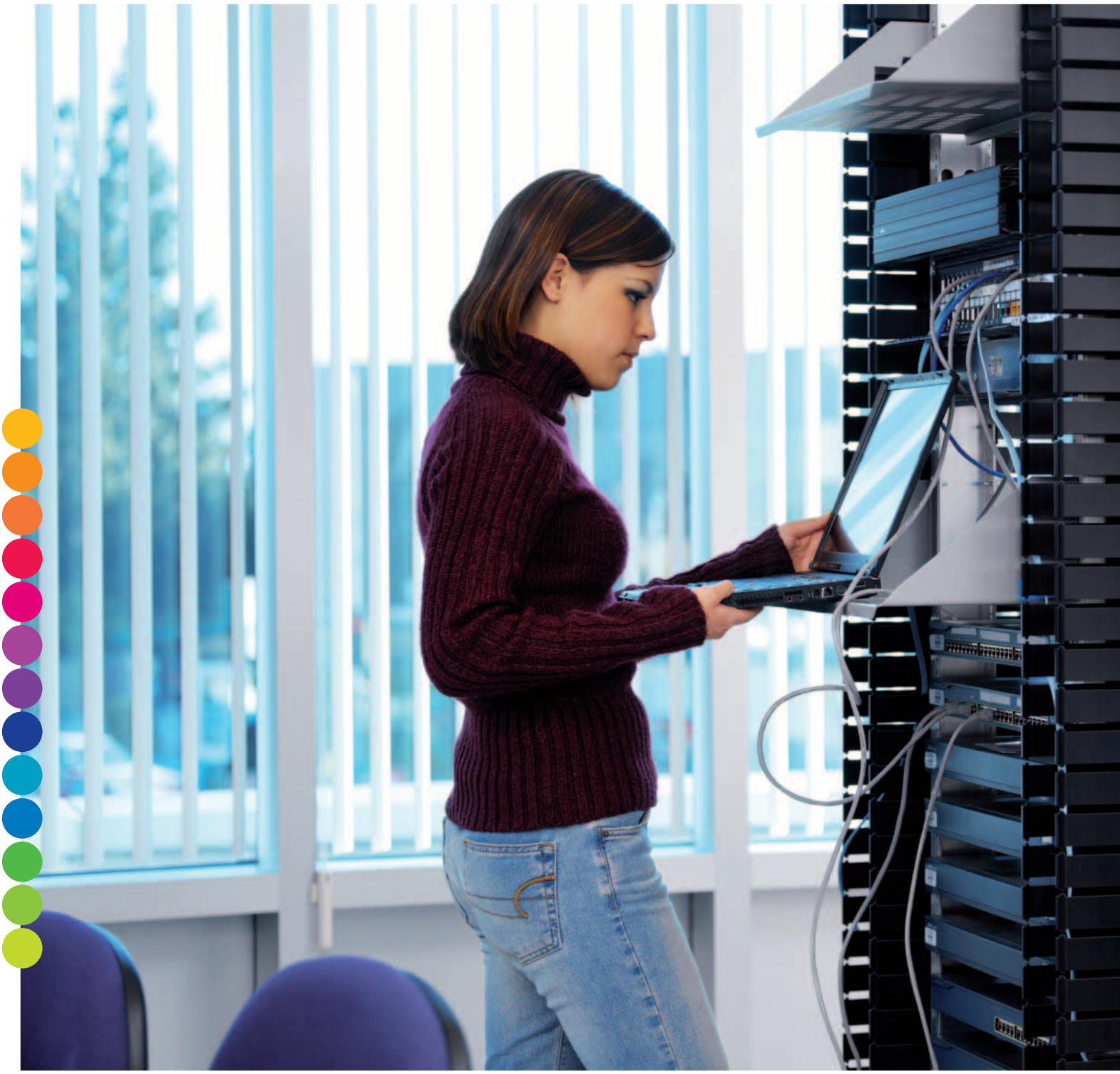
fast lane

NetApp Training and Certification 2009

" NetApp relies on Fast Lane, as its sole global partner for customer training. In response Fast Lane continues to exceed our expectations in execution, quality of classroom training, expansion plans and focus."

Bruce MacInnis Senior Manager Global Commercial Education, NetApp, Inc. – NetApp University



Welcome to Fast Lane

Fast Lane is the first and only worldwide, NetApp Authorized Learning Partner.

Specializing in internetworking projects and the development of relevant professional internetworking qualifications, Fast Lane has been an authorized worldwide Cisco Learning Solutions Partner for many years. Under NetApp's Authorized Learning Partner program, Fast Lane delivers NetApp authorized courses – both standard and customized - worldwide, using certified and highly experienced instructors.

We believe in a flexible and friendly approach and will provide you with a reliable and cost effective solution, whether you require training delivered on your site, tailored or on one of our public scheduled classes held around the country.

All courses are packed with practical lessons, featuring extensive hands-on experience that thoroughly engage each student in installation, configuration and troubleshooting activities. The complete NetApp curriculum is now available in over 40 countries and 12 languages.

We look forward to working with you.

Herman Goedman
Managing Director, Fast Lane Benelux

Useful Information

Fast Lane offers a wide range of NetApp and Cisco courses. From basic courses for beginners in Storage Networking up to advanced courses: contact Fast Lane to find out all of the possibilities.

Redeem your NetApp Training Units at Fast Lane
NetApp Training Units are credits which can be used to purchase NetApp training, both for scheduled and onsite training.

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Training Units can be purchase directly at NetApp or at one of the NetApp resellers in quantities of 1, 10, 20, 50, 100 or 200 units. 12 Training Units are equal to 1 day of classroom based training. All Training Units are valid until 12 months after purchase.

Redeem your Training Units at Fast Lane. At registering please provide us with the Purchase Order number you received after purchasing your Training Units. Fast Lane verifies this Purchase Order number at NetApp and confirms your registration.

If you would like to pay with Training Units, please make sure you have a NOW (NetApp On the Web) Account. A NOW Account – which only requires the usual registration details – can be set up at netmarket.netapp.com.

Standard versus Customized Courses
Fast Lane offers a comprehensive public schedule of the most important Cisco and NetApp courses. We can also bring these standard courses or customized versions of these courses to your location. Contact Fast Lane to discuss your specific training needs.

Course Registration
To register for any course offered by Fast Lane, visit our website. Simply select the course you would like to attend, click the date and complete the registration form..

Exam Registration
Register for your NetApp exams at Prometric – the exclusive test delivery vendor for NetApp – through the website www.prometric.com or phone + 31 (0)320 239 889. Visit the website of Prometric to find the nearest testing center.

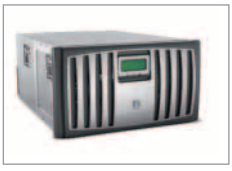
NetApp

NetApp Products and Technologies

NetApp delivers powerful, data center proven products and services designed to simplify complex IT environments and dramatically reduce your total cost of ownership. Designed to support large data centers, NetApp's industry-leading products make your data management scalable, flexible and available.

Primary Storage

NetApp primary storage enables you to unify and streamline your infrastructure by consolidating storage across many servers and applications over any storage fabric.



FAS6000 Series

FAS3100 Series

FAS3000 Series

FAS2000 Series

Storage Virtualization

NetApp V-Series is a network-based solution that virtualizes tiered, heterogeneous storage arrays enabling unified block (FCP and iSCSI) and file (NAS) access to data stored in Fibre Channel SAN storage arrays.

V-Series

Nearline Storage

The NetApp NearStore system bridges the gap between primary storage and offline storage by providing much faster data access than offline storage at a cost much lower than primary storage. This makes NearStore ideal for data protection and retention applications such as disk-to-disk backup, disaster recovery, archival, compliant retention and content storage.

NearStore

Data ONTAP GX Systems

Data ONTAP GX Systems are fully integrated, multinode solutions designed to meet the needs of the most demanding applications in high performance computing (HPC) and igital media content. Based on Data ONTAP GX software, these systems are offered as scale-out configurations with FAS (FAS3050, FAS3070 andFAS6070) building blocks.

Data ONTAP GX System

S Family

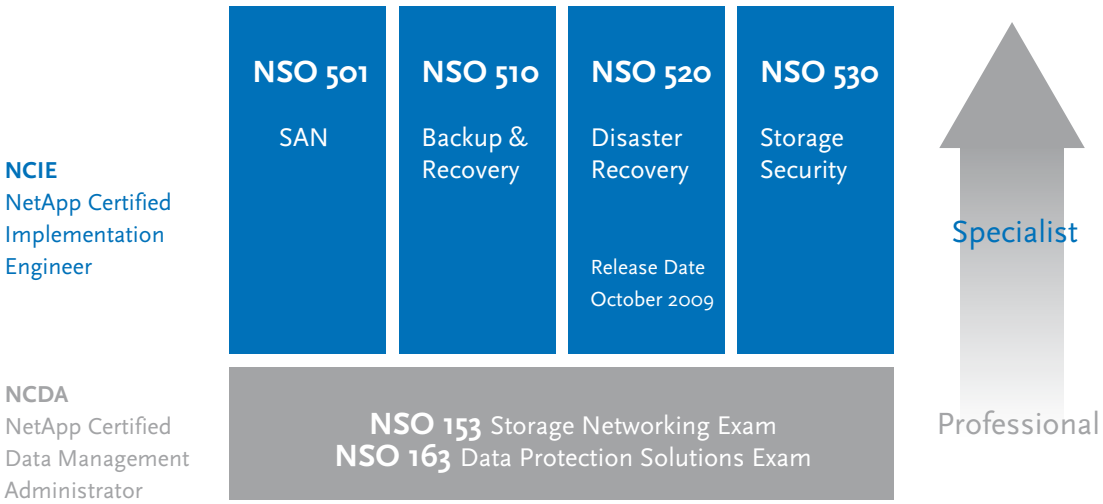
StoreVault family of network storage appliances is customized for midsize enterprises and remote office/branch offices to control data without adding new staff mid-market. StoreVault provides one of the most complete and featurerich packaging of enterprise storage technology solutions focused on helping manage and streamline IT tasks in growing businesses.

S Family

NetApp VTL

NetApp VTL provides complete Enterprise-Level Performance and Storage Efficiency backup & restores at 10x faster with up to 8.2TB/hr of scalable performance. It enables you to back up and retain more of your systems' data on disk with native deduplication and hardware compression that reduces capacity requirements by 95%. NetApp VTL also simplifies management by providing up to 550TB of native capacity and up to 10 PB of deduplicated capacity to minimize resource sprawl. NetApp VTL makes intelligent disk appear as tape.

Get NetApp Certified



NetApp Certified Data Management Administrator (NCDA)

This certification is for data management administrators and anyone who needs to perform in-depth support, administrative functions, and performance management of NetApp products and solutions.

Prerequisites: No Prerequisites Required.

Exam	Recommended Instructor-Led Training
NSO-153 Storage Networking	Data ONTAP Fundamentals (DOTF) Data ONTAP CIFS Administration (CIFS) Data ONTAP NFS Administration (NFS) Data ONTAP SAN Administration (SAN
NSO-163 Data Protection Solutions	NetApp Protection Software Administration (NPSA) High Availability (NAHA)

NetApp Certified Implementation Engineer (NCIE)

This certification is designed for Post Sales Engineers.

Prerequisites: No Prerequisites Required.

Exam	Recommended Instructor-Led Training
NSO-501 NetApp Certified SAN Implementation Engineer	SAN Administration on Data ONTAP (SAN)
NSO-510 NetApp Certified Backup and Recovery Implementation Engineer	NearStore Virtual Tape Library Administration (NAVTL) NetApp Protection Software Administration (NPSA) Operations Manager 3.7, Protection Manager, and Provisioning Manager (OPSMGR)
NSO-530 NetApp Certified Storage Security Implementation Engineer	DataFort Storage Security Administration (DSSA)

Please note:

- A minimum of 6 months of hands-on experience is recommended before sitting for any NetApp certification exam.
- Some exams require web based training offered by NetApp that should be studied in conjunction with the above instructor-led courses. Further information on these offerings can be found on the NetApp website.
- Next to instructor-led courses and webbased training certifications require hands-on experience with products and solutions. Further information on certification objectives and listed resources can be found on the NetApp website.

NetApp Training

Storage Foundation (SAN)

Course ID	SAN
Duration	5 days
Price	€ 2.495

Who should attend
Entry level storage technicians.

Prerequisites
It is required that the participant has a basic understanding of network fundamentals and TCP/IP Protocols.

Course description
This course gives an overview of the design and concepts of storage technology as well as covering vendor specific features and protocols.

Course outline
- Overview
  - Direct Attached Storage
  - Network Attached Storage
  - Storage Area Networks
  - Difference DAS <-> NAS <-> SAN
  - Combinations NAS and SAN
  - Differentiation Blocklevel and Filelevel
  - Unified Storage
  - Storage Appliances and Storage Gateways
  - Market overview NAS and SAN
  - Market and perspectives
- Protocols
  - Small Computer System Interface (SCSI)
  - SCSI Commands and Versions
  - Fiber Channel Protocol (FCP)
  - Fiber Channel Packet design
  - SCSI via IP (iSCSI)
  - TCP/IP encapsulated SCSI
  - FCIP, iFCP, Ficon
  - Fiber versus Copper
- Components
  - Hosts, Host Bus Adapters
  - HBA's for FCP and iSCSI
  - Typical Host-Applications in the SAN
  - Storage Appliances
  - Storage Gateways
  - Storage Virtualization
  - Tapes and Libraries
  - Backup-Strategies
  - Fiber Channel Switches
  - Fiber Channel Topologies
  - Fiber Channel Fabric
- NAS and SAN Features
  - Replication and Mirror
  - Data Protection
  - High Availability
  - Disaster Recovery
  - Snapshots and Clones
  - Central SAN Management
  - Scalability and flexibility
  - Storage Consolidation
  - Diskless Server – Boot over IP/FC
  - LAN-Free Backup with NDMP
- Design and Implementation
  - Application analysis
  - Evaluation of Storage demand
  - Topology design
  - Storage Resources Design
  - Fiber Channel Zoning
  - iSCSI SAN Design
- Storage Market Overview
  - Storage Appliance Vendors
  - Storage virtualization Hard- and Software
  - Fiber Channel Switch vendors
  - Best practices
  - Vendor solutions

Data ONTAP Fundamentals (DOTF)

Course ID	DOTF
Duration	5 days
Price	60 Training Units or € 4.500

Who should attend

An individual who provides basic support and administrative functions of the Data ONTAP operating system.

Prerequisites

- Introduction to NetApp Products (web based training)
- NetApp Hardware Fundamentals (web based training)

Recommended

- Storage Foundation (SAN)

Course description

Data ONTAP Fundamentals is an instructor-led course designed for those who provide support and administration on NetApp storage systems running the Data ONTAP operating system. The course covers Write Anywhere File Layout (WAFL) file system, volumes, aggregates, qtrees, and quotas. Hands-on labs for the course focus on the basic administrative use of Data ONTAP in NAS and IP-SAN environments.

Course objectives

On completion of the course the student should be able to:

- Describe the basic functions of the Data ONTAP operating system
- Access the NOW (NetApp on the Web) Knowledgebase to obtain software and hardware documentation
- Set up console access for a storage system
- Configure a storage system with the setup command
- Access FilerView and the command line to manage a storage system
- Configure and manage the AutoSupport service for a FAS storage system
- Define and create virtual interfaces (vifs) and VLANs
- Describe Data ONTAP RAID technology
- Calculate usable disk space of disks
- Define and create an aggregate and volume
- Define FlexClone volume
- Configure the storage system as an NFS server and CIFS server
- Configure a multiprotocol environment
- Configure a LUN for SAN environments
- Configure, create and restore Snapshot copies
- Describe the WAFL file system, including consistency points, tetris creation, RAID management, and storage levels
- Collect performance data
- Use FlexShare
- Configure an Active-Active configuration

CIFS Administration on Data ONTAP (CIFS)

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Course ID	CIFS
Duration	2 days
Price	24 Training Units or € 1.800

Who Should Attend

For those who provide support and administration for a CIFS environment on NetApp storage systems running the Data ONTAP operating system.

Prerequisites

- Introduction to NetApp Products (web based training)
- Data ONTAP Fundamentals (DOTF)

Course description

CIFS Administration on Data ONTAP is an instructor-led course designed for those who provide support and administration for a CIFS environment on NetApp storage systems running the Data ONTAP operating system. The course covers the different server environments where a storage system can support Windows client users; the licensing and setting up of CIFS on the storage system; configuring files and options; administering a storage system including creating and managing shares, users, and groups; and troubleshooting CIFS problems.

Course objectives

On completion of the course the student should be able to:

- Describe the different CIFS environments
- Identify the appropriate server environment for your storage system to support Windows client users
- Configure the CIFS environment on a storage system by licensing CIFS
- Configure files and options on the storage system
- Administer a storage system in a CIFS environment including creating and managing shares, users, groups, and sessions
- Understand group policy objects and file blocking
- Review approaches to harden security for a storage system in a CIFS environment
- Collect CIFS performance statistics with storage system commands and tools
- Explain how to troubleshoot basic CIFS problems

NFS Administration on Data ONTAP (NFS)

Course ID	NFS
Duration	1 day
Price	12 Training Units or € 900

Who should attend

For those who provide support and administration for an NFS environment on NetApp storage systems running the Data ONTAP operating system.

Prerequisites

- Introduction to NetApp Products (web based training)
- Data ONTAP Fundamentals (DOTF)
- Working knowledge of UNIX or equivalent experience
- Familiarity with networking concepts

Course description

NFS Administration on Data ONTAP is an instructor-led course designed for those who provide support and administration for an NFS environment on NetApp storage systems running the Data ONTAP operating system. The course covers the NFS protocol and implementation criteria; configuration, administration, and monitoring options; and troubleshooting NFS problems.

Course objectives

On completion of the course the student should be able to:

- Explain NFS protocol overview, NFS versions, and NFS implementation criteria
- Configure NFS protocol and options on the storage system
- Configure the storage system to export resources to clients
- Configure access permissions and options
- Configure the clients to mount resources from the storage system
- Administer exported resources to targets
- Monitor the usage of exported resources
- Create quota reports based on resource usage
- State the rules for exporting resources to hosts, subnets, and netgroups
- Explain the /etc/exports access options and how they relate to mount permissions
- Review approaches to harden security for a storage system in an NFS environment
- Collect NFS performance statistics with storage system commands and tools
- Troubleshoot basic NFS problems

NetApp Protection Software Administrator (NPSA)

Course ID	NPSA
Duration	3 days
Price	36 Training Units or € 2.700

Who should attend

Administrators and support personnel who will use SnapMirror, SnapRestore, SnapVault, Open Systems SnapVault, SnapLock, and LockVault.

Prerequisites

- Introduction to NetApp Products (web based training)
- Data ONTAP Fundamentals (DOTF)
- High Availability (NAHA)

Course description

This instructor-led course is for administrators and support personnel who will use SnapMirror, SnapRestore, SnapVault, Open Systems SnapVault, SnapLock, and LockVault to manage mission-critical data in the enterprise. Basic information on ReplicatorX and Protection Manager and Provisioning Manager are presented. A mixture of lecture and hands-on activities teach concepts and techniques needed to effectively use these solutions.

Course objectives

On completion of the course the student should be able to:

- Set up and maintain Snapshot copies
- Revert a file system to a previous version using SnapRestore
- Describe SnapMirror, SnapVault, and Open Systems SnapVault features and functions
- Process basic backup and restore operations with SnapMirror, SnapVault, and Open Systems SnapVault
- Troubleshoot common issues and optimize mirror solution performance
- Describe functionality for the Protection Manager and the Provisioning Manager application that run in the NetApp Management Console
- Describe ReplicatorX features, operating concepts and components and how they work together to provide reliable system-wide data consistency for data migration, replication and disaster recovery
- Protect your data with SnapLock

SAN Administration on Data ONTAP (SAN)

Course ID	NA-SAN
Duration	3 days
Price	36 Training Units or € 2.700

Who should attend
Individuals who provide support and administration for FC and IP SAN environments running the Data ONTAP operating system.

Prerequisites
- Introduction to NetApp Products (web based training)
- Data ONTAP Fundamentals (DOTF)

Course description
The SAN Administration on Data ONTAP course was designed for those who provide support and administration for FC and IP SAN environments running the Data ONTAP operating system. This course is delivered using Windows and UNIX hosts. The course covers SAN infrastructure preparation, storage provisioning options, creation and management of LUNs and volumes, multipathing and high availability, Fibre Channel cfmodes, and troubleshooting techniques.

Course objectives
On completion of the course the student should be able to:
- Define the characteristics of a SAN environment and how LUNs relate to the storage system
- Describe the components of FC and IP SANs
- Describe size planning requirements for LUNs
- Create and manage LUNs on a storage system from both Windows and UNIX hosts
- Explain both FC and IP SAN multipathing options for both Windows and native Solaris 10 operating system
- Explain the most common problems associated with a SAN environment and how to troubleshoot these problems

High Availability (NAHA)

Course ID	NAHA
Duration	2 days
Price	24 Training Units or € 1.800

Who should attend
Customers and service partners who implement Clustered Failover, SyncMirror and MetroCluster to ensure continuous data availability in the enterprise and rapid recovery of data in the event of a disaster

Prerequisites
- Data ONTAP Fundamentals (DOTF)

Course outline
- High Availability Overview
- Clustered Failover Licensing, Cabling, Configuration, and Testing
- SyncMirror Licensing, Cabling, Configuration, and Testing
- MetroCluster Licensing, Cabling, Configuration, and Testing
- Disaster Recovery

Course objectives
On completion of the course the student should be able to:
- Implement Clustered Failover, SyncMirror, and MetroCluster to ensure continuous data availability in the enterprise and rapid recovery of data in the event of a disaster
- License, cable, configure, and test Clustered Failover, SyncMirror, and MetroCluster
- Administer clusters and perform “takeover” and “giveback”
- Use “vol” commands to create a SyncMirrored volume, split the volume, and join the volume

NCDA Bootcamp Part 1 (NCDABC1)

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Course ID	NCDABC1
Duration	5 days
Price	78 Training Units or € 5.850

Who should attend

Network Professionals seeking the NCDA certification. This course is also valuable for those who need to perform in-depth support, administrative functions, and performance management for environments using any of the following enterprise storage solutions: CIFS, NFS, FCP, iSCSI protocols on a NetApp storage appliance running the Data ONTAP operating system.

Prerequisites

- Introduction to NetApp Products (web based training)
- NetApp Hardware Fundamentals (web based training)

Course description

During this Bootcamp the topics covered in the following courses will be discussed:

- Day 1 – 3 : Data ONTAP Fundamentals (DOTF)
- Day 4 – 5 : CIFS Administration on Data ONTAP (CIFS)
  : NFS Administration on Data ONTAP (NFS)

The NCDA certification is designed for data management administrators and anyone who needs to perform in-depth support, administrative functions, and performance management of NetApp products and solutions.

Required exams to achieve this certification:

- Storage Networking (Exam 153)
- Data Protection Solutions (Exam 163)

Delegates will receive one exam voucher after attending the NCDA Bootcamp Part 1.

To finalize your preparation for the NCDA certification please refer to the NCDA Bootcamp Part 2 (NCDABC2)

Course objectives

On completion of the course the student should be able to:

- Describe the basic functions of the Data ONTAP operating system
- Access the NOW (NetApp on the Web) Knowledgebase to obtain software and hardware documentation
- Set up console access for a storage system
- Configure a storage system with the setup command
- Access FilerView and the command line to manage a storage system
- Configure and manage the AutoSupport service for a FAS storage system
- Define and create virtual interfaces (vifs) and VLANs
- Describe Data ONTAP RAID technology
- Calculate usable disk space of disks
- Define and create an aggregate and volume
- Define FlexClone volume
- Configure the storage system as an NFS server and CIFS server
- Configure a multiprotocol environment
- Configure a LUN for SAN environments
- Configure, create and restore Snapshot copies
- Describe the WAFL file system, including consistency points, tetris creation, RAID management, and storage levels
- Collect performance data
- Use FlexShare
- Configure an Active-Active configuration
- Describe the different CIFS environments
- Identify the appropriate server environment for your storage system to support Windows client users
- Configure the CIFS environment on a storage system by licensing CIFS
- Configure files and options on the storage system
- Administer a storage system in a CIFS environment including creating and managing shares, users, groups, and sessions
- Understand group policy objects and file blocking
- Review approaches to harden security for a storage system in a CIFS environment
- Collect CIFS performance statistics with storage system commands and tools
- Explain how to troubleshoot basic CIFS problems
- Explain NFS protocol overview, NFS versions, and NFS implementation criteria
- Configure NFS protocol and options on the storage system
- Configure the storage system to export resources to clients
- Configure access permissions and options
- Configure the clients to mount resources from the storage system
- Administer exported resources to targets
- Monitor the usage of exported resources
- Create quota reports based on resource usage
- State the rules for exporting resources to hosts, subnets, and netgroups
- Explain the /etc/exports access options and how they relate to mount permissions
- Review approaches to harden security for a storage system in an NFS environment
- Collect NFS performance statistics with storage system commands and tools
- Troubleshoot basic NFS problems

NCDA Bootcamp Part 2 (NCDABC2)

Course ID	NCDABC2
Duration	5 days
Price	66 Training Units or € 4.950

Who should attend

Network Professionals seeking the NCDA certification. This course is also valuable for those who need to perform in-depth support, administrative functions, and performance management for environments using any of the following enterprise storage solutions: CIFS, NFS, FCP, iSCSI protocols on a NetApp storage appliance running the Data ONTAP operating system.

Prerequisites

- NCDA Bootcamp Part 1 (NCDABC1)

or

- Data ONTAP Fundamentals (DOTF)
- CIFS Administration on Data ONTAP (CIFS)
- NFS Administration on Data ONTAP (NFS)

Course description

During this Bootcamp the topics covered in the following courses will be discussed:

- Day 1 – 3 : SAN Administration on Data ONTAP (SAN)
- Day 3 – 5 : NetApp Protection Software Administrator (NPSA)

The NCDA certification is designed for data management administrators and anyone who needs to perform in-depth support, administrative functions, and performance management of NetApp products and solutionss.

Required exams to achieve this certification:

- Storage Networking (Exam 153)
- Data Protection Solutions (Exam 163)

Delegates will receive one exam voucher after attending the NCDA Bootcamp Part 2.

Course objectives

On completion of the course the student should be able to:

- Define the characteristics of a SAN environment and how LUNs relate to the storage system
- Describe the components of FC and IP SANs
- Describe size planning requirements for LUNs
- Create and manage LUNs on a storage system from both Windows and UNIX hosts
- Explain both FC and IP SAN multipathing options for both Windows and native Solaris 10 operating system
- Explain the most common problems associated with a SAN environment and how to troubleshoot these problems
- Set up and maintain Snapshot copies
- Revert a file system to a previous version using SnapRestore
- Describe SnapMirror, SnapVault, and Open Systems SnapVault features and functions
- Process basic backup and restore operations with SnapMirror, SnapVault, and Open Systems SnapVault
- Troubleshoot common issues and optimize mirror solution performance
- Describe functionality for the Protection Manager and the Provisioning Manager application that run in the NetApp Management Console
- Describe ReplicatorX features, operating concepts and components and how they work together to provide reliable system-wide data consistency for data migration, replication and disaster recovery
- Protect your data with SnapLock

NCDA Bootcamp (NCDABC)

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Course ID	NCDABC
Duration	10 days
Price	144 Training Units or € 10.800

Who should attend

Network Professionals seeking the NCDA certification. This course is also valuable for those who need to perform in-depth support, administrative functions, and performance management for environments using any of the following enterprise storage solutions: CIFS, NFS, FCP, iSCSI protocols on a NetApp storage appliance running the Data ONTAP operating system.

Prerequisites

- Introduction to NetApp Products (web based training)
- NetApp Hardware Fundamentals (web based training)

Recommended:

- Storage Foundation (SAN)

Course description

During this Bootcamp the topics covered in the following courses will be discussed:

- Day 1 – 3 : Data ONTAP Fundamentals (DOTF)
- Day 4 – 5 : CIFS Administration on Data ONTAP (CIFS)
  : NFS Administration on Data ONTAP (NFS)
- Day 6 – 8 : SAN Administration on Data ONTAP (SAN)
- Day 8 –10 : NetApp Protection Software Administrator (NPSA)

The NCDA certification is designed for data management administrators and anyone who needs to perform in-depth support, administrative functions, and performance management of NetApp products and solutions. Required exams to achieve this certification:

- Storage Networking (Exam 153)
- Data Protection Solutions (Exam 163)

Delegates will receive two exam voucher after attending the NCDA Bootcamp

Course objectives

On completion of the course the student should be able to:

- Describe the basic functions of the Data ONTAP operating system
- Access the NOW (NetApp on the Web) Knowledgebase to obtain software and hardware documentation
- Set up console access for a storage system
- Configure a storage system with the setup command
- Access FilerView and the command line to manage a storage system
- Configure and manage the AutoSupport service for a FAS storage system
- Define and create virtual interfaces (vifs) and VLANs
- Describe Data ONTAP RAID technology
- Calculate usable disk space of disks
- Define and create an aggregate and volume
- Define FlexClone volume
- Configure the storage system as an NFS server and CIFS server
- Configure a multiprotocol environment
- Configure a LUN for SAN environments
- Configure, create and restore Snapshot copies
- Describe the WAFL file system, including consistency points, tetris creation, RAID management, and storage levels
- Collect performance data
- Use FlexShare
- Configure an Active-Active configuration
- Describe the different CIFS environments
- Identify the appropriate server environment for your storage system to support Windows client users
- Configure the CIFS environment on a storage system by licensing CIFS
- Configure files and options on the storage system
- Administer a storage system in a CIFS environment including creating and managing shares, users, groups, and sessions
- Understand group policy objects and file blocking
- Review approaches to harden security for a storage system in a CIFS environment
- Collect CIFS performance statistics with storage system commands and tools
- Explain how to troubleshoot basic CIFS problems
- Explain NFS protocol overview, NFS versions, and NFS implementation criteria
- Configure NFS protocol and options on the storage system
- Configure the storage system to export resources to clients
- Configure access permissions and options
- Configure the clients to mount resources from the storage system
- Administer exported resources to targets
- Monitor the usage of exported resources
- Create quota reports based on resource usage

- State the rules for exporting resources to hosts, subnets, and netgroups
- Explain the /etc/exports access options and how they relate to mount permissions
- Review approaches to harden security for a storage system in an NFS environment
- Collect NFS performance statistics with storage system commands and tools
- Troubleshoot basic NFS problems
- Define the characteristics of a SAN environment and how LUNs relate to the storage system
- Describe the components of FC and IP SANs
- Describe size planning requirements for LUNs
- Create and manage LUNs on a storage system from both Windows and UNIX hosts
- Explain both FC and IP SAN multipathing options for both Windows and native Solaris 10 operating system
- Explain the most common problems associated with a SAN environment and how to troubleshoot these problems
- Set up and maintain Snapshot copies
- Revert a file system to a previous version using SnapRestore
- Describe SnapMirror, SnapVault, and Open Systems SnapVault features and functions
- Process basic backup and restore operations with SnapMirror, SnapVault, and Open Systems SnapVault
- Troubleshoot common issues and optimize mirror solution performance
- Describe functionality for the Protection Manager and the Provisioning Manager application that run in the NetApp Management Console
- Describe ReplicatorX features, operating concepts and components and how they work together to provide reliable system-wide data consistency for data migration, replication and disaster recovery
- Protect your data with SnapLock

Performance Analysis on Data ONTAP (FPA)

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Authorized Learning Partner

Course ID	FPA
Duration	3 days
Price	36 Training Units or € 2.700

Who should attend

Administrators and support personnel who administrate NetApp storage systems running Data ONTAP 7.3 and who wish to have a deeper understanding of the system performance.

Prerequisites

- Introduction to NetApp Products (web based training)
- Data ONTAP Fundamentals (DOTF)
- High Availability (NAHA)

Course description

The Performance Analysis on Data ONTAP course provides students with the knowledge and skills to perform data collection and analysis on NetApp storage systems. Students will learn how to interpret data and apply performance changes based on their analysis. They will use analysis data for tuning and monitoring performance.

Course objectives

On completion of the course the student should be able to:

- Recognize performance terminology and basic methodology
- Use known methods and tools to collect performance data
- Describe the Data ONTAP architecture and the benefits of features such as NVRAM and the WAFL (Write Anywhere File Layout) file system
- Use knowledge about how data flows through the network and protocol layers of Data ONTAP to monitor and analyze storage system performance
- Examine command output from case studies to identify performance bottlenecks
- Perform basic software configuration and recognize diagnostic operations for the Performance Acceleration Module and FlexScale
- Use FlexCache to improve NFSv2 and NFSv3 read performance
- Use the reallocate command to measure volume or file layout and optimize the layout when appropriate
- Implement configuration for best practices for resiliency and performance
- Identify where to find further information

Data ONTAP GX Fundamentals (DOTGX)

Course ID	DOTGX
Duration	3 days
Price	36 Training Units or € 2.700

Who should attend

An individual who will administrator a NetApp storage system with Data ONTAP GX operating system software installed.

Prerequisites

- Data ONTAP Fundamentals (DOTF)
- Basic knowledge of networking
- Basic knowledge of UNIX

Course description

The Data ONTAP GX Fundamentals course is a comprehensive course designed to teach the basics of Data ONTAP GX. At the end of this course, the student will know the evolution of Data ONTAP GX, dating back to the 1980s, understand the benefits of this product, be able to explain the architecture and functionality of the product, and be able to install, configure, manage, and troubleshoot Data ONTAP GX clusters.

Course objectives

On completion of the course the student should be able to:

- Describe the major principles associated with Data ONTAP GX
- Describe how an N-blade and a Dblade interact with each other
- Describe how a replicated database (RDB) application communicates among the members in its ring
- Describe the difference between an mroot volume and a virtual server root volume
- Create a cluster made up of multiple nodes
- Create an aggregate
- Create two virtual servers, two additional volumes in each, and two three-volume namespaces
- Configure an active-active relationship between a pair of nodes
- Configure network interfaces for a virtual server
- Create an NFS export and a CIFS share
- Move a volume from one node to another
- Create a Snapshot policy for a volume
- Create two load-sharing (LS) mirrors of a volume, and manually replicate them
- Create two disaster-recovery (DR) mirrors of a volume, and manually replicate them
- Promote a mirror to be a read-write volume
- Diagnose a VLDB crash and recover from it
- Upgrade the Common Firmware Environment on a node
- Upgrade the Data ONTAP GX software on two nodes with no downtime

Operations Manager 3.7, Protection Manager and Provisioning Manager (OPSMGR)

Course ID	OPSMGR
Duration	5 days
Price	60 Training Units or € 4.500

Who should attend

Administrators and support personnel who will use Operations Manager 3.7, Protection Manager, and Provisioning Manager services to backup and protect mission critical data in the enterprise.

Prerequisites

- Introduction to NetApp Products (web based training)
- Data ONTAP Fundamentals (DOTF)

Course description

This instructor-led course is for administrators and support personnel who will use Operations Manager, Protection Manager and Provisioning Manager services to backup and protect mission critical data in the enterprise.

Course objectives

On completion of the course the student should be able to:

- Articulate the different components that make up the Operations Manager 3.7 data management suite
- Explain the differences between Operations Manager 3.7 and previous versions
- Explain Operations Manager Licensing
- Explain hardware and software requirements
- Determine proper sizing of the Operations Manager Environment
- Install Operations Manager 3.7
- Configure user accounts
- Create and manage configuration templates
- Explain the Discovery process
- Setup host credentials and create groups
- Configure Operations Manager database backups
- Install Protection Manager from within Operations Manager
- Explain how hosts become visible in Protection Manager
- Navigate through the Protection Manager management console
- Explain the configuration of groups
- Configure Resource Pools, Schedules, Polices, and Data Sets
- Configure hosts and OSSV systems for use with Protection Manager
- Enable backup interfaces
- Operate the functionality that is provided in the core Operations Manager software suite and know its limitations
- Identify common problems that are encountered with normal Operations Manager use and their remedies
- Perform common tasks in Protection Manager: add hosts, backup and restore data, manage resource pools, setup schedules, manage policies, manage data setups, setup alarms and alerts
- Explain how to backup and restore VMware ESX servers using Protection Manager
- Explain user-defined Provisioning Manager policies to auotmate storage provisioning and configure default settings for exporting storage
- Explain Provisioning Manager periodic conformance checking to ensure the provisioned storage conforms to the provisioning policy
- Explain how to configure Thin Provisioning using Provisioning Manager
- Perform common tasks in Provisioning Manager: resize and delete volumes, edit Data Sets, Policies and Resource Pools, resize space and capacity of existing storage, provision new and existing storage
- Troubleshoot common issues associated within provisioning, jobs, access, and hosts
- Articulate the features and functions of Performance Advisor
- Monitor and display disk, file system, processor, and memory resources
- Replay performance charts in Performance Advisor
- Explain third party SNMP integration with Performance Advisor
- Explain integration of Operations Manager RBAC support into Performance Advisor
- Create custom performance views, alarms and thresholds in Performance Advisor

MetroCluster (METRO)

Course ID	METRO
Duration	2 days
Price	24 Training Units or € 1.800

Who should attend

Administrators, Support staff and SAN-Administrators responsible for the implementation and the management of a NetApp Cluster solution over long distance.

Prerequisites

- Data ONTAP Fundamentals (DOTF)
- SAN Administration on Data ONTAP (SAN)
- Basic knowledge in High Availability

Course outline

- Fibre Channel Fabric Basics
- Analysis of existing Storage systems
- Configuration of the components
- Installation of a Cluster & Cabling
- SnapMirror Configuration & Administration
- Failover scenarios
- Disaster Recovery
- Troubleshooting in MetroCluster environments

Course objectives

This course provides the student with skills to successfully install, configure and deploy a NetApp Fabric Attached MetroCluster.

DataFort Storage Security Administration (DSSA)

Course ID	DSSA
Duration	5 days
Price	60 Training Units or € 4.500

Who should attend

Anyone who performs basic support and administration functions on a DataFort Storage Security appliance or Lifetime Key Management appliance.

Prerequisites

- Knowledge of networking terminology and management
- Background in Unix or Windows server administration
- Knowledge of SAN Administration

Course description

Through a combination of discussion and hands-on activities, this instructor-led course describes the features and functions of the DataFort E-Series (NAS & iSCSI), FC-Series (SAN Disk & SAN Tape), S-Series (SCSI Tape), Lifetime Key Management appliances and the Data Decryption Software.

Course objectives

On completion of the course the student should be able to:

- Explain basic security and encryption principles and how those apply to a storage security appliance
- Explain the features and functions of the NetApp DataFort platform including encryption key hierarchy and smart card operation
- Describe different architectures and deployment options for the NetApp DataFort storage security appliance and Lifetime Key Management Appliance
- Install the Decru Management Console for centralized key and configuration management
- Manage a NetApp DataFort storage security appliance using the Decru Management Console
- Use the Setup Wizard to initialize a NetApp DataFort storage security appliance
- Create and manage Cryptainer vaults that encrypt data at rest
- Configure E-Series (NAS and iSCSI) NetApp DataFort appliances for storage encryption and access control
- Configure E-Series NetApp DataFort appliances into a cluster and simulate failover
- Configure FC-Series (disk and tape) NetApp DataFort appliances for storage encryption
- Perform administration of a NetApp DataFort appliance using specialty administrative accounts
- Recover an E-Series NetApp DataFort appliance from a configuration backup file
- Decrypt data without a NetApp DataFort storage security appliance using Data Decryption Software
- Complete operations using the command-line interface on the E-Series and FC-Series NetApp DataFort appliances
- Describe the key sharing methods available for NetApp DataFort storage security appliances
- Perform key sharing operations using the NetApp DataFort storage security appliances and the Lifetime Key Management Appliance

NearStore VTL Administration (NAVTL)

fast lane

NetApp
Authorized Learning Partner

Course ID	NAVTL
Duration	3 days
Price	36 Training Units or € 2.700

Who should attend

Anyone who will architect, implement, administer or work with administrators of the VTL appliance.

Prerequisites

- Knowledge of networking terminology and management
- Background in UNIX or Windows server administration
- Knowledge of (storage area network (SAN) administration

Course description

This instructor-led course is designed for anyone who will architect, implement, administer or work with administrators of the NearStore Virtual Tape Library (VTL) appliance. Through a combination of discussion and hands-on activities, this course describes the features and functions of the NearStore VTL and how to integrate with the three leading backup applications (as measured by data center market share): Symantec NetBackup, IBM Tivoli Storage Manager and EMC NetWorker. A significant portion of this course is devoted to hands-on lab-centric training enabling
students to set up, install and configure a VTL and then to integrate it operationally with the backup applications and tape libraries. Instructors will share case studies of complex VTL implementations and provide best practices and advanced configuration techniques.

Course objectives

On completion of the course the student should be able to:

- Explain advanced disk-to-disk backup principles and how those apply to a virtual tape library appliance
- Explain features and functions of the NearStore VTL, such as direct tape creation, sizing and architecting VTL environments, and compression versus tape smart sizing
- Explain the features of a NearStore VTL and their impact on backup environments
- Describe different architectures and deployment options for the NearStore VTL
- Identify and describe best practice concepts and processes
- Install and cable a NearStore VTL
- Implement all of the features of the VTL product in a working environment including performance tuning and port configurations
- Architecting and implementing the VTL into existing SAN infrastructures
- Architecting and implementing the VTL into new backup environments
- Configure a NearStore VTL to integrate with the following supported backup applications: Symantec NetBackup, IBM Tivoli Storage Manager, and EMC NetWorker
- Perform administration of a NearStore VTL
- Complete operations using the command-line interface and scripting.
- Troubleshoot and resolve errors with the operation of a NearStore VTL
- Describe lessons learned from existing installations and avoid common pitfalls

Oracle on NetApp Storage Systems (NAOR)

Course ID	NAOR
Duration	5 days
Price	60 Training Units or € 4.500

Who should attend
- Oracle database administrators
- System Managers
- Developers

Prerequisites
- Proficiency in Oracle database administration
- Proficiency in NetApp Filer administration
- UNIX/Linux and/or Windows knowledge

Course description
- Fundamentals
  - Storage networks: NFS, iSCSI, FCP. Configuration of NFS & iSCSI on the database server and on the Filer
  - Networking: Configuring gigabit ethernet, NFS mount options, tuning (jumbo frames)
- Backup and recovery
  - Online and offline backup: basics; archivelog mode of the Oracle database
  - Backup/recovery based on NetApp snapshots: Configuration on Unix & Windows
  - Database cloning with Filer means: rewriteable snapshots, FlexClone & NDMP-Copy
- High availability
  - Storage: basics of NetApp Cluster & Metrocluster
  - Oracle: Oracle Real Application Cluster; Standby database & shadow database

Course objectives
This course covers the alternatives of running Oracle databases in a NetApp storage infrastructure. The course focuses on the relevant features of NetApp Filers, like Snapshots.

VMware ESX on NetApp Storage Systems (NAVMW)

Course ID	NAVMW
Duration	5 days
Price	60 Training Units or € 4.500

Who should attend
System administrators and system engineers who are responsible for the integration, administration and management of VMware ESX server in a NetApp Storage environment.

Prerequisites
- Knowledge on NetApp Storage Systems, VMware ESX, Linux and Windows Servers

Course description
This course covers the installation, configuration, and administration of an ESX Server and focuses on optimal connectivity on NetApp Storage Systems using FCP, iSCSI, CIFS and NFS. Backup and Restore of VMware ESX Server storage LUNs with ESX and NetApp are also covered, as is the planning and operation of VMware ESX Server and NetApp Storage Systems in a high availability scenario.

Course content
- Overview of the VMware virtualization concepts
- Basic configuration of the VMware ESX Server and the VMs
- Networks in VMware
- Planning, installation and configuration of CIFS/SMB, NFS and iSCSI within a VW
- Planning, installation and configuration of CIFS.SMB and NFS in the service console of VMware ESX Server
- Planning, installation and configuration of FCP, NFS, and iSCSI in the VM Kernel
- Backup scenarios
- High availability scenarios
- Monitoring and system management
- Troubleshooting

Microsoft SQL Server 2005 on NetApp Storage Systems (MSSQL)

fast lane

NetApp
Authorized Learning Partner

Course ID	MSSQL
Duration	4 days
Price	48 Training Units or € 3.600

Who should attend

An administrator who is responsible for the integration process of architecture planning, data migration, backup and restore, disaster recovery, and troubleshooting SQL Server with NetApp storage system environments.

Prerequisites

- Data ONTAP Fundamentals (DOTF)
- NetApp Protection Software Administrator (NPSA)
- SAN Administration on Data ONTAP (SAN)

At least one of the following:

- Microsoft Course 2072A: Administering a Microsoft SQL Server 2000 Database
- Microsoft Exam 70-228: System Administration for Microsoft SQL Server 2000
- One year of Microsoft SQL Server 2005 experience

Course description

This solution-based instructor-led course focuses on the optimization of Microsoft SQL Server 2005 in a NetApp storage environment. This course takes students through the entire systems integration process of architecture planning, data migration, backup and restore, disaster recovery and troubleshooting.

Course objectives

On completion of the course the student should be able to:

- Describe the benefits of running SQL Server 2005 on a NetApp Storage System
- Perform SQL Server 2005 storage planning, implementation and administration
- Architect a high performance, highly available, consolidated SQL Server solution on a NetApp Storage System
- Deploy SQL Server 2005 on a NetApp Storage System
- Describe the SQL Server 2005 backup and restore process using SnapManager
- Determine the correct NetApp Storage Controller model, volume size and LUN size to support the solution
- Back up and verify a SQL Server 2005 database using SnapManage
- Restore data using SnapManager
- Describe different disaster recovery methods
- Implement disaster recovery methods.
- Isolate and correct faults in a SQL Server and SnapManager solution

NetApp SnapManager 5.0 for Microsoft Exchange (MSEXC)

Course ID	MSEXC
Duration	4 days
Price	48 Training Units or € 3.600

Who should attend

Customers, Direct and Partner Sales Representatives and System Engineers, Professional Services.

Prerequisites

- Data ONTAP Fundamentals (DOTF)
- NetApp University course: Data Protection & Backup Recovery Solutions
- Microsoft course 2400: Implementing and Managing Microsoft Exchange Server 2007 Microsoft course 2011: Troubleshooting Microsoft Exchange Server 2007
- Microsoft Seminar: Microsoft Exchange Server 2007 Disaster Recovery

Course description

This solution-based course focuses on the optimization of Microsoft® Exchange 2007 in a NetApp storage environment. This course takes students through the entire system integration process of architecture planning, data migration, backup and restore, disaster recovery, clustering and troubleshooting.

Course objectives

On completion of the course the student should be able to:

- Describe the benefits of running MS Exchange on a storage system
- Perform Exchange 2007 storage planning, implementation, and administration
- Describe the MS Exchange backup and restore process
- Perform an installation of a Clustered Exchange server on a NetApp storage system
- Install and configure SnapDrive for Windows 6.0
- Back up and verify an Exchange Data Store using SnapManager 5.0
- Restore data using SnapManager 5.0

Other Fast Lane Courses

Fast Lane offers many courses in basic and advanced technologies of which you will find a sample on this page. Visit our website for more details or contact us to discuss your specific training needs.

Cisco Data Centre and Storage Networking Training

Implementing the ACE Service Module (ACESM)
Implementing the Cisco Application Control Engine Appliance (ACEAP)
Designing a Data Center Application Infrastructure with the Cisco ACE Family (ACEDES)
Cisco Wide Area Application Service (CWAAS)
Implementing Cisco Storage Networking Solutions (ICSNS)
Implementing Cisco Advanced Storage Networking Solutions (IASNS)
Designing Cisco Storage Networking Solutions (DCSNS)
Data Center Network Infrastructure Design (DCNID)
Implementing Cisco Data Center Network Infrastructure 1 (DCNI-1)
Implementing Cisco Data Center Network Infrastructure 2 (DCNI-2)
Implementing Cisco Data Center Application Services (DCASI)
Designing Cisco Data Center Application Services (DCASD)

VMware Training *)

VMware Infrastructure V3.5 : Install and Configure (HB513S)
VMware Virtual Infrastructure V3.5 :Deploy, Secure, Analyze (HB934S)
VMware Infrastructure V3.5 : Fast Track Program (HF800S)
VMware Certification Exam Training (VMEXAM)
VMware Infrastructure 3: Skills for Operators (U8691S

**) Fast Lane Benelux offers Authorized VMware Training in The Netherlands delivered by HP Education Services (a VMware Authorized Training Center)*

Colofon
Design and lay-out: vandenboogaard [ontwerp & realisatie], Bilthoven

fast lane

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