



# Data Center Training 2010

- Virtualization
- Data Center Switching
- Unified Computing
- Storage Networking
- Business Continuity



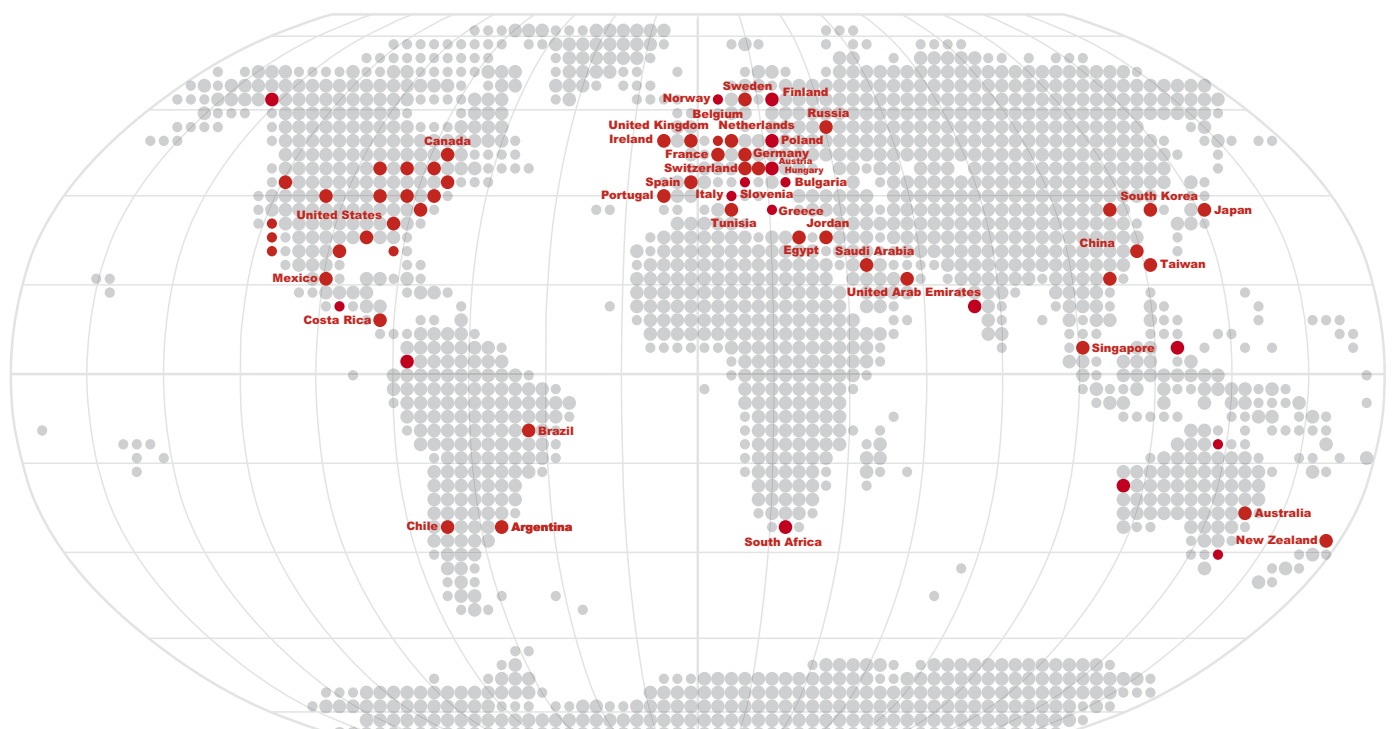
We are pleased to present to you our comprehensive range of qualification programs in this data center catalog. Our offering has been extended and now encompasses a great deal of training on virtualization technologies. For example, we now offer a host of new classes centered on the Cisco Nexus 1000V, 2000, 5000, and 7000 product lines as well as new VMware courses.

Every course participant learns the necessary theory in classroom instruction and puts this knowledge into practice, gaining hands-on experience in our high-end data center labs. Our lab infrastructure comprises new Nexus labs equipped with Nexus 7000 and Nexus 5010 switches, VMware ESX servers including Nexus 1000V, and much more.

Our specialists will be happy to adapt training to suit your unique requirements. What's more, we can conduct all training on-site at your location. Certified by the various vendors, our coaches bring to the classroom extensive practical experience with data centers.

We can deliver our training to you worldwide. Fast Lane has planted a footprint on all continents, with offices in 50 countries. This makes us the only Cisco Learning Solutions Partner (CLSP) worldwide serving all regions, as well as the only global Learning Partner of NetApp.

Our experienced experts will be delighted to help you draft a training plan attuned fully to your demands and geared to develop the professional skills your people need to make the most of your data center solutions.



Fast Lane Training Centers

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Note: Prices are subject to change. Please visit our web site ([www.fastlaneus.com](http://www.fastlaneus.com)) for the current course schedule and pricing



# Unified Computing and Unified Fabric: Training for the virtualized Data Center



The Cisco Unified Computing System (UCS) is the next-generation data center platform. Designed to improve IT responsiveness to rapidly changing business demands, it accelerates the delivery of new services simply, reliably, and securely, through end-to-end provisioning and migration support for both virtualized and non-virtualized systems. The Unified Computing System unifies network, compute, storage access, and virtualization resources in a cohesive system to reduce total cost of ownership, increase business agility, and improve productivity.

## NEW COURSES FOR CISCO'S UNIFIED COMPUTING SYSTEM (UCS)

Fast Lane was selected as an initial delivery partner by Cisco to train their internal engineers on the UCS product. Our current training offerings include the complete new Cisco Unified Computing curriculum. Beyond that, in 2010 Fast Lane brings to market a special UCS training package encompassing the full range of UCS certifications - Storage Networking, Data Center Networking Infrastructure, Virtualization (VMware), and UCS Design & Implementation.



## CISCO NEXUS 1000V / 2000 / 5000 / 7000 COURSES

The innovative architecture of the Cisco Nexus Series Switches simplifies data center transformation by helping to enable a standards-based, high-performance unified fabric. The Cisco Nexus family offers an infrastructure that can be scaled cost-effectively and that helps you increase energy, budget, and resource efficiency. Fast Lane not only offers official Cisco Nexus courses, we have also developed supplementary Cisco Nexus training courses.



## CISCO UCS COURSES

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## CISCO NEXUS COURSES

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# Cisco, VMware, NetApp: Multi-vendor Training Programs



Virtualization helps consolidate, streamline, and significantly simplify the data center. Cisco, VMware, and NetApp collectively offer the innovative infrastructure on which the virtualized, Ethernet-based computing center of the future is built.

## **CISCO UNIFIED COMPUTING, VMWARE VSPHERE, NETAPP UNIFIED STORAGE**

An authorized training partner of all three vendors, we offer comprehensive technology know-how and develop custom multi-vendor training programs. We also cooperate closely and directly with Cisco and NetApp in many course development projects.

## **TRAINING FOR MULTI-VENDOR IT INFRASTRUCTURE**

Our multi-vendor training offerings enable us to demonstrate the benefits of the virtualized data center to you, including lower operating costs, protected investment in legacy systems, better exploitation of all IT resources, as well as a streamlined and simplified



## **CISCO EUROPEAN LEARNING PARTNER OF THE YEAR 2009**

In June 2009, Fast Lane received the Cisco European Learning Partner of the "Year 2009" award. Among other things, this award highlights the activities in the field of data centers in connection with VMware and NetApp technologies. This also includes Cisco Nexus 1000V, Nexus 2000, Nexus 5000 and the Nexus 7000 course and lab developments.

## **WE KEEP YOU UP TO DATE ON THE LATEST DEVELOPMENTS IN THE CURRICULUM!**

Did you know about the Fast Lane community site for our partners and customers? Register there and we will keep you posted on new developments in the curriculum! This community site includes discussion forums, technical information, and the the Fast Lane Learning Center which provides free assessment tests.

» [www.fastlane-community.com](http://www.fastlane-community.com)



## **MULTIVENDOR TRAINING PROGRAMS**

- |  |         |
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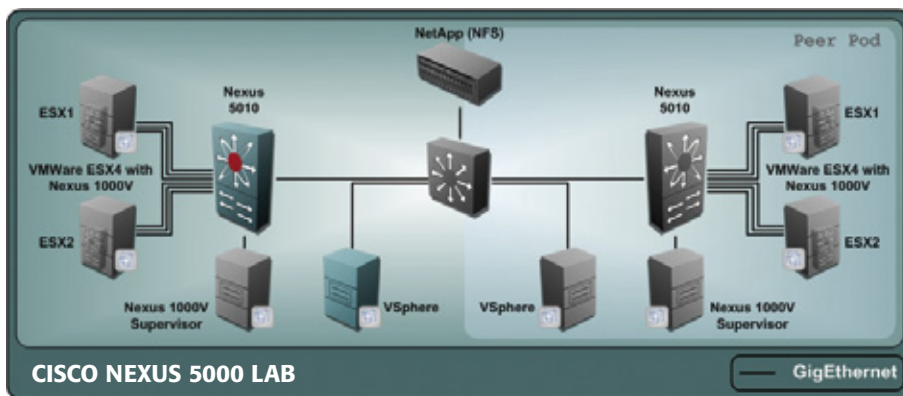
# High-end Data Center Labs



We offer our customers a data center solutions training and demo lab environment unrivalled worldwide. Featuring the latest devices and technologies, our high-end-labs provide first-rate service—setting premium quality standards for training.

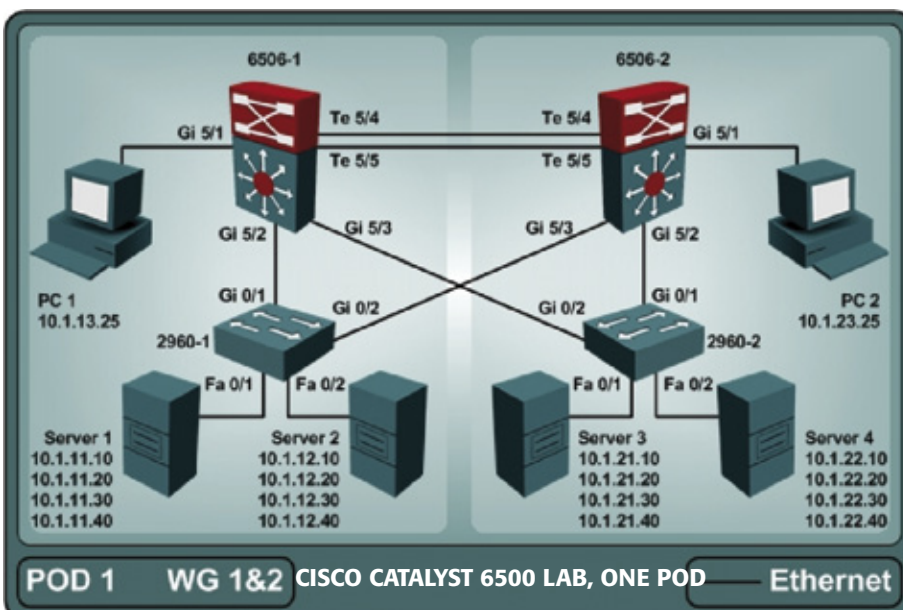
## CISCO DATA CENTER LABS

Fast Lane invested in a comprehensive Nexus Lab equipped with Cisco Nexus 7000 and 5010 Switches, Nexus 2000 Fabric Extenders, MDS 9216i Switches and VMware ESX servers, including the Nexus 1000V.



We also offer you Europe's only Cisco SAN Lab with two MDS 9509 and 32 MDS 9216i switches. Each pod includes two MDS 9216i switches, one port analyzer, a JBOD and two high performance Dell servers.

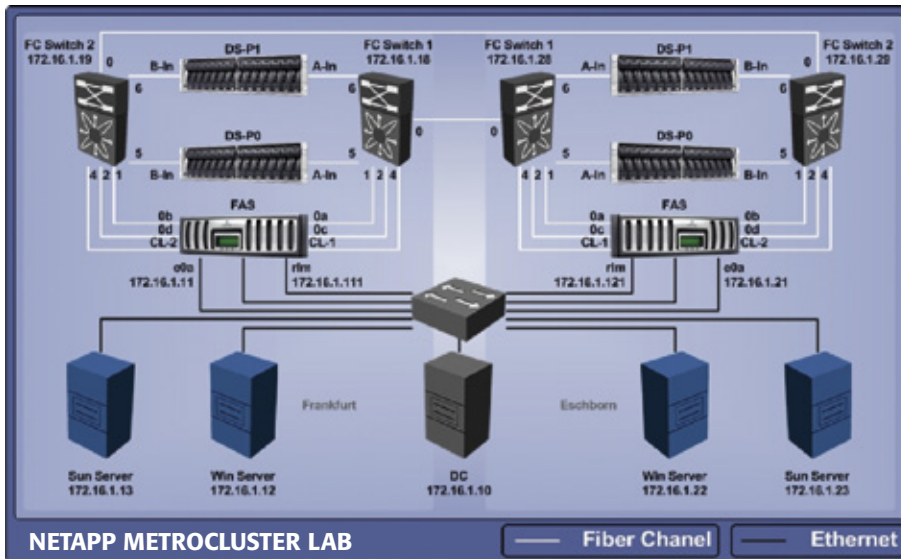
Our big Catalyst Core Lab comprises 14 Cisco 6500 Catalyst switches equipped with Virtual Switching Supervisor Engines 720-10G, Firewall Service Modules (FWSM), NAM as well as redundant ACE modules.





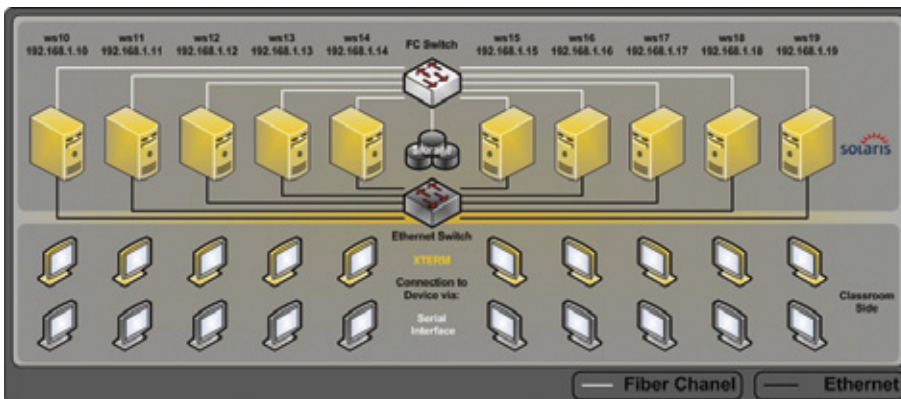
### NETAPP LABS

Fast Lane offers 12 NetApp Labs with FAS3040 Fabric Attached MetroCluster as well as 16 FAS2050 and 32 FAS270C storage systems. The labs include high performance Dell servers with Solaris and Windows. In addition, the labs are equipped with Symantec and VMware backup and virtualization solutions.



### SYMANTEC LABS

Our Symantec labs include numerous high performance servers with Solaris and Windows, Brocade switches and tape libraries.



Fast Lane is the only global NetApp Learning Partner. We offer the full NetApp curriculum in more than 50 countries and 12 languages. 100 certified Fast Lane storage experts deliver our training programs to you worldwide.

## ORIGINAL NETAPP

As an authorized NetApp Learning Partner, Fast Lane offers NetApp's original training programs to you wherever in the world you may be. Our storage specialists share their knowledge and experience, helping you acquire the skill set it takes to design and implement highly-available and scalable NetApp storage systems.

## SUPPLEMENTARY TRAINING

We conduct further courses alongside authorized NetApp training, for instance, NetApp Power Workshops and special sales courses.

## STORAGE SECURITY TRAINING

We also offer training on NetApp DataFort products and solutions that use encryption, authentication, secured access, and partitioning to protect storage networks.

## CUSTOMIZED TRAINING RIGHT ON SITE

Our storage specialists enjoy the challenge of adapting training to suit your needs. We can even conduct all NetApp training at your company's location.

## TOP CONSULTANTS

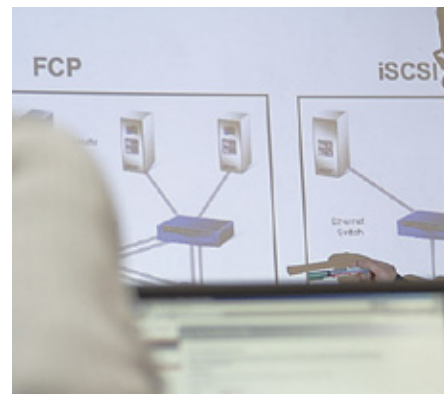
All our instructors are NetApp-certified specialists with extensive practical experience in the storage environment.

## NETAPP LABS

NetApp training extends far beyond classroom theory, enabling every course participant opportunities to gain hands-on experience installing, configuring, and troubleshooting these systems. Fast Lane offers twelve NetApp labs featuring FAS3040 Fabric Attached MetroCluster as well as 16 FAS2050 and 32 FAS270C storage systems. These labs also comprise Dell servers with Solaris and Windows operating systems. And they are equipped with backup and virtualization solutions from Symantec and VMware.

## NETAPP TRAINING UNITS (NTUs)

Redeem your NetApp Training Units! You are free to use NTUs to pay for any NetApp training.



**“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,  
Sr. Program Manager  
for Technical Partners,  
NetApp, Inc. -  
NetApp University



**Data center proven and engineered to simplify your critical storage networking infrastructure.** 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.



**FAS2000 Series**



**FAS3100 Series**



**FAS6000 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 on FAS, NetApp VTL**

## 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**

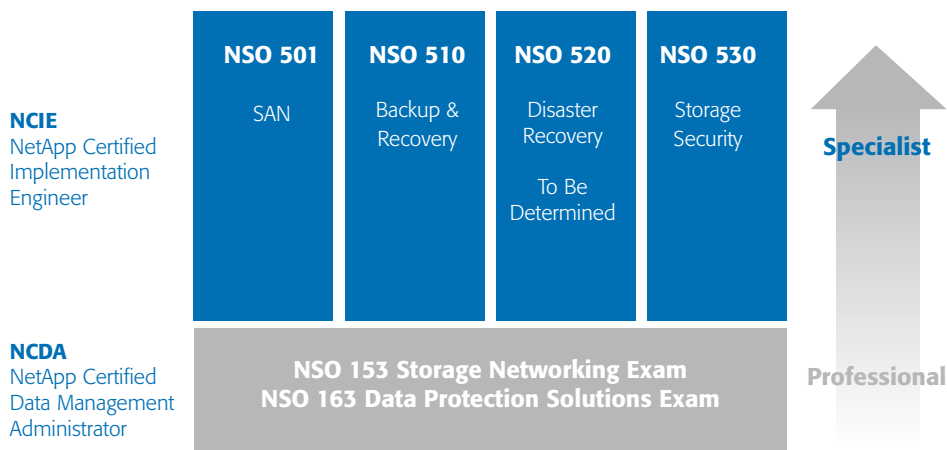
## STORAGE SECURITY

NetApp DataFort offers you the only unified platform that transparently secures data at rest across heterogeneous enterprise environments. DataFort appliances are enterprise-class storage encryption systems that build the foundation to protect core data assets.



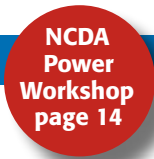
**DataFort Platform**

NetApp's comprehensive certifications give you the opportunity to validate your knowledge and skills as a trained NetApp technical professional. Fast Lane delivers the courses you need to prepare for the certification you desire.



## NETAPP CERTIFIED DATA MANAGEMENT ADMINISTRATOR (NCDA)

Test	Recommended Training
NSO 153: Storage Networking Professional	<ul style="list-style-type: none"> <li>• Data ONTAP Fundamentals (DOTF)</li> <li>• CIFS Administration on Data ONTAP (CIFS)</li> <li>• NFS Administration on Data ONTAP (NFS)</li> <li>• SAN Administration on Data ONTAP (SAN)</li> </ul>
NSO 163: Data Protection Solutions Professional	<ul style="list-style-type: none"> <li>• NetApp Protection Software Administration (NPSA)</li> <li>• High Availability (NAHA)</li> </ul>



## NETAPP CERTIFIED IMPLEMENTATION ENGINEER (NCIE)

### NETAPP CERTIFIED SAN IMPLEMENTATION ENGINEER (NCIE-SAN)

Test	Recommended Training
NSO 501: SAN	<ul style="list-style-type: none"> <li>• SAN Administration on Data ONTAP (SAN)</li> </ul>

### NETAPP CERTIFIED BACKUP & RECOVERY IMPLEMENTATION ENGINEER (NCIE-B&R)

Test	Recommended Training
NSO 510: Backup & Recovery	<ul style="list-style-type: none"> <li>• NetApp Virtual Tape Library Administration (NAVTL)</li> <li>• NetApp Protection Software Administration (NPSA)</li> <li>• Operations Manager, Protection Manager &amp; Provisioning Manager (OPSMGR)</li> </ul>

### NETAPP CERTIFIED STORAGE SECURITY IMPLEMENTATION ENGINEER (NCIE-STORAGE SECURITY)

Test	Recommended Training
NSO 530: Storage Security	<ul style="list-style-type: none"> <li>• DataFort Storage Security Administration (DSSA)</li> </ul>

## Data ONTAP Fundamentals (DOTF)

**ID** NA-DOTF **Price** \$4,500.00 60 NTUs **Duration** 5 Days

### WHO SHOULD ATTEND

- Anyone who provides basic support and administrative functions of the Data ONTAP operating system

### PREREQUISITES

- Introduction to NetApp Products (WBT)
- NetApp Hardware Fundamentals (WBT)

### COURSE OBJECTIVES

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 CONTENT

- 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





**ID** NA-CIFS **Price** \$1,800 **24 NTUs** **Duration** 2 Days

### WHO SHOULD ATTEND

- Anyone who provides support and administration for a CIFS environment on NetApp storage systems running the Data ONTAP operating system

### PREREQUISITES

- Data ONTAP Fundamentals (DOTF) course

### COURSE OBJECTIVES

This 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 & options, administering a storage system including creating and managing shares, users, and groups, and troubleshooting CIFS problems.

### COURSE CONTENT

- 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)

**ID** NA-NFS **Price** \$900 **12 NTUs** **Duration** 1 Day

### WHO SHOULD ATTEND

- Anyone who provides support and administration for a NFS environment on NetApp storage systems running the Data ONTAP operating system

### PREREQUISITES

- Data ONTAP Fundamentals (DOTF) course
- Working knowledge of UNIX
- Familiarity with networking concepts

### COURSE CONTENT

- 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, 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

## SAN Administration on Data ONTAP (SAN)

ID NA-SAN Price \$2,700 36 NTUs Duration 3 Days

### WHO SHOULD ATTEND

- Anyone who provides support and administration for FC and IP SAN environments running the Data ONTAP operating system

### PREREQUISITES

- Data ONTAP Fundamentals (DOTF) course

### COURSE OBJECTIVES

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 CONTENT

- 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

## NetApp Protection Software Administration (NPSA)

ID NA-NPSA Price \$2,700 36 NTUs Duration 3 Days

### WHO SHOULD ATTEND

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

### PREREQUISITES

- Data ONTAP Fundamentals (DOTF) and High Availability (NAHA) courses

### COURSE OBJECTIVES

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 SnapMirror for Open Systems 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 CONTENT

- 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 SnapMirror for Open Systems 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 Boot Camp (NCDABC)

**ID** FL-NCDAABC **Price** \$10,650 **142 NTUs** **Duration** 10 Days

### WHO SHOULD ATTEND

- Network Professionals seeking the NetApp Certified Data Management Administrator (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.

### COURSE OBJECTIVES

- State the advantages, features, and functions of a NetApp storage system
- Identify the key features of NetApp product platforms and disk shelves
- Distinguish between SAN and NAS topologies
- Describe the basic functions of the Data ONTAP operating system
- Access the NOW (NetApp on the Web) Knowledgebase to obtain software and hardware documentation
- Implement NetApp HA solutions using Clustered Failover, SyncMirror, and MetroCluster to ensure continuous data availability in the enterprise and rapid recovery of data in the event of a disaster
- Learn to license, cable, configure, and test Clustered Failover, SyncMirror, and MetroCluster
- Learn how to administer NetApp clusters and perform appropriate "takeover" and "giveback" commands
- Use "vol" commands to create a SyncMirrored volume, split the volume, and join the volume
- Identify the appropriate CIFS server environment for your storage system to support Windows client users
- Configure the CIFS environment on a storage system by licensing CIFS, setting up CIFS, and configuring files and options
- Administer a storage system in a CIFS environment including creating and managing shares, users, groups, and sessions
- Explain how to troubleshoot basic CIFS 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 controller for both Windows and UNIX hosts
- Explain FC and IP SAN multipathing options for Windows and UNIX operating systems
- Explain how to troubleshoot common SAN issues
- State the rules for exporting resources to hosts, subnets, and netgroups
- Explain the /etc/ exports access options and how they relate to mount permissions
- Analyze NFS performance using sysstat and nfsstat commands
- Explain NFS protocol overview, NFS versions, and NFS Implementation criteria
- Configure and administer clients and servers in an NFS environment
- Collect and analyze data to assist with troubleshooting storage system hardware, operating system, network connections, NFS configuration files and options
- Explain the concept of Information Lifecycle Management (ILM)
- Set up and maintain SnapShots
- Plan and perform data recovery using SnapRestore
- Configure and administer Asynchronous and Synchronous SnapMirror
- Configure and administer SnapVault
- Configure and administer OSSV
- List best practices and perform troubleshooting of SnapMirror, SnapVault, and OSSV
- Use NDMP to archive data
- Configure and administer SnapLock and LockVault

### COURSE CONTENT

This 10-day boot camp will prepare you to pass all the NetApp exams required to achieve the NetApp Certified Data Management Administrator (NCDA) certification.

The hands-on course covers the required knowledge from the following courses:

- Data ONTAP Fundamentals (DOTF)
- Data ONTAP CIFS Administration (CIFS)
- Data ONTAP NFS Administration (NFS)
- NetApp Protection Software Administration (NPSA)
- Data ONTAP SAN Administration (SAN)
- High Availability (HA)

**For further information about NetApp's Certification Programs please see page 10!**





# Advanced NCDA Boot Camp (ANCDABC)

ID FL-ANCDABC Price \$6,150 82 NTUs Duration 5 Days

Intensive preparation for NCDA (NetApp Certified Data Management Administrator) certification!

## 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

- Data ONTAP Fundamentals (DOTF) course
- NOTE: It is strongly recommended that you have attended the instructor-led DOTF course or have the equivalent practical experience with the NetApp ONTAP operating system before attending this advanced boot camp. The web-based version of DOTF will not provide sufficient preparation for those seeking NCDA certification upon completion of this course.
- This class will run extended hours.

## COURSE OBJECTIVES

- Describe the different server 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, setting up CIFS, and configuring files and options
- Administer a storage system in a CIFS environment including creating and managing shares, users, groups and sessions
- Explain how to troubleshoot basic CIFS problems
- Explain NFS protocol overview, NFS versions and NFS Implementation criteria
- Configure and administer client and server in an NFS environment
- State the rules for exporting resources to hosts, subnets, and netgroups
- Explain the /etc/ exports access options and how they relate to mount permissions
- Analyze NFS performance using sysstat, nfsstat, and other commands
- Collect and analyze data to assist with troubleshooting storage system hardware, operating systems, network connections, NFS configuration files and options
- 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 controller for both Windows and UNIX hosts
- Explain FC and IP SAN multipathing options for Windows and UNIX operating systems
- Explain how to troubleshoot common SAN issues
- Explain the concept of Information Lifecycle Management (ILM)
- Set up and maintain snapshots
- Plan and perform data recovery using SnapRestore
- Configure and administer Asynchronous and Synchronous SnapMirror
- Configure and administer SnapVault

- Configure and administer OSSV
- List best practices and perform troubleshooting of SnapMirror, SnapVault and OSSV
- Use NDMP to archive data
- Configure and administer SnapLock and LockVault
- Define High Availability and Network Appliance solutions: active-active configuration, SyncMirror, Stretch MetroCluster, and Fiber-Attached MetroCluster
- Create a SyncMirror aggregate
- Articulate best practices when deploying active-active configurations
- Configure MetroCluster
- Configure SyncMirror

## COURSE CONTENT

This 5-day intensive, advanced boot camp will prepare you for all required NetApp exams to achieve the NetApp Certified Data Management Administrator (NCDA) certification, assuming you have met the prerequisites.

The hands-on course covers the required knowledge from the following courses:

- Data ONTAP CIFS Administration (CIFS)
- Data ONTAP NFS Administration (NFS)
- NetApp Protection Software Administration (NPSA)
- Data ONTAP SAN Administration (SAN)
- High Availability (HA)



## Performance Analysis on Data ONTAP (PAD)

ID NA-PAD Price \$2,700 36 NTUs Duration 3 Days

### WHO SHOULD ATTEND

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

### PREREQUISITES

- Data ONTAP Fundamentals (DOTF) course

### COURSE OBJECTIVES

This 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 CONTENT

- 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



## Operations Manager, Protection Manager & Provisioning Manager (OPSMGR)

**ID** NA-OPSMGR **Price** \$4,500 60 NTUs **Duration** 5 Days

### WHO SHOULD ATTEND

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

### PREREQUISITES

- Data ONTAP Fundamentals (DOTF) course

### COURSE CONTENT

- Components of Operations Manager 3.7 data management suite
- Operations Manager licensing & required hard- & software
- 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
- Explain how hosts become visible in Protection Manager
- Navigate through the Protection Manager management console
- Explain the configuration of groups
- Configure Resource Pools, Schedules, Policies, and Data Sets
- Configure hosts & OSSV systems for use with Protection Manager
- Enable backup interfaces
- Operate the core Operations Manager software suite and know its limitations
- Identify common problems with normal Operations Manager use and their remedies
- Perform common tasks in Protection Manager such as add hosts, backup and restore data, manage resource pools, setup schedules, and more
- Explain how to backup and restore VMware ESX servers using Protection Manager
- Explain user-defined Provisioning Manager policies and conformance checking
- Explain how to configure Thin Provisioning using Provisioning Manager
- Troubleshoot common issues associated with provisioning, jobs, access, and hosts
- Articulate the features and functions of Performance Advisor
- Monitor & display disk, file system, processor & 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

## NetApp VTL Administration (NAVTL)

**ID** NA-NAVTL **Price** \$2,700 36 NTUs **Duration** 3 Days

### WHO SHOULD ATTEND

- Anyone who will architect, implement, administer, or provide support for a NetApp VTL appliance

### PREREQUISITES

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

### COURSE CONTENT

- Install & cable a NetApp VTL
- Configure a NetApp VTL to integrate with supported backup applications
- Upgrade a NetApp VTL from VTL 5.6 to VTL 6.0 to use the deduplication feature
- Configure a NetApp VTL to perform Direct Tape Creation
- Troubleshoot & resolve errors with the operation of a NetApp VTL





# SANscreen Fundamentals (SANSF)

**ID** NA-SANSF **Price** \$1,800 **24 NTUs** **Duration** 2 Days

### WHO SHOULD ATTEND

- NetApp partners and customers

### PREREQUISITES

- SANscreen Deployment (WBT)
- Basic working knowledge of Fibre Channel and storage networking

### COURSE OBJECTIVES

Learn the features and functions of the SANscreen suite of products. This hands-on course will show you how SANscreen manages storage through service policies and change-planning capabilities to provide improved resource and capacity utilization. Product demonstrations will enable you to become proficient with many aspects of SANscreen. By the end of this course, you will be able to explain how SANscreen can extend data center automation to a networked storage environment for more efficient operations.

### COURSE CONTENT

- Define the five integrated products of SANscreen and their core features and interdependencies
- Perform SANscreen, data warehouse installation and configuration
- Explain paths, violations, and application groups
- Identify policies and violations
- Interpret performance views and analyze annotations



## Data ONTAP GX Fundamentals (DOTGX)

**ID** NA-DOTGX **Price** \$2,700 **36 NTUs** **Duration** 3 Days

### WHO SHOULD ATTEND

- Individuals who will administrate a NetApp storage system with Data ONTAP GX operating system software installed

### PREREQUISITES

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

### COURSE CONTENT

- 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

## DataFort Storage Security Administration (DSSA)

**ID** NA-DSSA **Price** \$4,500 **60 NTUs** **Duration** 5 Days

### PREREQUISITES

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

### COURSE CONTENT

- Basic security and encryption principles and how those apply to a storage security appliance
- Features and functions of the DataFort platform including encryption key hierarchy and Smart Card operation
- Architectures and deployment options for the DataFort storage security appliance and Lifetime Key Management appliance
- Install the Management Console for centralized key and configuration management
- Manage a DataFort storage security appliance using the Management Console
- Use the Setup Wizard to initialize a DataFort storage security appliance
- Create and manage Cryptainer vaults that encrypt data-at-rest
- Configure the E-series DataFort (NAS and iSCSI) for storage encryption and access control
- Configure E-series DataFort appliances into a cluster and simulate failover

- Configure the FC-series DataFort for storage encryption
- Perform administration of a DataFort appliance using specialty administrative accounts
- Recover a DataFort appliance from a configuration backup file
- Decrypt data without a DataFort Storage Security appliance using Data Decryption Software
- Complete operations using the CLI on the E-series and FC-series DataFort appliances
- Key sharing methods available for DataFort storage security appliances
- Perform key sharing operations using the DataFort storage security appliances and the LKM appliance
- New features like Key Sharing Group and Remote Authorization
- Upgrade and Downgrade DataFort firmware
- Perform Monitoring and logging of DataFort
- Perform basic troubleshooting



# NetApp Storage Systems & Cisco MDS Switch Administration (NACSA)

**ID** FL-NACSA **Price** \$3,750 **50 NTUs** **Duration** 5 Days

**PREREQUISITES**

- Profound Solaris and/or Windows knowledge; basic storage knowledge

**COURSE CONTENT**

- Installation & Administration of NetApp Storage Systems
- Topologies
- Fiber Channel Protocol
- Cisco Storage Products & Features
- Cisco MDS 9000 Administration
- Server Connection
- Differences SAN / NAS
- Backup in SANs
- Load Balancing, FSPF, Port-Channel, Trunking
- Performance & High Availability
- SAN Monitoring

- Virtualization
- Snapshots
- NFS, CIFS
- Quota Management
- Volume Management, NDMP
- Multipathing
- Cluster Failover
- Designing a SAN
- NASB, FAIS, SSM-Virtualization
- Switch Security
- Zoning & IVR
- FCIP





## Design & Implement Virtualization Solutions on NetApp Storage (DIVS)

**ID** NA-DIVS **Price** \$3,600 **48 NTUs** **Duration** 4 Days

### WHO SHOULD ATTEND

- NetApp Global Services (NGS) and partner audiences who implement virtualization solutions with NetApp storage systems

### PREREQUISITES

- NetApp Core Technical Training or equivalent knowledge
- NetApp SAN Core Technical Training or equivalent knowledge
- Recommended: VMware Virtual Infrastructure 3 Fast Track or equivalent knowledge; Citrix XenServer Enterprise Edition 4.1: Administration or equivalent knowledge; Microsoft Hyper-V technical training or equivalent knowledge

### COURSE OBJECTIVES

This course shows how to design and implement virtualization solutions on NetApp storage systems. The course first reviews the NetApp virtualization service delivery process: students learn how to use NetApp virtualization service products to engage with customers to design and implement virtualization solutions. A case study consolidates the knowledge acquired in this part of the course. Next, the course shows how to deploy VMware Virtual Infrastructure on NetApp storage systems and how to achieve maximum value with VMware and NetApp integrated features. Hands on lab exercises consolidate the knowledge acquired in this part of the course.

Next, this course shows how to deploy Citrix XenServer on NetApp storage systems and how to achieve maximum value with Citrix XenServer and NetApp integrated features. Hands on lab exercises consolidate the knowledge acquired in this part of the course. Finally, the course shows how to deploy Microsoft Windows Server Virtualization (Hyper-V) on NetApp storage systems and how to achieve maximum value with Hyper-V and NetApp integrated features. Hands on lab exercises consolidate the knowledge acquired in this part of the course.

### COURSE CONTENT

- Describe the NetApp Virtualization Service delivery
- Implement host and storage virtualization with VMware and NetApp
- Implement host and storage virtualization with Citrix XenServer and NetApp
- Implement host and storage virtualization with Microsoft Hyper-V and NetApp



## Architecting VMware Solutions on NetApp Storage (AVS)

**ID** NA-AVS **Price** \$1,800 **24 NTUs** **Duration** 2 Days

### WHO SHOULD ATTEND

- System engineers who architect VMware solutions with NetApp storage systems

### PREREQUISITES

- Basic understanding of SAN, NAS, NetApp, and VMware technologies

### COURSE OBJECTIVES

This course will cover the basics of a VMware environment and the NetApp value proposition within that environment. The course will include discussions and activities on architecting and design specifics for ESXi, vSphere, and Desktop Management. It will also describe the NetApp best practices in these environments. There will be training and activities focused on the areas of Backup and Recovery, Deduplication, Cloning, and Sizing.

### COURSE CONTENT

- Identify NetApp's value proposition when integrated with VMware virtualization solutions
- Recognize the components of Desktop management, and the different styles of provisioning
- Practice the creation of Virtual Machines in the VMware environment
- Demonstrate when and how a Proof of Concept activity should be done for customers
- Distinguish which backup and recovery options are appropriate for the customers environment
- Practice using NetApp technology for replication, deduplication, and cloning
- Distinguish how to size VMware virtualization environments and modify the sizing as needed

## Architecting Hyper-V Solutions on NetApp Storage (AHS)

**ID** NA-AHS **Price** \$1,800 **24 NTUs** **Duration** 2 Days

### WHO SHOULD ATTEND

- SE and Partner audiences who architect Hyper-V solutions with NetApp storage systems

### PREREQUISITES

- Basic understanding of SAN, NAS, NetApp, and Hyper-V technologies

### COURSE OBJECTIVES

In this course you will learn the basics of a Hyper-V environment along with the value proposition of NetApp within that environment. The course will include discussions and activities on architecting and design specifics for Hyper-V, along with the NetApp best practices in these environments. There will also be training and activities focused on the areas of Backup and Recovery, Deduplication, Cloning, and Sizing.

### COURSE CONTENT

- Identify NetApp's value proposition when integrated with Hyper-V virtualization solutions
- Implement host and storage virtualization with Microsoft Hyper-V and NetApp Storage
- Demonstrate when and how a Proof of Concept activity should be done for customers

- Distinguish which backup and recovery options are appropriate for the customers environment
- Practice using NetApp technology for replication, deduplication, and cloning
- Distinguish how to size Hyper-V virtualization environments and modify the sizing as needed



## Architecting Citrix Solutions on NetApp Storage (ACS)

**ID** NA-ACS **Price** \$1,800 **24 NTUs** **Duration** 2 Days

### WHO SHOULD ATTEND

- SE and Partner audiences who architect Citrix solutions with NetApp storage systems

### PREREQUISITES

- Basic understanding of SAN, NAS, NetApp, and Citrix technologies

### COURSE OBJECTIVES

Learn how NetApp technologies can be integrated with Citrix to provide compelling virtualization solutions. In this course, you will learn architecture, design specifics, and best practices for XenServer and XenDesktop. Through hands-on activities, you will practice creating virtual machines in a Citrix environment. By the end of this course, you will be able to demonstrate to customers the value of Citrix solutions in NetApp.

### COURSE CONTENT

- Identify the NetApp value proposition when integrated with Citrix virtualization solutions
- Recognize the components of XenDesktop, and the different styles of provisioning
- Practice the creation of virtual machines in the Citrix environment

- Demonstrate when and how a Proof of Concept activity should be done for customers
- Distinguish which backup and recovery options are appropriate for the customers environment
- Practice using NetApp technology for replication, deduplication, and cloning
- Distinguish how to size Citrix virtualization environments and modify the sizing as needed

## VMware ESX on NetApp Storage Systems (NAVMW)

**ID** FL-NAVMW **Price** \$4,500 60 NTUs **Duration** 5 Days

### 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

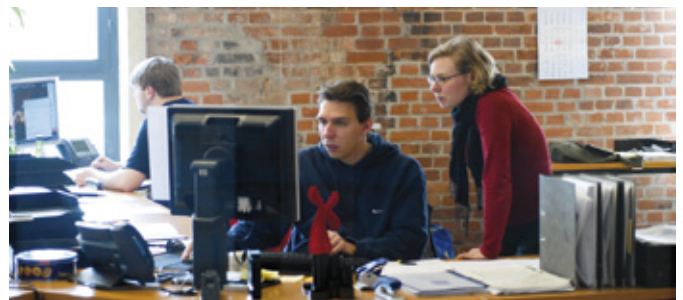
### COURSE OBJECTIVES

This course covers the installation, configuration and administration of ESX Servers and focuses on optimal connectivity to NetApp storage systems using FCP, iSCSI, CIFS and NFS. Backup and restore of VMware ESX Server storage LUNs with ESX and NetApp means 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 VMware virtualization concepts
- Basic configuration of the VMware ESX Server and the VMs
- Networks in VMware
- Planning, installation & configuration of CIFS/SMB, NFS & iSCSI within a VM

- Planning, installation & configuration of CIFS/SMB & NFS in the service console of VMware ESX server
- Planning, installation & configuration of FCP, NFS & iSCSI in the VMkernel
- Backup scenarios
- High availability scenarios
- Monitoring & system management
- Troubleshooting



## Microsoft SQL Server 2005 on NetApp Storage Systems (MSSQL)

**ID** NA-MSSQL **Price** \$3,600 48 NTUs **Duration** 4 Days

### 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 Administration (NPSA)
- Data ONTAP SAN Administration (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 OBJECTIVES

At the end of this course you 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 SnapManager.
- Restore data using SnapManager.
- Describe different disaster-recovery methods.
- Implement disaster-recovery methods.
- Isolate and correct faults in a SQL Server and SnapManager solution.

### COURSE CONTENT

This solution-based 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.

## Oracle on NetApp Storage Systems (NAOR)

**ID** NA-NAOR **Price** \$4,500 60 NTUs **Duration** 5 Days

### WHO SHOULD ATTEND

- Oracle database administrators, system managers, developers

### PREREQUISITES

- Proficiency in Oracle database administration
- Proficiency in NetApp storage system administration
- UNIX/Linux and/or Windows knowledge

### 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 storage systems, like Snapshots.

### COURSE CONTENT

- Fundamentals: Storage networks: NFS, iSCSI, FCP; Configuration of NFS & iSCSI on the database server and on the storage system; Networking: Configuring gigabit ethernet, NFS mount options, tuning

- Backup & 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 storage system means: rewriteable snapshots, FlexClone & NDMP-Copy
- High Availability: Storage: basics of NetApp Cluster & MetroCluster; Oracle: Oracle Real Application Cluster; Standby database & shadow database

## NetApp SnapManager 5.0 for Microsoft Exchange (MSEXC)

**ID** NA-SME **Price** \$3,600 48 NTUs **Duration** 4 Days

### WHO SHOULD ATTEND

- System Engineers, Windows and Exchange administrators

### PREREQUISITES

- Data ONTAP Fundamentals (DOTF) and NetApp Protection Software Administration (NPSA) courses
- Microsoft courses: Implementing and Managing Microsoft Exchange Server 2007, Troubleshooting Microsoft Exchange Server 2007 and Microsoft Exchange Server 2007 Disaster Recovery

### COURSE OBJECTIVES

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

### COURSE CONTENT

- Benefits of running MS Exchange on a storage system
- Perform Exchange 2007 storage planning, implementation, and administration
- 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 & verify an Exchange Data Store using SnapManager 5.0
- Restore data using SnapManager 5.0



# IBM System Storage N series Training



Fast Lane is IBM's Worldwide Authorized Learning Partner delivering both standard and customized courses in public and private sessions on IBM System Storage™ N series Unified Storage Solutions product line. All instructors are certified to teach IBM System Storage™ N series product courses and all courses are taught using Authorized IBM System Storage™ N series courseware.

## IBM N series Data ONTAP Fundamentals (DOTFN)

**ID** FL-DOTFN **Price** \$4,500 **Duration** 5 Days

### PREREQUISITES

- Introduction to N series Products Web Based Training (WBT)

### COURSE CONTENT

- Describe the basic functions of the Data ONTAP operating system
- Access the IBM Support site 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

## IBM N series Data ONTAP CIFS Administration (CIFSN)

**ID** FL-CIFSN **Price** \$1,800 **Duration** 2 Days

### PREREQUISITES

- IBM N series Data ONTAP Fundamentals (DOTFN) course

### COURSE CONTENT

- 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

## IBM N series Data ONTAP NFS Administration (NFSN)

**ID** FL-NFSN **Price** \$900 **Duration** 1 Day

### PREREQUISITES

- IBM N series Data ONTAP Fundamentals (DOTFN) course
- Working knowledge of UNIX or equivalent experience
- Familiarity with networking concepts

### COURSE CONTENT

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; 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



## IBM N series Data ONTAP SAN Administration (SANN)

**ID** FL-SANN **Price** \$2,700 **Duration** 3 Days

### PREREQUISITES

- IBM N series Data ONTAP Fundamentals (DOTFN) course

### COURSE CONTENT

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

## IBM N series Protection Software Administration (NPSAN)

**ID** FL-NPSAN **Price** \$2,700 **Duration** 3 Days

### PREREQUISITES

- IBM N series Data ONTAP Fundamentals (DOTFN) course

### COURSE CONTENT

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 IBM N series® App Management Console; Describe SnapMirror for Open Systems® 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

Fast Lane's training offerings are as multifaceted as the diverse Cisco data center technologies and specialized solutions your company and workforce need.

## **CISCO COMPLETE**

Fast Lane offers the full range of Cisco data center training, from entry-level to high-end specialty courses. We can ensure you are prepared to master the challenges of Cisco data center certification and specialization.

## **TAILORED COURSES**

Our experts will be delighted to tailor and conduct training to suit your wishes.

## **TOP CONSULTANTS**

All our instructors are Cisco-certified specialists with extensive practical experience in their specialty fields.

## **CERTIFIED WORLDWIDE**

Fast Lane is certified in all regions worldwide as a Cisco Learning Solutions Partner.

## **ADVANCED TECHNOLOGY LABS**

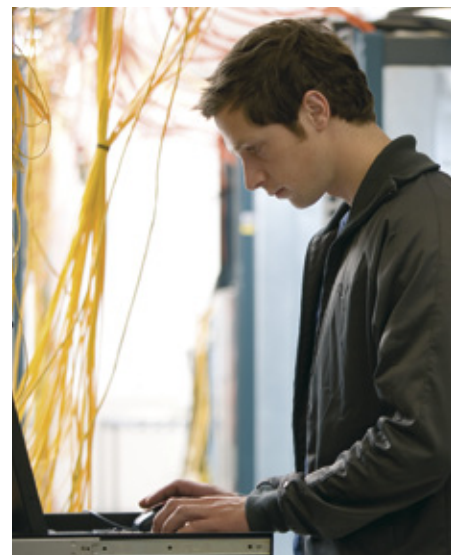
Putting hands-on exercises and the latest Cisco equipment to good use, we convey the knowledge you need to operate complex data center infrastructures.

## **CISCO LEARNING CREDITS**

Redeem your Cisco Learning Credits! You are free to use CLCs to pay for any Cisco training.

## **CISCO EUROPEAN LEARNING PARTNER OF THE YEAR 2009**

In June 2009, Fast Lane received the "Cisco European Learning Partner of the Year 2009" award. Amongst other things this award highlights the activities in the field of data centers in connection with VMware and NetApp technologies. This also includes Cisco Nexus 1000V, Nexus 5000 and the Nexus 7000 course and lab developments.



# Cisco Data Center Products & Technologies



By aligning your IT people, processes, and technology with your business objectives, the new, virtualized data center helps you address global challenges. Cisco Data Center 3.0 transforms infrastructure silos into pools of resources that can be dynamically aligned to meet your application and business needs. Create network-enabled virtualized pools of storage, server, compute and application resources with Cisco data center portfolio.

## DATA CENTER SWITCHING



The network platform for Data Center 3.0 delivers new levels of operational continuity, scalability and transport flexibility to meet the demands of the next generation data center. Featured

products include:

- Cisco Nexus Family:
  - Cisco Nexus 7000 Series Switches
  - Cisco Nexus 5000 Series Switches
  - Cisco Nexus 2000 Series Fabric Extenders
  - Cisco Nexus 1000V Series Switches
- Cisco Catalyst Switches:
  - Cisco Catalyst 6500 Series Switches
  - Cisco Catalyst 6500 Virtual Switching System
  - Cisco Catalyst 4900 Series Switches
- Cisco Blade Switches

## UNIFIED COMPUTING SYSTEM (UCS)



The Cisco Unified Computing System unifies network, compute, storage access, and virtualization resources in a cohesive system. Featured products include:

- Cisco UCS 6100 Series Fabric Interconnects
- Cisco UCS 5100 Series Blade Server Chassis
- Cisco UCS 2100 Series Fabric Extenders
- Cisco UCS B-Series Blade Servers
- Cisco UCS C-Series Rack-Mount Servers
- Cisco UCS Network Adapters
- Cisco UCS Manager

## STORAGE AREA NETWORKING



Address the challenges of managing, protecting, and scaling data storage with an efficient, reliable, and secure solution. Featured products include:

- Cisco MDS 9500 Series Multilayer Directors
- Cisco MDS 9200 Series Multilayer Switches
- Cisco MDS 9100 Series Fabric Switches & Blade Switches
- Cisco MDS 9000 Series Intelligent Fabric Applications
- Cisco Fabric Manager

## APPLICATION NETWORKING SOLUTIONS



Increase performance, scale, and security with network-based application delivery tools. Featured products include:

- Cisco ACE Family:
  - Cisco ACE Application Control Engine Module
  - Cisco ACE 4710 Appliance
  - Cisco ACE Global Site Selector
  - Cisco ACE XML Gateway
- Wide Area Application Services Software (WAAS) Family:
  - Cisco Wide Area Application Services Software (WAAS)
  - Windows Server on WAAS
  - Cisco Wide Area Application Services Mobile
  - Cisco Application & Content Networking System (ACNS)

## DATA CENTER SECURITY



Defend critical business processes against attack and disruption, protect privacy, and support policy and regulatory compliance. Featured products include:

- ACE Web Application Firewall
- ACE XML Gateway
- Advanced Security Appliance 5500
- Nexus 1000V Series Switches
- Cisco MDS 9000 Family Storage Media Encryption (SME)
- Cisco Secure Access Control Server (ACS)
- Cisco Security Monitoring, Analysis & Response System





The Cisco Data Center certifications validate knowledge of the corresponding Cisco technologies. Fast Lane delivers the courses you need to prepare for the certification you desire.

## DATA CENTER NETWORKING INFRASTRUCTURE

Certification and Test	Recommended Training
Cisco Data Center Networking Infrastructure Design Specialist Prerequisites: CCDA Certification <b>Test: #642-971</b>	<ul style="list-style-type: none"> <li>Designing Cisco Data Center Network Infrastructure (DCNID)</li> </ul>
Cisco Data Center Networking Infrastructure Support Specialist Prerequisites: CCNP Certification <b>Test: #642-973 (DCNI-1) and #642-974 (DCNI-2)</b>	<ul style="list-style-type: none"> <li>Implementing Cisco Data Center Network Infrastructure 1 (DCNI-1)</li> <li>Implementing Cisco Data Center Network Infrastructure 2 (DCNI-2)</li> </ul>
Cisco Data Center Networking Sales Specialist Prerequisites: CSE Certification <b>Test: #646-985</b>	<ul style="list-style-type: none"> <li>Data Center Networking Solution Sales (DCNSS)</li> </ul>

## DATA CENTER UNIFIED COMPUTING

Certification and Test	Recommended Training
Cisco Data Center Unified Computing Design Specialist Prerequisites: VMware Design Exam PLUS one of the following options: <ul style="list-style-type: none"> <li>CCDA Certification and DCUCD 642-978 Qualifier Exam</li> <li>Cisco DC Storage Networking Design Specialist and Cisco DC Networking Infrastructure Design Specialist</li> </ul> Networking Infrastructure Design Specialist Certifications <b>Test: #642-982</b>	<ul style="list-style-type: none"> <li>Data Center Unified Computing Design (DCUCD)</li> </ul>
Cisco Data Center Unified Computing Support Specialist Implementing Cisco Data Center Network Prerequisites: VCP3 or VCP4 (VMware Certified Professional) PLUS one of the following options: <ul style="list-style-type: none"> <li>CCNA Certification and 642-979 DCUCI Qualifier Exam</li> <li>Cisco DC Storage Networking Support Specialist and Cisco DC Networking Infrastructure Support Specialist Certifications</li> </ul> <b>Test: #642-983</b>	<ul style="list-style-type: none"> <li>Data Center Unified Computing Implementation (DCUCI)</li> </ul>

## DATA CENTER STORAGE NETWORKING

Certification and Test	Recommended Training
Cisco Data Center Storage Networking Design Specialist Prerequisites: none <b>Test: #642-357</b>	<ul style="list-style-type: none"> <li>Designing Cisco Storage Networking Solutions (DCSNS)</li> </ul>
Cisco Data Center Storage Networking Support Specialist Prerequisites: none <b>Test: #642-359</b>	<ul style="list-style-type: none"> <li>Implementing Cisco Storage Networking Solutions (ICSNS)</li> <li>Implementing Cisco Advanced Storage Networking Solutions (IASNS)</li> </ul>
Cisco Data Center Storage Networking Sales Specialist Prerequisites: CSE Certification <b>Test: #646-976</b>	<ul style="list-style-type: none"> <li>Selling Cisco Data Center Networking Solutions (DCNS)</li> </ul>

## DATA CENTER APPLICATION SERVICES

Certification and Test	Recommended Training
Cisco Data Center Application Services Design Specialist Prerequisites: CCDA Certification <b>Test: #642-972</b>	<ul style="list-style-type: none"> <li>Designing Cisco Data Center Application Services (DCASD)</li> </ul>
Cisco Data Center Application Services Support Specialist Prerequisites: CCNA Certification <b>Test: #642-975</b>	<ul style="list-style-type: none"> <li>Implementing Cisco Data Center Application Services (DCASI)</li> </ul>

## Cisco Nexus Overview Workshop (CNOW)

**ID** FL-CNOW **Price** \$895 **9 CLCs** **Duration** 1 Day

### WHO SHOULD ATTEND

- Data Center Architects responsible for managing the Cisco Nexus family including the Cisco Nexus 1000, 2000, 5000 and 7000 products

### PREREQUISITES

- CCNA Certification or equivalent knowledge

### COURSE OBJECTIVES

This workshop helps you develop an understanding of how to successfully make the most of the new Cisco Nexus switch family technologies to optimize the scalability, performance and efficiency of your Data Center.

### COURSE CONTENT

- Cisco Nexus Family Overview: Nexus 7000; Nexus 5000; Nexus 2000; Nexus 1000V; NX-OS

- The Nexus 5000 Series Switch: Data Center challenges; I/O Consolidation; Nexus 5000 Architecture Overview; FCoE Server Adapters; Management of the Nexus 5000
- The Nexus 2000 Fabric Extender: Architecture of the Access Switch; Nexus 2000 Access Layer Design
- The Nexus 1000V Virtual Switch: Overview of the Virtual Environment; VN-Link; VM Provisioning
- The Nexus 7000 Core Switch: Data Center Core Requirements; Nexus 7000 Deployment, Nexus 7000 Integrated Core
- Virtual Data Center Architecture: Data Center Network Overview; Access Layer Designs



## Implementing Data Center Networks Using the Cisco Nexus 1000V Switch (IDCN1V)

**ID** FL-IDCN1V **Price** \$1,795 **18 CLCs** **Duration** 2 Days

### WHO SHOULD ATTEND

- Network Field Engineers, Network System Engineers, Data Center Network Designers, Pre-sales Engineers, Post-sales Engineers, Network Administration Personnel

### PREREQUISITES

- Intermediate knowledge of switching, routing and data center architectures and protocols, as well as an understanding of server virtualization techniques

### COURSE OBJECTIVES

This highly focused, 2-day course provides a detailed understanding of the emerging features and protocols supported by the Nexus 1000V product family. Upon completion of this course, the student will understand product placement for the Nexus 1000V, in addition to its close relationship to VMware devices and services.

### COURSE CONTENT

- Modern Server Architecture Scalability & Consolidation
- Network Virtualization & Consolidation in DC Bridging Networks
- Data Center Application High-Availability

- NIV on ESX using Cisco Nexus Hardware Switches
- Nexus 1000 VEM (NX-OS) Features & Functions
- Nexus 1000V Switching Mechanisms
- Overview of the Nexus 1000 VSM
- VM Policy-based Connectivity & Mobility using Nexus 1000V
- Utilize Cisco NX-OS based End-to-End QoS Concepts & Enforcement
- Configure the Nexus 1000V System Management & Monitoring Features
- Configure VM Security Features Using the Nexus 1000V

### LAB EXERCISES

- Installing the Nexus 1000V VSM & ESM
- Configuring policy-based VM connectivity
- Configuring Nexus 1000V Security
- Configuring Nexus 1000V QoS

# Implementing Data Center Networks Using the Cisco Nexus 5000 Switch & 2000 Fabric Extender (IDCN5K)

**ID** FL-IDCN5V **Price** \$2,695 **27 CLCs** **Duration** 3 Days

## WHO SHOULD ATTEND

- Network Field Engineers, Network System Engineers, Data Center Network Designers, Pre-sales Engineers, Post-sales Engineers, Network Administration Personnel

## PREREQUISITES

- Intermediate knowledge of switching, routing and data center architectures and protocols, as well as an understanding of server virtualization techniques

## COURSE OBJECTIVES

This highly focused, 3-day course provides a detailed understanding of Cisco's converged SAN/LAN network architecture using Fibre Channel over Ethernet (FCoE) and Data Center Bridging (DCB) protocols on the Cisco Nexus 5000 and Nexus 2000 platform. In this course you will learn about the hardware and software architecture of the Nexus 5000 and 2000 switches, and how this architecture deploys congestion management and other QoS characteristics in the FCoE/DCE networks. This course covers FCoE and DCB/DCE protol design guidelines and configuration details for Cisco's virtualized DCB network environment. You will learn how to deploy a highly available and scalable virtualized converged networking infrastructure using Nexus 5000 and Nexus 2000 series switches in switch mode or NPV/NPIV mode of operation using FC, Ethernet and virtual Port channeling, including RSTP and FSFP high availability implementation considerations. It discusses several design options for modern Data Center access layer architecture, integration of Server Virtualization (ESX), Blade Server and Rack Server into the DC network topology. In addition, QoS, Management, and Monitoring tools for these type of environments are discussed.



## COURSE CONTENT

- Fibre Channel Protocol Implementation on the Cisco Nexus 5000
- FCoE & DCB Protocols & their Applicability to a Unified Fabric Environment
- DCB/FCoE Network Design Considerations
- Configure the Nexus 5000 in Converged Network Environments
- Nexus 5000 System Hardware & Software Architecture
- Nexus 5000 Software Features & Licensing
- Configure Server Connectivity to the FCoE/DCB Network Using Converged Network Adapters
- Nexus 5000 High-Availability Features
- Configure the Nexus 5000 Management & Monitoring Features
- Nexus 2000 Hardware Architecture & Operational Features
- Relationship Between the Nexus 5000 & 2000 Product Families
- Configure Advanced Features Including Congestion Avoidance, Traffic Management, Static & Dynamic Pinning
- Utilize the Fabric & Device Manager Products to Perform Discovery, Configuration, Management & Troubleshooting

## LAB EXERCISES

- Nexus 5000 Hardware Discovery & System Management
- Configure the Nexus 5000 for Dual-Homing Using the Virtual Port-Channel Feature
- Configure DCB using the Nexus 5000
- Configure the Nexus 5000 in NPV Mode
- Configure Nexus 5000 Traffic Management & QoS & Monitor FCoE Performance Using Ethalyzer & SPAN with Wireshark
- Configure Nexus 5000 Security Features



## Implementing Cisco Data Center Network Infrastructure 1 (DCNI-1)

ID CI-DCNI-1 Price \$3,295 33 CLCs Duration 5 Days

### WHO SHOULD ATTEND

- Network Administrators; Network Engineers; Network Designers; System Engineers and Network Managers involved with Data Center Infrastructure

### PREREQUISITES

- CCNP or CCIE Routing & Switching certification status or equivalent knowledge

### COURSE OBJECTIVES

This course offers Data Center-oriented content primarily focused on the Cisco Catalyst 6500 Series switches, Cisco Catalyst 4900 Series top-of-rack switches, and to a lesser degree also on the Blade switches.



### COURSE CONTENT

- Implementing the Catalyst 6500 , 4900 and Blade Switches
- Implementing FWSM for a Data Center Network Infrastructure
- Implementing Network Analysis with NAM
- Implementing High Availability Data Center Features

## Implementing Cisco Data Center Network Infrastructure 2 (DCNI-2)

ID CI-DCNI-2 Price \$3,295 33 CLCs Duration 5 Days

### WHO SHOULD ATTEND

- Network Administrators; Network Engineers; Network Designers; System Engineers and Network Managers involved with Data Center Infrastructure

### PREREQUISITES

- Interconnecting Cisco Network Devices 2 (ICND2), Building Cisco Multilayer Switched Networks (BCMSN), Building Scalable Cisco Internetworks (BSCI) and Implementing Secure Converged Wide Area Networks (ISCW) courses

### COURSE OBJECTIVES

This course teaches you how to deploy, configure and troubleshoot data center networks using the Cisco Nexus Platform Family including the Cisco Nexus 7000, 5000 and 2000. **The course utilizes real Nexus hardware for all lab activities.**

### COURSE CONTENT

- Using the Cisco Nexus 7000 in Data Center Networks:
  - Understanding the Cisco Nexus 7000 Series Switches
  - Overview of the Cisco Nexus 7000
  - Introducing the Virtual Device Contexts in the Cisco Nexus 7000
  - Managing the Cisco Nexus 7000
  - Cisco Nexus 7000 & Cisco NX-OS Layer 2 Protocols & Features

- Cisco Nexus 7000 & Cisco NX-OS Layer 3 Protocols & Features
- Cisco Nexus 7000 & Cisco NX-OS Quality of Service
- Cisco Nexus 7000 & Cisco NX-OS Security
- Troubleshooting
- Using the Cisco Nexus 5000 & 2000 in Data Center Networks:
  - Overview of the Cisco Nexus 5000 & Cisco Nexus 2000
  - Understanding Fibre Channel
  - Implementing an FCoE Network Using Cisco Nexus 5000 Switches





## Data Center Network Infrastructure Design (DCNID)

**ID** CI-DCNID **Price** \$3,295 **33 CLCs** **Duration** 5 Days

### PREREQUISITES

- Designing for Cisco Internetwork Solutions (DESGN), Implementing Cisco IOS Network Security (IINS) and Security Solutions for System Engineers (SSSE) courses

- Cisco Nexus 5000 Switch: Introduction to Fibre Channel over Ethernet (FCoE); Introduction to Cisco Nexus 5000 Switch; Cisco Nexus 5000 Switch Design Overview
- Data Center Design: Overview; Data Center Application Design

### COURSE CONTENT

- Data Center Objectives: Key Data Center Concerns and Objectives; Data Center Environmental Requirements; Data Center Networking Components: Cisco Platforms and Modules
- Cisco Nexus 7010 Switch: Hardware Architecture; Software Architecture; Continual Availability; Network Management; Security Overview; QoS implementation on NX 7010; Cisco Nexus 7010 position in the DC network



## Designing Data Center Application Services (DCASD)

### PREREQUISITES

- Basic understanding of the following topics: The TCP/IP protocol, the HTTP and SSL protocols, N-tier application architecture, Server load-balancing

- Data Center Application Services Overview
- Designing Server Load Balancing Solutions
- Designing Web Application Acceleration Solutions
- Designing Site-to-Site Load Balancing Solutions
- Optimizing the DCAS Solution

### COURSE CONTENT

- With a focus on preparing the student to properly position the ACE products in the network to design Server Load Balancing (SLB) solutions, this course covers all of the key features of the ACE products, including resources virtualization and management, server load balancing (Layer 2-4 and Layer 7), SSL termination and offload, and security features like application-layer inspection and fixups.

## Implementing Data Center Application Services (DCASI)

**ID** CI-DCASI **Price** \$3,295 **33 CLCs** **Duration** 5 Days

### PREREQUISITES

- Basic understanding of the following topics: The TCP/IP protocol, the HTTP and SSL protocols, N-tier application architecture, Server load-balancing

- Data Center Application Services Overview
- Implementing Server Load Balancing
- Implementing Web Application Acceleration
- Implementing Site-to-Site Load Balancing
- Redundancy and Troubleshooting

### COURSE CONTENT

- This course covers all of the key features of the ACE 2.0 software, including resource virtualization and management, server load balancing (Layer 2-4 and Layer 7), SSL termination and offload, and security features like application-layer inspection and fixups.



## Implementing Cisco Storage Networking Solutions (ICSNS)

**ID** CI-ICSNS **Price** \$3,195 **32 CLCs** **Duration** 5 Days

### WHO SHOULD ATTEND

- Cisco Channel Partner/Reseller, Cisco Customers

### PREREQUISITES

- Basic understanding of data storage hardware components and protocols, including SCSI and Fibre Channel

### COURSE OBJECTIVES

ICSNS enables the student to describe and configure the hardware and software components of the Cisco MDS 9000 product family, focusing on key technologies and features that apply to departmental, mid-range, and enterprise SANs.

### COURSE CONTENT

- MDS 9000 Platform Overview
- System Installation and Initial Configuration
- Building Virtual SANs
- Managing SAN Traffic
- Implementing FCIP
- Troubleshooting Tools and Scenarios



## Implementing Cisco Advanced Storage Networking Solutions (IASNS)

**ID** CI-IASNS **Price** \$3,195 **32 CLCs** **Duration** 5 Days

### WHO SHOULD ATTEND

- Cisco Channel Partner/Reseller, Cisco Customers

### PREREQUISITES

- Implementing Cisco Storage Networking Solutions (ICSNS)

### COURSE OBJECTIVES

IASNS enables the student to implement advanced Cisco MDS 9000 technologies and features that apply primarily to enterprise SANs, and troubleshoot common SAN problems and configuration errors.

### COURSE CONTENT

- Building Enterprise SAN Fabrics
- Implementing Management and Security Services
- Advanced Troubleshooting
- Implementing iSCSI

## Designing Cisco Storage Networking Solutions (DCSNS)

**ID** CI-DCSNS **Price** \$3,195 **32 CLCs** **Duration** 5 Days

### PREREQUISITES

- Basic understanding of data storage hardware components and protocols, including SCSI and Fibre Channel

### COURSE OBJECTIVES

DCSNS enables the student to design enterprise Cisco MDS 9000 solutions that include core Fibre Channel SANs, iSCSI for mid-range applications, and SAN extension solutions.

### COURSE CONTENT

- MDS 9000 Platform Overview
- Designing SAN Fabrics
- Consolidating Storage in the Data Center
- Securing the SAN
- Designing SAN Extension Solutions



## Data Center Unified Computing Design (DCUCD)

**ID** CI-DCUCD **Price** \$3,495 **35 CLCs** **Duration** 5 Days

### COURSE OBJECTIVES

The goal of this course is to enable engineers to design scalable, reliable, and intelligent Data Center Unified Computing solutions based on Cisco Unified Computing System (UCS), Cisco Nexus family switches, Catalyst 6500 in Virtual Switching System (VSS), MDS family SAN switches with NX-OS, Data Center Network Manager (DCNM) and MDS Fabric Manager configuration and management applications, VMware server virtualization products, and Linux and Microsoft Windows operating system.

- Cisco Data Center Unified Computing Solution Benefits
- Unified Computing System Implementation Aspects
- Evaluate Existing Data Center Computing Solutions
- Design Cisco Data Center Unified Computing Solutions
- Evaluate Cisco Data Center Unified Computing Solutions

### COURSE CONTENT

- Data Center Computing Solutions
- Cisco Data Center Unified Computing Solution Components

## Data Center Unified Computing Implementation (DCUCI)

**ID** CI-DCUCI **Price** \$3,495 **35 CLCs** **Duration** 5 Days

### COURSE OBJECTIVES

The Cisco Data Center Unified Computing Implementation course is designed to teach students knowledge of the fundamentals of the Cisco Unified Computing System and the ability to implement a virtualized Data Center environment. In addition the student also learns on how to implement the Cisco Unified Computing System (UCS) in an enterprise data center routing and switching infrastructure with the next-generation Cisco Nexus product family.

### COURSE CONTENT

- Understanding how Cisco UCS Benefits Today's Data Center
- Cisco's Unified Computing System: UCS Hardware Components & UCS Features
- Understanding User Management
- Understanding the Chassis Array Manager (CAM) Conceptual Overview
- Explaining the Implementation of Server Resources via the Unified Computing System
- Maintaining a Cisco Unified Computing System
- Monitoring, Diagnostics & Troubleshooting the Cisco Unified Computing System
- Designing Cisco Unified Computing System Deployment



## Cisco Wide Area Application Services (CWAAS)

**ID** CI-CWAAS **Price** \$3,295 **33 CLCs** **Duration** 5 Days

### PREREQUISITES

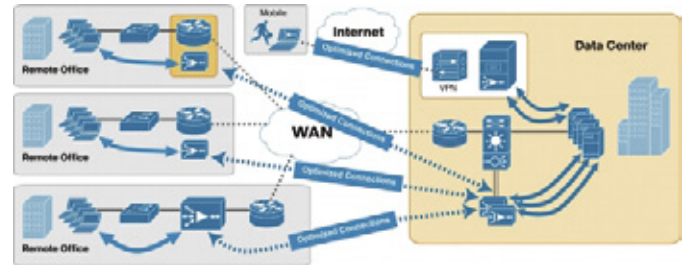
- CCNA certification or equivalent knowledge

### COURSE OBJECTIVES

This course teaches you how to deploy the WAAS 4.1 product including WAAS Mobile.

### COURSE CONTENT

- Cisco Wide-Area Application Services:
  - Introducing Cisco WAAS
  - Understanding WAN Optimization
  - Understanding Application Acceleration
- Cisco WAAS Quick Start:
  - Introducing Traffic Interception
  - Installing and Configuring Cisco WAAS Using Quick Start
- Implementation, Integration, and Management:
  - Performing an Advanced Cisco WAE Installation and Configuration
  - Configuring Traffic Interception
  - Implementing Cisco WAAS Central Management
  - Configuring Application Traffic Policies
  - Configuring Cisco WAAS Virtualization
- Cisco WAAS Application Optimizers:
  - Configuring CIFS Optimization
  - Configuring Cisco WAAS Windows Network Printing
  - Configuring NFS Optimization
  - Configuring HTTP Optimization
  - Configuring Streaming Video Optimization
  - Configuring MAPI Optimization
  - Configuring SSL Optimization
- Cisco WAAS Design and Troubleshooting:
  - Planning a Cisco WAAS Network Design
  - Troubleshooting Introduction
  - Troubleshooting Network Interception
  - Troubleshooting WAN Optimization
- Cisco WAAS Mobile Client Solution:
  - Installing Cisco WAAS Mobile
  - Configuring Cisco WAAS Mobile Options
  - Troubleshooting Cisco WAAS Mobile



## Implementing the Application Control Engine Service Module (ACESM)

**ID** CI-ACESM **Price** \$2,995 **30 CLCs** **Duration** 4 Days

### PREREQUISITES

- Basic understanding of the following topics: The TCP/IP protocol, the HTTP and SSL protocols, N-tier application architecture, Server load-balancing

### COURSE OBJECTIVES

This course teaches you how to design, deploy, and optimize intelligent network services using the Cisco Application Control Engine (ACE) Service Module for Catalyst 6500 switches. The course covers all of the key features of the ACE 2.0 software, including resource virtualization and management, server load balancing (Layer 2-4 and Layer 7), SSL termination and offload, and security features like application-layer inspection and fixups.

### COURSE CONTENT

- Managing the Cisco ACE Module
- Understanding Security Features
- Configuring Layer 4 Load Balancing
- Configuring Health Monitoring
- Configuring Layer 7 Protocol Processing
- Processing Secure Connections
- Understanding High Availability
- Integrating Multiple Features
- Introducing the Cisco ACE Module
- Deploying the Cisco ACE Module
- Understanding Modular Policy CLI





## Designing an Enterprise Application Infrastructure with the ACE Family (ACEDES)

**ID** CI-ACEDES **Price** \$3,495 **35 CLCs** **Duration** 4 Days

### COURSE CONTENT

- This course covers all of the key features of the ACE products, including resource virtualization and management, server load balancing (Layer 2-4 and Layer 7), SSL termination and offload, and security features like application-layer inspection and fixups.
- Introducing ACE
- Deploying ACE
- Modular Policy Configuration
- Layer 4 / 7 Load Balancing
- Layer 7 Protocol Processing

- Processing Secure Connections
- Security Features
- High Availability
- Integrating Multiple Features



## Implementing the Cisco ACE Appliance (ACEAP)

**ID** CI-ACEAP **Price** \$2,995 **30 CLCs** **Duration** 4 Days

### COURSE CONTENT

- This course covers all of the key features of the ACE 2.0 software, including resource virtualization and management, server load balancing (Layer 2-4 and Layer 7), SSL termination and offload, and security features like application-layer inspection and fixups.
- Implementing the Cisco Application Control Engine Appliance
- Introducing the Cisco ACE 4710 Appliance
- Deploying Cisco ACE
- Modular Policy CLI
- Managing the Cisco ACE Appliance

- Security Features
- Load Balancing
- Health Monitoring
- Layer 7 Protocol Processing
- Processing Secure Connections
- Deploying Application Acceleration and Optimization
- High Availability
- Integrating Multiple Features

## ACE XML Gateway Operations & Configuration (AXGOC)

**ID** CI-AXGOC **Price** \$1,895 **19 CLCs** **Duration** 2 Days

### COURSE CONTENT

- This course covers all of the key features of the ACE XML Gateway including maximizing application scalability, securely accelerating performance of Web services, and reducing costs of provisioning services, and teaches students how to design in and deploy the ACE XML Gateway to optimize web content management.

- Application Security
- Introducing the ACE XML Gateway
- Deploying the ACE XML Gateway
- Securing Communications with SSL
- Message Level Security
- Advanced Deployment Options
- Troubleshooting the ACE XML Gateway

## Advanced Catalyst 6500 Switching (CAT6KS)

**ID** FL-CAT6KS **Price** \$3,295 **33 CLCs** **Duration** 5 Days

### PREREQUISITES

- CCNP certification or comparable experience

### COURSE CONTENT

- Options and Hardware available for the Catalyst 6500 Switches: Chassis, Line Card, Supervisor, MSFC, PFC, SFM, DFC, Power Supplies, Architecture, Service Modules Overview
- Virtual Switching System 1440 Architecture, Operation and Configuration
- Deploying and Examining IOS Software Modularity
- Recovering the Supervisor Password
- Managing and Upgrading IOS on Catalyst 6500
- VLAN Enhancements: VTP and Trunk Configuration Guidelines and Restrictions
- Spanning Tree, Rapid and Multiple Spanning-Tree Operation
- Spanning-Tree Enhancements: BPDU Guard and Filter, Root Guard, Loop Guard, PortFast, UplinkFast, BackboneFast
- Using Unidirectional Link Detection
- Using EtherChannel including MultiChassis EtherChannel in VSS mode
- Configuring NetFlow and NDE
- Understanding and Implementing Catalyst 6500 QoS options

- Deploying and Examining Embedded Event Manager
- Utilizing Automated Diagnostics (GOLD, TDR, On Board Failure Logging, System Event Archive, Smart Call Home)
- Implementing SPAN, RSPAN, and ERSPAN
- Implementing High Availability Features (HSRP, FHRP, VRRP, GLBP)
- Implementing Catalyst 6500 Stateful Switchover options (RPR, RPR+, SSO, NSF)
- Network Security Enhancements (TCP Intercept, Unicast RPF, Storm Control, VLAN ACL, VACL Capture, DAI, DHCP Snooping, IP Source Guard, CoPP, Port Security, PVLAN, IEEE 802.1X Port-Base Authentication)



## Catalyst 6500 & Cisco 7600 Series Routers Firewall Services Module Deployment (FWSMD)

**ID** FL-FWSMD **Price** \$3,295 **33 CLCs** **Duration** 5 Days

### PREREQUISITES

- Experience of configuring Cisco IOS Software
- CCNA certification or similar knowledge
- Basic knowledge of Windows Operating systems
- Familiarity with Network and Security Concepts

### COURSE CONTENT

- Catalyst 6500 Family and overview over Advanced Services Modules
- Firewall Services
- Configuration of the switch for the FWSM
- Implementing the FWSM
- Translations and Connections
- Access Control Lists and Content Filtering
- Grouping of objects
- IP Routing
- Cisco Modular Policy Framework

- Advanced Protocol Handling
- Transparent Firewall Mode
- Cisco Adaptive Security Device Manager
- Authentication, Authorization and Accounting
- Deployment of the FWSM within multiple contexts
- Failover
- FWSM Management
- Site-to-Site and Remote Access VPN for FWSM Remote Management
- FWSM Troubleshooting
- Cisco Security Manager



# VMware vSphere™ and Cisco Nexus 1000V Integration



The Cisco Nexus 1000V Series Switches are virtual machine access switches that are an intelligent software switch implementation for VMware vSphere environments. Operating inside the VMware ESX hypervisor, the Cisco Nexus 1000V Series supports Cisco VN-Link server virtualization technology to provide policy-based virtual machine (VM) connectivity, mobile VM security and network policy, and non-disruptive operational model for your server virtualization, and networking teams. Fast Lane has developed two courses to prepare you for the VMware vSphere™ and Cisco Nexus 1000V integration.

## What's New vSphere™ 4 on Nexus 1000V Data Center Networks (WNND)

**ID** FL-WNND **Price** \$2,895 **Duration** 4 Days

### WHO SHOULD ATTEND

- Network Field Engineers
- Network System Engineers
- Data Center Network Designers
- Pre-sales Engineers
- Post-sales Engineers
- Network Administration Personnel
- System architects
- System administrators
- IT managers, and individuals responsible for implementing and managing VMware Infrastructure architectures

### PREREQUISITES

- VMware Infrastructure 3: Install & Configure (VIIC) or equivalent experience with VMware ESX and vCenter Server
- Intermediate knowledge of switching, routing and data center architectures and protocols, as well as an understanding of server virtualization techniques

### COURSE OBJECTIVES

This course provides a detailed understanding of the features and protocols supported by the Nexus 1000V product family and explores new features in VMware vCenter Server and ESX™/ESXi, as well as how to upgrade an ESX 3.X environment. Upon completion of this course, you will understand product placement for the Nexus 1000V, with its close relationship to VMware devices and services. Practical lab exercises augment and reinforce the courseware to provide a unified curriculum.

### COURSE CONTENT

- Overview of the Nexus 1000 VEM and VSM
- Network Virtualization and consolidation in Data Center Bridging Networks
- Upgrading VMware deployments
- Data Center Application High-Availability
- Nexus 1000 VEM (NX-OS) Features and Switching Mechanisms
- Deploying distributed virtual switches to simplify datacenter-wide network management
- Migrating virtual machines' storage while they are live with Storage vMotion
- Growing virtual disks and VMFS volumes while they are live
- Employing VMware's new Pluggable Storage Architecture
- Ensuring application availability with VMware Fault Tolerance
- Use the new host profiles feature to keep hosts uniformly configured
- Saving energy with VMware Distributed Power Management
- Saving disk space with thin provisioning
- NIV on ESX using Cisco Nexus switches
- Virtual Machine Policy-based Connectivity and Mobility
- Utilize Cisco NX-OS based End-to-End QoS Concepts and Enforcement
- Configure the Nexus 1000V System Management and Monitoring Features
- Configure Virtual Machine Security Features Using the Nexus 1000V
- Save disk space with thin provisioning
- Administer virtual appliances consisting of more than one virtual machine



# Install, Config & Manage vSphere™ 4 on Nexus 1000V Data Center Networks (ICMND)

**ID** FL-ICMND **Price** \$3,495 **Duration** 5 Days

## WHO SHOULD ATTEND

- Network Field Engineers
- Network System Engineers
- Data Center Network Designers
- Pre-sales Engineers
- Post-sales Engineers
- Network Administration Personnel
- System architects
- System administrators
- IT managers, and individuals responsible for implementing and managing VMware Infrastructure architectures

## PREREQUISITES

- Administration experience on Microsoft Windows or Linux operating systems
- Intermediate knowledge of switching, routing and data center architectures and protocols
- VMware vSphere 4: What's New (VIWN) course

## COURSE OBJECTIVES

This course provides a detailed understanding of the emerging features and protocols supported by the Nexus 1000V product family and installation configuration, and management of VMware vSphere™. Upon completion of this course, you will understand product placement for the Nexus 1000V, in addition to its close relationship to VMware devices and services. Practical lab exercises augment and reinforce the courseware to provide a unified curriculum.

## COURSE CONTENT

- Install and configure ESX and vCenter Server
- Configure and manage ESX networking and storage using vCenter Server
- Deploy, manage and monitor VM and their resources
- Manage user access to the VMware infrastructure
- Increase scalability using vCenter Server
- Apply patches using VMware vCenter Update Manager
- Manage higher availability and data protection using vCenter Server
- Overview of the Nexus 1000 VEM and VSM
- Network Virtualization and consolidation in Data Center Bridging Networks
- Data Center Application High-Availability
- Nexus 1000 VEM (NX-OS) Features and Switching Mechanisms
- NIV on ESX using Cisco Nexus switches
- Virtual Machine Policy-based Connectivity and Mobility
- Utilize Cisco NX-OS based End-to-End QoS Concepts and Enforcement
- Configure the Nexus 1000V System Management and Monitoring Features
- Configure Virtual Machine Security Features Using the Nexus 1000V
- Manage higher availability and data protection using vCenter Server





Fast Lane is an authorized VMware Training Center (VATC) and delivers original VMware education programs. We can also deliver VMware courses as customized on-site programs for your company.

## VCP CERTIFICATION

The VMware Certified Professional (VCP) Program is designed for any technical individual - partners, end-users, resellers, and consultants - who wants to demonstrate his or her virtualization expertise and increase his or her potential for career advancement. Please note that participation in a VMware authorized training class is required for VCP certification. Candidates who take the VCP exam without a class will not be certified or confirmed by VMware. Fast Lane delivers the courses you need to prepare for the VCP certification.

Test	Recommended Training
VCP on vSphere 4 Test # VCP-401	<ul style="list-style-type: none"> <li>VMware vSphere 4: Install, Configure, Manage (VICM) or</li> <li>VMware vSphere 4 Fast Track (VVFT) or</li> <li>VCP on VI3 Certification plus VMware vSphere 4: What's New (VIWN)</li> </ul>



## VMware vSphere: What's New? (VIWN)

ID VM-VIWN Price \$1,495 Duration 2 Days

### PREREQUISITES

- Completion of VMware Infrastructure 3: Install & Configure V3.5 or equivalent experience with VMware ESX and vCenter Server

### COURSE CONTENT

- Introducing the Next Generation of VI - highlights Next Generation enhancements by component and reviews upgrade tools and strategies.
- Infrastructure Administration - presents new features that support better infrastructure monitoring and reduce the time it takes to provision ESX/ESXi hosts and virtual machines.
- Networking - discusses networking enhancements that simplify configuration, extend support, and improve performance.
- Storage - introduces new storage features that reduce storage costs, streamline management, and optimize performance.
- Resource Management - reviews vMotion™ compatibility enhancements, new VMware Distributed Resource Scheduler monitoring and management tools, and extended VMware DPM support.
- Business Continuity - presents VMware High Availability enhancements and introduces VMware Fault Tolerance and vStorage APIs for data recovery.

## VMware vSphere: Install, Configure, Manage (VICM)

**ID** VM-VICM **Price** \$2,995 **Duration** 4 Days

### PREREQUISITES

- System administration experience on Microsoft Windows or Linux operating systems

### COURSE CONTENT

- Introduction to VMware Virtualization
- Configuring ESXi/ESX
- Installing and Using VMware vCenter Server
- Networking

- Storage
- Virtual Machines
- Access Control
- Resource Monitoring
- Scalability
- High Availability and Data Protection
- Configuration Management
- Installing ESX



## VMware vSphere: Fast Track (VVFT)

**ID** VM-VVFT **Price** \$4,695 **Duration** 5 Days

**Incl. Exam Voucher!**

### PREREQUISITES

- Willingness to participate in a demanding, high-intensity training experience
- Comfort with system administration using command-line interfaces

### COURSE CONTENT

This intensive, extended-hours training course focuses on installing, configuring, managing, and troubleshooting VMware vSphere™. It combines the content of the VMware vSphere 4: Install, Configure, Manage (VICM) course with advanced tasks and skills for configuring a highly available and scalable virtual infrastructure. Upon completing this course, you can take the examination to qualify as a VMware Certified Professional.

## VMware Site Recovery Manager (VSRM)

**ID** VM-VSRM **Price** \$1,695 **Duration** 2 Days

### PREREQUISITES

- Completion of VMware Infrastructure 3: Install & Configure (VIIC) or equivalent experience with VMware Infrastructure 3
- Basic knowledge of disaster recovery concepts
- Basic knowledge of storage array technology

### COURSE CONTENT

- SRM Overview
- Introduction to Disaster Recovery
- SRM Planning
- SRM Installation
- Array Managers
- Inventory Mappings
- Protection Groups
- Recovery Plans
- SRM Alarms and Site Status
- Troubleshooting
- Failover Testing and Failover
- Failback

## VMware View™: Install, Configure, Manage (VIEW)

**ID** VM-VIEW **Price** \$2,245 **Duration** 3 Days

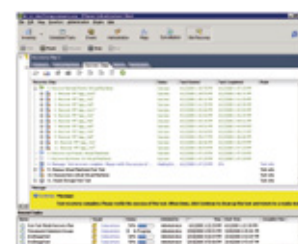
### PREREQUISITES

- Experience in Microsoft Windows Active Directory (AD) administration
- Experience with VMware Infrastructure 3

### COURSE CONTENT

- Introduction to VMware View
- VMware View Connection Server
- VMware View Virtual Desktops
- VMware View Client Options

- View Administrator
- Configuring & Managing Linked Clones
- Unified Access
- Virtual Printing
- Managing View Security
- View Manager Performance and Scalability
- VMware ThinApp



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We can help your company gain and develop all the technology skills it needs to rise to high-end challenges. After all, technology is the tool and only those who master it can capitalize on its benefits. Our customers and partners rely on us, and for very good reasons.

**Fast Lane provides the IT know-how you need.** Virtualization and data center, voice, video and unified communications, security, wireless networking or optical technologies – whatever specialized insight, skills, and consulting you may need, Fast Lane has the right expert for you.

**Fast Lane is there for you in 50 countries across all continents.** More than 300 Fast Lane employees train and advise major companies in all industries, leading service providers, and government agencies in twelve languages. Serving customers worldwide, Fast Lane head offices are sited in Berlin, Cary/NC, San Jose de Costa Rica, Ljubljana, St. Petersburg, Tokyo and Dubai.

**Fast Lane is one of the leading Cisco Learning Solutions Partners worldwide.** The fastest growing Cisco Learning Solutions Partner (CLSP), Fast Lane offers you the full Cisco training curriculum, from entry-level to specialized high-end courses, in all regions across the globe.

**Fast Lane is the only global NetApp Learning Partner.** An authorized NetApp training partner, Fast Lane offers original NetApp training programs worldwide. NetApp-certified specialists with extensive storage experiences conduct the training.

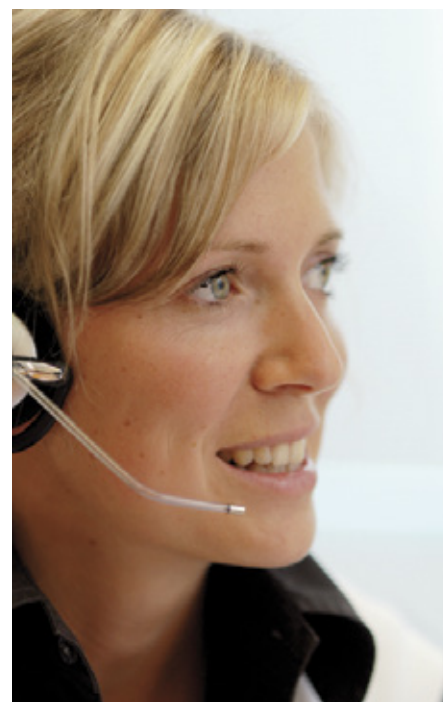
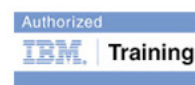
**Fast Lane is the training provider of choice when it comes to virtualized data center solutions.** As an authorized training partner of Cisco, NetApp, VMware, and Symantec, we get you ready to rise to the challenges of planning and making the most of future-focused data center solutions.

**Fast Lane has developed courses of its own covering all key future technologies.** What's more, our offering comprises many other vendors and organizations' training programs, for example, Brocade, CA, Check Point, Citrix, CompTIA, HP, ITIL, Lotus, LPI, Microsoft, Nokia, Novell, Oracle, PMI, PRINCE2™, Red Hat, RSA Security, SAP, Sun, Symantec, Trend Micro, and VMware.

**Fast Lane gives you access to a lab infrastructure unrivalled worldwide.** Fast Lane customers enjoy the use of training and demo labs for all areas of high-end networking. Equipped with the latest devices and technologies, our high-end labs provide first-rate service and raise the bar for training quality. Our project consultants can access these labs from any location.

**Fast Lane services satisfy the most discerning demands.** A comprehensive evaluation system ensures Fast Lane lives up to the most rigorous quality standards. With professional experience and excellent teaching skills, all our instructors and consultants transfer knowledge efficiently and effectively.

**Fast Lane employees' response is swift and courteous.** Rest assured you will always enjoy friendly, competent service and a quick response to your every request, even at shortest notice. For example, we can deploy troubleshooting experts within a few hours and organize on-site training including a coach, equipment, and course materials within 24 hours.



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Networking & TCP/IP Fundamentals (NWF)  
Troubleshooting TCP/IP (TTCP)  
Routing & Switching (RSW)  
VPN Design & Implementation (VDI)

## PACKET ANALYSIS

Packet Analysis with Wireshark Analyzer (PAE)  
Advanced Packet Analysis with Ethereal/Wireshark (APAE)  
Packet Analysis Power Workshop (PAPW)  
Analysing MS-Windows Networking (AWN)

## CISCO ROUTING & SWITCHING

Interconnecting Cisco Network Devices 1 (ICND1)  
Interconnecting Cisco Network Devices 2 (ICND2)  
Building Scalable Cisco Internetworks (BSCI)  
Building Cisco Multilayer Switched Networks (BCMSN)  
Implementing Secure Converged Wide Area Networks (ISCW)  
Optimizing Converged Cisco Networks (ONT)  
Configuring BGP on Cisco Routers (BGP)  
Implementing Cisco MPLS (MPLS)  
Implementing Cisco MPLS Traffic Engineering (MPLST)  
IPv6 Fundamentals, Design & Deployment (IP6FD)

## CISCO WIRELESS

Implementing Cisco Unified Wireless Networking Essentials (IUWNE)  
Conducting Cisco Unified Wireless Site Survey (CUWSS)  
Implementing Advanced Cisco Unified Wireless Security (IAUWS)  
Implementing Cisco Unified Wireless Voice Networks (IUWVN)  
Implementing Cisco Unified Wireless Mobility Services (IUWMS)  
Cisco Wireless Mesh Networking (CWMN)  
Designing Cisco RF Networks (DRFN)

## SECURITY

Voice Anti-Hacking Workshop (VHACK)  
Anti-Hacking Workshop / White Hat Hacking (HACK)  
WLAN Anti-Hacking Workshop (WHACK)

## CISCO SECURITY

Implementing Cisco IOS Network Security (IINS)  
Securing Networks with Cisco Routers & Switches (SNRS)  
Securing Networks with ASA Fundamentals (SNAF)  
Securing Networks with ASA Advanced (SNAA)  
Implementing Cisco Intrusion Prevention Systems (IPS)  
Designing VPN Security (DVS)  
Implementing Cisco Network Admission Control (NAC)  
Implementing Cisco NAC Appliance (CANAC)  
Implementing Cisco Security Monitoring, Analysis & Response System (MARS)

## CISCO IRONPORT SECURITY

Securing Your Email with IronPort C-Series (SYEPW)  
Securing Your Web with Ironport S-Series (SYW)

## VOICE OVER IP

Telecommunications & VoIP Migration (TMV)  
VoIP for Enterprise & SP Networks (VOIP)

## CISCO VOICE & UNIFIED COMMUNICATIONS

Implementing Cisco IOS Unified Communications (IIUC)  
Implementing Cisco Quality of Service (QOS)  
Cisco Voice over IP (CVOICE)  
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Implementing Cisco Unified Communications Manager Part 2 (CIPT2)  
Troubleshooting Cisco Unified Communications Systems (TUC)

## CISCO BUSINESS VIDEO

TelePresence Installation and Configuration Training (TPICT)  
Digital Media Systems (DMS)  
IP Video Surveillance (IPVS)  
Implementing Cisco Unified MeetingPlace Solutions (IMPS)  
Designing Cisco Unified MeetingPlace Solutions (DMPS)

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# Course Booking



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To learn more about our consulting services for data center solutions and other specialty fields such as security, unified communications, and wireless, call us on (919) 674-3100 or email us at [info@fastlaneus.com](mailto:info@fastlaneus.com).

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