- TimeFinder Mirror/BCV
- TimeFinder/Clone
- TimeFinder/Snap
- Lab 4
 - (1) Zoning and LunMasking to assign STD to production host
 - (2) Symconfigure to make BCV and map BCV to FA
 - (3) BCV operations (Query/Establish/split)
 - (4) Zoning and LunMasking to assign BCV to host
 - (5) Split BCV and STD
 - (6) Mount STD and BCV using Lun-masking
 - (7) Consistent split

Week 5 – SRDF configuration and Management

- Symmetrix TimeFinder Review
- Symmetrix SRDF
- SRDF operations
- Symmetrix SRDF failover and failback
- Lab 5
 - (1) Symconfigure to make R1/R2 and map R2 to FA
 - (2) RDF operations (Establish/split)
 - (3) Mount STD and Failover to DR
 - (4) Zoning and LunMasking to Mount R2 on DR hosts
 - (5) Modify R2 and Failback to R1 site
 - (6) SRDF restore from R2 to R1

Week 6 – Advanced TimeFinder and SRDF

- Dynamic SRDF
- Switched SRDF
- Concurrent SRDF
- Asynchronous SRDF
- SRDF Automated Replication (Single/Multi Hop)
- Lab 6
 - (1) Setup SRDF Single Hop Replication
 - (2) Mount STD for File System and Database
 - (3) Manage to replicate data from STD to BCV/R1
 - (4) Manage to replicate data from R1 to R2
 - (5) Manage to replicate data from R2 to RBCV
 - (6) Mount RBCV to remount File System and Database

Week 7 – EMC Clariion Management and EMC Control Center

- EMC Clariion Introduction
- Raid Group configuration, Lun-binding, Storage Group
- EMC Control Center Introduction
- ECC Architecture/Administration
- Lab 7
 - (1) Clariion Configuration and management
 - (2) ECC configuration and mgmt