CUSTOMER EDUCATION CATALOG

EMC² PROVEN PROFESSIONAL

Including EMC Proven Professional Certification

Enable Your Team for Tommorow's IT Challenges, Today

December 2010

EMC² where information lives®

Enable Your Team for Tommorow's IT Challenges, Today

IT infrastructures are evolving rapidly to contain explosive data growth and meet escalating business requirements

Where are you along the IT infrastructure evolution? Do you have a plan to maximize and optimize your IT infrastructure team capabilities? Is your team ready to exploit the full potential of technology innovations such as virtualization and cloud computing?

Skill levels lag task requirements

Respondents to EMC's annual survey* of over 1,450 storage professionals indicates that 70 percent of staff can benefit from additional skill development in two strategic areas: planning and design and integration and optimization.

Stay at the forefront of technology innovations

EMC® Education Services address the skills gap, offering training that can help you clear a path to pervasive virtualization and continue your journey to the private cloud. We offer a broad range of training, from VMware server virtualization integration, to EMC storage platforms, to data deduplication, to ITIL that will increase the productivity of your IT infrastructure team.

EMC Education Services training participants report a 37 percent increase in productivity following training, confirming the effectiveness of our education and certification offerings.

EMC Education Services solutions

1. Information Storage Technology 'Open' Curriculum
    - Unique offering in the industry; leads with concepts and principles
    - Leverage best practices for planning and design, informed decision-making
    - Establish efficient processes for your information storage and management

2. EMC Technology-Specific Learning Paths
    - Expand your knowledge and skills to deploy and manage the full range of EMC technologies
    - Integrate extensive capabilities of EMC technologies to optimize performance and availability

3. EMC Proven Professional Certification Program
    - #1 certification program in the information storage and management industry
    - Take advantage of exclusive benefits to share and maintain your industry expertise

*** Managing Information Storage: Trends, Challenges, and Options (2010 - 2011)**

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*This learning path has been enhanced with new or updated courses and/or delivery modes

Welcome to EMC Education Services

We are here to enable your team for tomorrow's IT challenges, today. Maximize the return on your technology investments by developing and validating your expertise in Information Storage and Management.

Find training by product/technology and based on your role.

Plan and Architect – Build Your Team of Trusted Advisors

Leverage 'Open' curriculum-based training and certification focused on technology concepts and principles applicable to any vendor environment. Ideal for companies and organizations planning to implement private cloud or provide cloud-based IT services. Go to page 12 to view comprehensive skills roadmap for the architect.

Cloud Architect Track

Cloud Architects bring cross-domain expertise to virtualization and cloud designs - including IT-as-a-Service considerations - and are likely to lead the business interfacing role within the team.

Virtualized Infrastructure	page 20

Data Center Architect Track

Data Center Architects play a crucial role on the team, providing information storage domain-specific expertise to complement, expand, and complete the cloud-ready virtualized infrastructure designs.

Storage Networking Design	page 16
Information Availability Design	page 17
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Deploy and Manage – Full Range of EMC Technologies

Expand your knowledge and skills to deploy and manage the full range of EMC technologies, including Storage Networks, Business Continuity Solutions, Disaster Recovery Solutions, Backup and Recovery, Data Deduplication, IT infrastructure networking management, and more.

SAN, IP-SAN, NAS, CAS Environments

EMC CLARiiON® Family	page 28, 29
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EMC PowerPath® Family	page 28, 29
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Data Deduplication, Backup and Recovery Environments

EMC Avamar®	page 39
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EMC Ionix™ Based IT Infrastructure and Networking Management Solutions

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Take Advantage of Our FREE Knowledge Assessment Tests

Identify your current subject matter strengths and weaknesses. Make it part of your training and certification planning exercise.

Visit: http://education.emc.com/Assess

Integrate and Optimize – Applying Best Practices

The following advanced-level courses and workshops provide best practices and hands-on experiences to build your technology integration expertise. To understand the content and successfully complete the exercises, the student must have taken the 'Deploy and Manage' courses or have equivalent experience.

Performance Optimization and Capacity Utilization

CLARiiON page 30	Celerra page 25	Symmetrix page 35
ControlCenter StorageScope page 54		

Integrate VMware vSphere™, SRM and EMC Storage Including Data Replication Technologies

CLARiiON page 45	Celerra page 45	Symmetrix page 45

Integrate Oracle, Exchange, SQL Servers and EMC Storage Including Data Replication Technologies

CLARiiON page 30	Symmetrix page 35

Information Storage and Management 'Open' Course

EMC's Information Storage Technology 'open' curriculum benefits storage professionals who plan, design, deploy, and manage an information storage infrastructure. In particular, as IT infrastructures evolve to accommodate emerging technologies such as virtualization and data deduplication, planning and design skills become increasingly vital, illustrating how IT is assuming a more strategic business role.

Information Storage and Management page 15

Vblock, VPLEX, VMware, Cisco, Brocade, and more

Whether deploying pre-configured Vblock infrastructure packages or integrating technologies from EMC, VMware, Cisco, and Brocade to establish your own virtualized environment, EMC Education Services offers the training you need.

Vblock Infrastructure

Vblock page 50

Cisco MDS, Nexus, and UCS

MDS and Nexus Switches page 33	
Unified Computing System (UCS) page 50	

Brocade

Fibre Channel Administration page 32

VPLEX and UIM

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VMware Virtualized Server Environments

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VMware View, Site Recovery Manager, and Service Manager page 48	

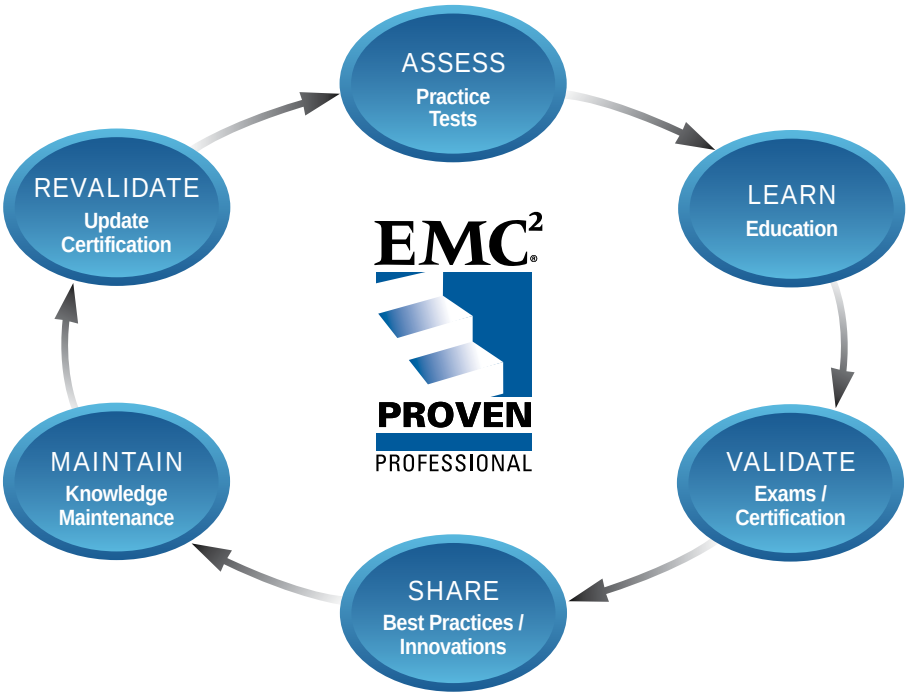
EMC Proven Professional Program Overview

EMC Proven™ Professional is the #1 certification program in the information storage and management industry. It offers a role-based series of courses and exams that cover the full range of EMC's hardware, software, and solutions. In addition to three levels of technical learning and certification, EMC Proven Professional also includes 'open' courses such as Information Storage and Management.

Being Proven means investing in yourself and formally validating your knowledge, skills, and expertise by the industry's most comprehensive learning and certification program. Join a community of dedicated professionals, share exclusive benefits, get Proven.

For up-to-date information on the EMC Proven Professional certification program, please visit http://education.emc.com/Certification.

EMC Proven Professional Learning Framework

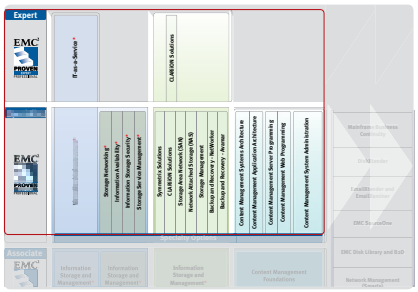


A consistent, measurable means to build and maintain the technical knowledge and skills of information storage and management professionals.

Trained and certified professionals are essential to the success of IT infrastructure management organizations

EMC, in conjunction with IDC, fielded a survey to a population of individuals who have achieved one or more EMC Proven Professional certifications. 3,200+ respondents were recorded. Survey respondents confirmed the applicability and value of their broadened skills and expertise. Read how IDC analyzes the career impact of IT professionals who are certified EMC Proven Professionals.

Download the IDC white paper: The Proven Professional Certification - Proving Certification Can Profit http://education.emc.com/ProvenImpact



EMC Proven Professional Certification Framework

Broad and relevant technology coverage – ensures wider application of your knowledge

- Develop information storage knowledge and skills that will enable you to respond to the challenges of evolving IT infrastructures. Learn information storage and management concepts and principles that can be applied in many IT scenarios.
- Evaluate and recommend information storage solutions based on broad technology considerations.
- Adapt to changing requirements in evolving IT infrastructures.

Role-based specialization – develops expertise based on best practices

- The complexity of evolving IT infrastructures drives a greater need for IT professionals with specialized information storage knowledge and skills. Leverage our modularized curriculum to suit your individual learning needs based on your job role.
- Better understand EMC products, software, and solutions.
- Use more features and functions, maximizing investment in EMC products and technologies.

EMC Proven™ Professional Certification Framework

Expert

EMC² PROVEN EXPERT PROFESSIONAL

- IT-as-a-Service*
- CLARiiON Solutions

Specialist

EMC² PROVEN SPECIALIST PROFESSIONAL

- Virtualized Infrastructure*
- Storage Networking*
- Information Availability*
- Information Storage Security*
- Storage Service Management*
- Symmetrix Solutions
- CLARiiON Solutions
- Storage Area Network (SAN)
- Network Attached Storage (NAS)
- Storage Management
- Backup and Recovery - NetWorker
- Backup and Recovery - Avamar
- Content Management Systems Architecture
- Content Management Application Architecture
- Content Management Server Programming
- Content Management Web Programming
- Content Management System Administration

Specialty Options

Associate

EMC² PROVEN PROFESSIONAL

- Information Storage and Management*
- Information Storage and Management*
- Information Storage and Management*
- Content Management Foundations

Levels

- EMCCA Cloud Architect
- EMCDCA Data Center Architect
- EMCSA Storage Administrator
- EMCTA Technology Architect
- EMCApD Application Developer
- EMCSyA System Administrator

Certification Tracks (Job Functions)

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- EMC Technology Foundations
- Mainframe Business Continuity
- DiskXtender
- EmailXtender and EmailXaminer
- EMC SourceOne
- EMC Disk Library and B2D
- Network Management (Smarts)

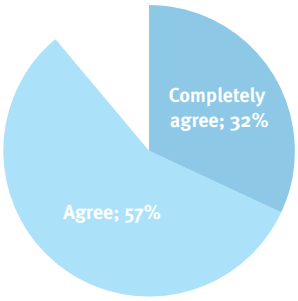
Product/Technology Specific Certifications

* **Unique 'Open' Courses and curricula** - Content focused on technology concepts, principles, and case studies that can be applied in all IT environments.

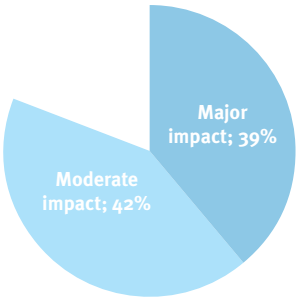
Why Get Proven?

Value of EMC Proven Professional training and certification

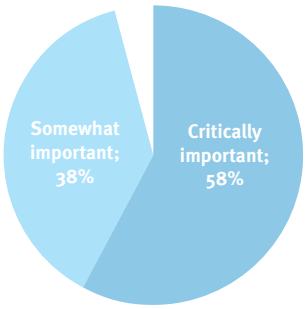
EMC, in conjunction with IDC, fielded a survey to a population of individuals who have achieved one or more EMC Proven Professional certifications. 3,200+ respondents were recorded. Survey respondents confirmed the applicability and value of their broadened skills and expertise.



Subjects and content I learned in preparing to achieve my most relevant EMC Proven Professional certification are highly applicable to my job/work.



Please rate the impact of the learning required to pass an EMC Proven Professional exam on using more functionality of EMC products and technologies.



Please rate the level of importance to your current role/ position for possessing up-to-date knowledge of EMC products/technologies.

Quality assurance

- Maximize your investment in training and skills development
- Increased confidence in technical competence
- Highly relevant learning to the job/work

By design, EMC Proven Professional exams are fully aligned to curriculum and validate the knowledge acquired through our multiple delivery modes. Before or after taking your training, leverage free practice tests to identify technical knowledge gaps and provide a benchmark for your skills development needs.

Develop in-house expertise

- Comprehensive understanding of broader IT environments
- Ability to architect and design multi-vendor, optimized solutions
- In-depth knowledge and ability to work with EMC technology
- Deploy advanced features and functionality of EMC products

Developing a broad understanding of information storage and management concepts enables IT professionals to architect optimized solutions based on multi-vendor technologies and utilize more functionality of EMC products and technologies.

Independence

- Reduce or eliminate dependency on EMC experts and support
- Exclusive access to expertise shared within the EMC Proven Professional certified community

Through our training and certification offerings, you can decrease your reliance on EMC experts and support, optimize uptime, and achieve faster time to problem resolution.

Plus, through our Proven online community, you can connect and collaborate with thousands of certified EMC Proven Professionals from EMC, partners, customers, and the industry at large.

https://education.emc.com/CertifiedCommunity

Keep Current

- No-cost update training on new products
- Proactive webcasts on new product launches
- Access and contribute best practices, technical white papers

Knowledge Maintenance, an exclusive benefit for certified Specialists and Experts, provides proactive notification and no-cost knowledge update through e-Learning titles to sustain the value of your certification.

All certified Proven Professionals are invited to Engineer-to-Engineer webcasts at major EMC product/technology launches.

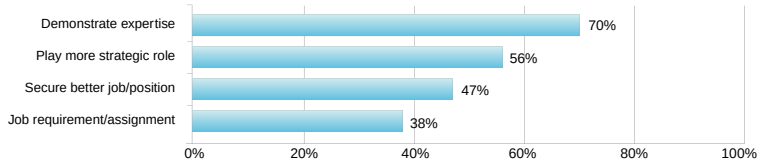
Knowledge Sharing is a platform for certified Proven Professionals to share expertise, unique deployments, best practices, or any relevant topic of interest. Written exclusively by EMC Proven Professionals, anyone can learn from these Knowledge Sharing articles and webcasts.

Demonstrate expertise

- Demonstrable validation of your skills and expertise
- Play a strategic role by having up-to-date broad and deep skills
- Create growth opportunities

IT professionals can validate and demonstrate a high level of technical competence by leveraging the EMC Proven Professional program. Storage/IT managers need IT professionals with deep, broad storage technology skills who can contribute to big picture/strategic decisions.

The respondents were asked to rank the importance of reasons why they worked to achieve their most relevant EMC Proven certification.

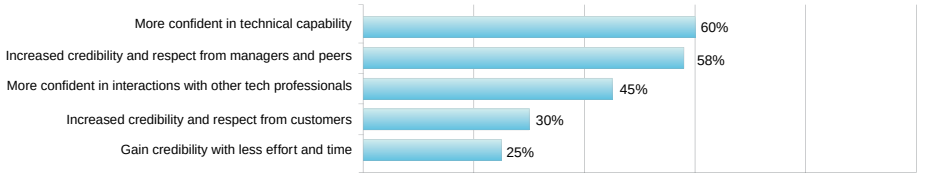


Impact of EMC Proven Professional

- Increased confidence on technical capabilities
- Increased credibility and respect by managers and peers
- Increased credibility and respect by internal and external customers

Establish your expertise relative to your industry peers by formally validating your skills. Take on greater responsibilities and expand career opportunities by taking advantage of the credibility you establish through EMC Proven Professional training and certification.

The respondents were asked to rank the impact of achieving most relevant EMC Proven Certification

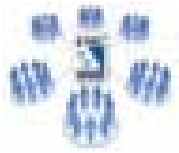


Connect and Collaborate

- Connect and collaborate with world-wide community of EMC Proven Professionals
- Share, publish, and be rewarded for your best practices by collaborating globally

Collaborate on industry challenges, join exam building, influence content, discuss programs, and get early announcements. Share ideas and expertise. Find answers from EMC Proven Professional program management team, subject matter experts, EMC Education Services managers, and other EMC Proven Professionals.

Become a fan:
EMC Proven Professional



http://education.emc.com/ProvenCommunity

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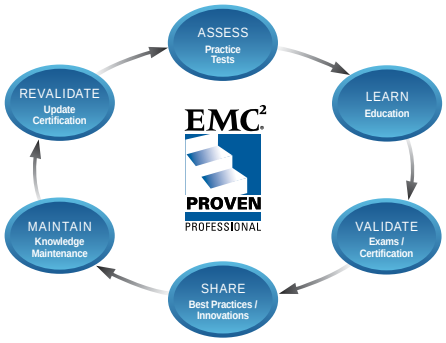

Becoming a certified EMC Proven Professional

Leveraging the EMC Proven Professional Learning Framework

1. ASSESS your level of expertise
Leverage FREE online assessment tests http://education.emc.com/Exams

2. LEARN the technology subject areas in need of further development
Leverage certification-aligned 'open' or EMC Technology Specific Learning Paths
http://education.emc.com/Training

3. VALIDATE your expertise by taking and passing a proctored exam
Leverage your closest PEARSON VUE testing center http://www.pearsonvue.com/emc

Leveraging Learning Paths

Take the guesswork out of your education plan.

Learning paths are structured road maps of courses that help you develop a thorough understanding of your selected technologies. They ensure the gradual introduction of complex technologies and challenging concepts from foundation through expert levels. Self-paced modules are a great way to learn the concepts and principles, enabling students in the classroom to spend more time on discussions and hands-on lab activities.

Maximize your storage expertise with advanced-level training.

If you have the knowledge and experience, go straight to the advanced levels. You will learn increasingly complex integration scenarios and application-centric solution best practices.

Validate your knowledge.

Our learning paths are conveniently aligned to EMC Proven Professional certifications. If you choose to take the next step, you already have the knowledge and access to the supporting study materials to prepare for the exam. Free practice tests are available online for all Proven Professional exams.

Utilize blended learning.

Not everybody learns the same way, or at the same pace. Some prefer a classroom environment, others do well with self-paced methods that are easier on their time and budget. EMC Education Services has a highly "blended" approach to learning, offering several training modalities. Some curriculum is offered in more than one way. Choose from traditional classroom training (with hands-on labs) or online learning where the pace of instruction is up to you.

Delivery Modes

The key advantage of blended learning is *flexibility.* Choose the learning mode that best fits your learning style, time constraints, and budget.

e-Learning—Self-paced training, generally one to three hours which can be accessed directly over the Internet or downloaded to your PC for use at your convenience. Also includes downloadable and printable student guides that can be taken anywhere, anytime.

Instructor-Led Training (ILT)—Traditional classroom training, with hands-on labs or case-studies, delivered at one of our many training centers worldwide, by a highly qualified EMC instructor.

Video Instructor-Led Training (Video-ILT)—Top-instructor-delivered, Instructor-Led Training (ILT), packaged in a convenient CD-ROM/DVD-ROM format, with an intuitive navigation menu. Lecture content, lab exercises, and student materials are identical to the ILT.

Online Instructor-Led Training (Online ILT)—A realtime interactive training experience where students participate online to access the instructor-led virtual classroom. Lecture, discussion, questions and answers, and lab exercises make this a rich and flexible training experience.

Purchase Options

We offer several convenient methods to purchase training from EMC Education Services. Purchase options are aligned with how many people require training, whether you or your teams are preparing for EMC Proven Professional certification, or whether your team of eight or more employees require the same class. If you have any questions about payment or your account, please contact an Education Registration Consultant or your EMC account representative.

Are you working with a particular EMC product or solution?

ValuePaks and **Video ValuePaks** are the right choice. They offer a streamlined curriculum that aligns to our learning paths, and prepares learners for EMC Proven Professional certification. ValuePaks are blended and include e-Learning and one or more Instructor-Led or Online ILT classes.

Video ValuePaks, in addition to being our "green" option, offer a blend of e-Learning courses and videotaped instructor-led classes. Train without traveling!

Do you want to broaden and/or advance your expertise on EMC products and solutions?

Subscription*—Provides one individual access to the entire EMC training library (Instructor-Led, e-Learning, Online ILT and up to three Video-ILTs) for one year from the date of purchase. Also includes three Proven Professional exam vouchers ($600 value).

V-Subscription*—Provides one individual access to the entire EMC training library (e-Learning and up to 3 Video-ILTs) for one year from the date of purchase. Also includes one Proven Professional exam voucher ($200 value).

e-Subscription—Offers unlimited access to our entire library of self-paced e-Learning courses.

*One year subscriptions are valid for one (1) year from date of activation with activation not to exceed 60 days from the invoice date and hold a maximum attainable value of $25,000 USD, ($12,500 USD for V-Subscriptions) based on the list price represented in the EMC Education Services online catalog. Subscription options do not apply to Content Management, RSA.

Subscription Pricing**			(USD)
CE-SUBCUS01	Customer Subscription	1 person, 1 year	$ 11,000
CE-SUBCUS02	Customer Subscription	1 person, 2 years	$ 20,000
CE-SUBCUSeV	V-Subscription	1 person, 1 year	$ 5,000
CE-SUBCUSELN	e-Subscription	1 person, 1 year	$ 2,000

Teams requiring additional skills development.

Training units are EMC Education currency. Upon purchase, TUs are deposited into your company's training account and made available for general consumption by your organization's employees. Valid for one year from date of purchase, pre-paid training units provide maximum flexibility to ensure your team's readiness.

Training Unit (TU) Pricing**		(USD)
CE-TU0001	1 Training Unit	$ 100
CE-TU0050	50 Training Units	$5,000
CE-TU0100	100 Training Units	$10,000
CE-TU0250	250 Training Units	$25,000

Unable to travel? Take advantage of onsite engagements.

We deliver our Instructor-Led training experience at your site or at the closest EMC facility. For more information on onsite training engagements please contact EMC Education Services or ask your EMC account representative for details.

** For local pricing in your region, please contact your EMC account representative. Pricing is subject to change without notice, please refer to http://education.emc.com/Terms for up-to-date information.

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COMPREHENSIVE SKILLS ROADMAP FOR THE ARCHITECT

Leverage 'open' curriculum training and certification focused on technology concepts and principles applicable to any vendor environment.

Cross-domain Cloud Architect (EMCCA) and information infrastructure-focused Data Center Architect (EMCDCA) training and certification tracks for organizations

- building infrastructures to provide cloud-based services for clients
- planning to implement private or hybrid cloud

These tracks have been specially developed to validate and brand planning and design skills of architects and IT consultants across the IT industry, including enterprises, service providers, as well as EMC and its business partners.

Cloud Architects

IT-as-a-Service

Cloud Environment

Build and evolve planning and design skills for IT-as-a-Service:

- Establish IT-as-a-Service
- Architect private and hybrid cloud
- Integrate technology and business
- Prepare for emerging technologies

EMC² PROVEN EXPERT PROFESSIONAL **EMCCAe**

Deliver virtualization and cloud designs based on business strategies encompassing all key technical domains.

Virtualized Infrastructure Page 20

Virtualized Environment

- Plan and design highly virtualized, cloud-ready infrastructure
- Cross-domain skills including compute, storage, networking, and application resources
- Build/evolve planning and design skills for virtualization with cloud considerations

EMC² PROVEN SPECIALIST PROFESSIONAL **EMCCA**

Storage Networking Page 16

Information Availability Page 17

Information Storage Security Page 19

Storage Service Management Page 18

Build your planning and design skills in information storage technology domains.

Classic Environment

- Reinforce your skills and expertise to address data center level requirements
- Storage infrastructure planning and design including cloud and virtualization considerations

Data Center Architects

EMC² PROVEN SPECIALIST PROFESSIONAL **EMCDCA**

Provide detailed designs for Information Storage technical domains to complement, expand, and complete the overall virtualization and cloud Infrastructure design.

Become a certified architect and lead the journey to the cloud

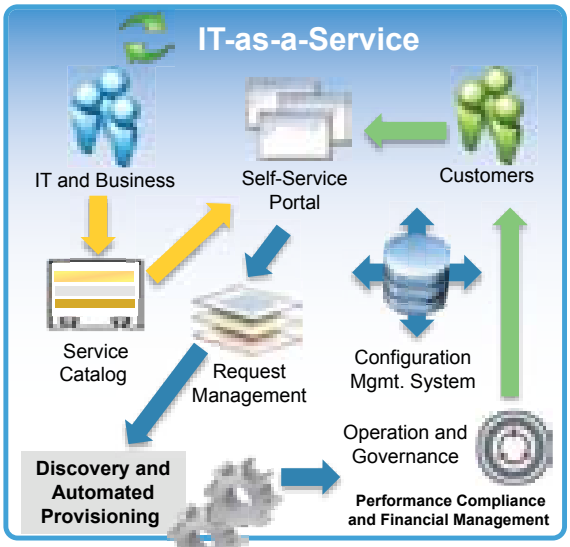
Develop and Validate Your Planning and Design Skills

IT-as-a-Service Expert-level Training and Certification

Validate and brand your capabilities to architect cloud-based solutions and deploy IT-as-a-Service. Improve business agility.

Extensive Service-oriented topics include:

- Cloud Offering Definition (IT and Business)
- Configuration Management
- Service Catalogs and Service Management
- Infrastructure Integration, Discovery, and Provisioning
- Operation and Governance – Performance, Financial, Management, Security
- Closed Loop Process Management

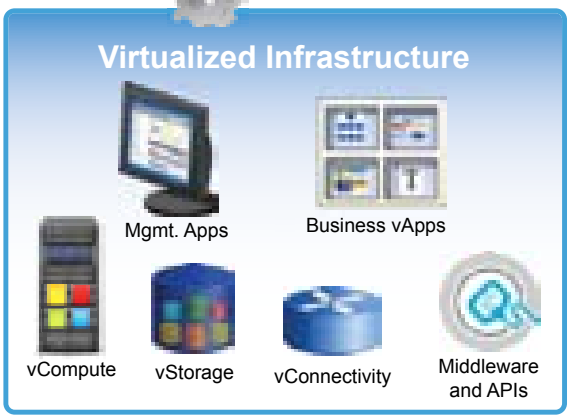


Virtualized Infrastructure Specialist-level Training and Certification

Validate and brand your ability to architect and design information infrastructure that leads to virtualized data center and cloud-enabled environments.

Extensive coverage of topics, including:

- Virtualized Data Center/Cloud Introduction
- Virtualized Data Center Architecture and Components
- Planning and Design for Virtualized Infrastructures
- Managing and Protecting Virtualized Environments
- Cloud Services
- Security, Governance, and Audit
- Planning and Design for Cloud Infrastructure Enablement



Lead the transformation from classic to virtualized data center by applying information infrastructure design concepts, principles, and best practices. Specialize in one or more of the domain specialties below.

Storage Networking

Establish a process-oriented approach to designing, deploying, and managing IT infrastructure leveraging a variety of storage networking technologies and virtualization concepts and principles. Gain a thorough exposure to Storage Networking requirement analysis, business value justification, and technology design considerations.

Page 16

Information Availability

Enhance your knowledge of planning, designing, and managing information availability solutions, including backup and recovery, business continuity, disaster recovery, and archiving. Gain a thorough exposure to information availability requirement analysis, business value justification, and technology design best practices.

Page 17

Information Storage Security

Develop and apply information storage security best practices holistically to help meet information security requirements set by businesses, including legal and regulatory standards. Expand your ability to securely incorporate storage infrastructures into the overall enterprise data center.

Page 19

Storage Service Management

Build the knowledge and skills required to meet and exceed expectations for storage service level to the business, while reducing cost, complexity, and risks. Architect, administer, and manage storage infrastructure as a service.

Page 18

BECOME A CERTIFIED EMC PROVEN PROFESSIONAL

Get started with the EMC Proven Professional Starter Kit!

EMC Information Storage Associate certification (EMCISA) is a key first step in your development as an EMC Proven Professional and is a valuable addition to your credentials as an IT professional.

Through EMCISA certification, you will apply concepts, principles, and deployment considerations to define, evaluate, and drive key information storage and management decisions in many IT scenarios.

Develop an understanding of a breadth of information storage technologies found in today's virtualized data center environments, including:

- Storage Systems
- Storage Networking Technologies and Virtualization
- Backup and Recovery, Business Continuity, and Disaster Recovery
- Storage Security and Management

TOP 10 ACTIVITIES OF A CERTIFIED EMCISA

Typical activities performed by an EMCISA	How does the activity impact the business?
1. Select the best storage networking technology	Depending on your choice of storage networking technology, you may enhance or degrade your company's existing network performance and availability.
2. Set optimal storage networking design parameters	Improper or incorrect parameter settings will lead to; • Information security and/or availability issues • Increase in data storage management overhead
3. Choose the optimal data protection techniques	Optimal choice of data protection can drive further cost savings and better utilization of data storage.
4. Determine business continuity objectives for varying computing environments	Defining the Business Continuity (BC) and Disaster Recovery (DR) objectives is critical for designing and implementing cost-effective BC/DR solutions.
5. Choose appropriate backup topologies and target devices	Broadening choice of topologies and devices enables further cost savings and backup performance enhancements as the amount of data and need of regulatory compliance continues to grow.
6. Apply different backup and recovery techniques	Prolong or enhance the utilization of existing backup topologies, target devices, and storage capacities by combining different techniques.
7. Apply a variety of local and remote data replication techniques	There are many ways to replicate data both locally and remotely. Choosing the optimal combination of replication technologies will help; 1. Meet the defined BC/DR objectives 2. Meet the performance and availability expectations 3. Meet the budget expectations
8. Identify and address single point of failure	Avoids unplanned business outage, a foundation for achieving high-availability.
9. Identify storage security threats and set appropriate mechanisms in place	Identifying the security threats from the storage and storage networking perspectives will help strengthen the overall security plan and strategy typically driven from applications, networking, and user access perspectives.
10. Set, monitor, and report key information storage management parameters	With help of a process-oriented approach, properly set management parameters that will lead to automation and establishment of Storage as a Service model.

TAKE THE FIRST STEP! GET THE STARTER KIT!

EMC Proven Professional Starter Kit provides all the components you need to become certified as an EMCISA. This convenient package (worth $1800) is being offered at $500 (72% discount). The package includes:

- Get Proven Guide
- Information Storage and Management Video ILT
- EMC Proven Professional Exam Voucher
- Information Storage and Management Book Discount Code

Go to http://education.emc.com/StarterKit

Information Storage and Management

Benefits storage architects, administrators, or managers; CIOs or project managers; or recent additions to information and storage management teams.

You will learn to make informed decisions across multiple technologies involving SAN, NAS, CAS, IP-SAN, Backup and Recovery, Business Continuity, Security, and Virtualization.

Prepare for your Associate-Level Certification (EMCISA).

Certification Alignment

Expert	N/A
Specialist	All Specialist Level Exams
Associate	E20-001 Exam

Associate Course

(5 Days)

Information Storage and Management

Information Storage and Management (ISM) is the only course of its kind to fill the knowledge gap in understanding varied components of modern information storage infrastructure. It provides a strong understanding of information storage technologies which prepares you to learn advanced concepts, technologies and also enable you to make more informed decisions in an increasingly complex IT environment. You will learn about the architectures, features, and benefits of Intelligent Storage systems; storage networking technologies such as FC-SAN, NAS, and IP-SAN; long-term archiving solution—CAS; business continuity solutions such as backup and replication, the increasingly critical area of information security, and the emerging field of storage virtualization including storage resource management. The technologies described in the course are illustrated and reinforced with EMC product examples. Realistic case studies enable the participant to design the most appropriate solution for given sets of criteria.

OR

OR receive the same content in the following self-paced e-Learning

(20 Hrs) (Total)

Course Topics

Storage Systems
- Describe the challenges in information storage and management
- Describe the core elements in a data center infrastructure
- List and describe the components of storage system environment
- Describe RAID and its various levels
- Describe features and implementation of intelligent storage systems

Storage Networking Technologies and Virtualization

Describe the components, connectivity, and management of:
  - Direct Attached Storage (DAS)
  - FC and IP Storage Area Networks (SAN)
  - Network-Attached Storage (NAS)
  - Content-Addressed Storage (CAS)
- Compare the benefits and challenges of each of the storage models
- Describe storage virtualization technologies

Business Continuity
- Discuss the concept of information availability and its measurement
- Describe the backup/recovery purposes and considerations
- Discuss architecture and different backup/recovery topologies
- Describe local replication technologies and their operation
- Describe remote replication technologies and their operation

Storage Security and Management
- Define information security
- List the critical security attributes for information systems
- Define storage security domains
- List and analyze the common threats in each domain
- Identify key parameters and components to monitor in a storage infrastructure
- List key management activities with examples
- Define storage management standards and initiative

Instructor-Led Training Video-ILT (VILT) e-Learning

For more information on delivery modes, see page 10

Purchase Options

Information Storage and Management
CE-VALPAKSTF $2,700 or (27 TU)
Includes one Instructor-Led course.

Information Storage and Management eValuePak
CE-eVALPAKSTF $800 or (8 TU)
Includes four self-paced e-Learning courses.

Proven Professional Starter Kit
CE-EMCPRoSTART $500 or (5 TU)
Includes one Video-ILT, one exam voucher and more. **See full details on Page 15**

For more information on purchase options, see page 11

Storage Networking

Benefits any storage professional who plans, designs, deploys, and manages an information storage infrastructure.

You will learn to capture and analyze business requirements, design solutions, and implement plans in a process-oriented workshop using real-world case studies.

Prepare for your Data Center Architect Certification.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Expert	N/A
Specialist	E20-016
Associate	E20-001 Exam See Page 15

Courses

(5 Days)
(50 TU)

Storage Networking Design
Storage Networking Design course covers a range of storage networking technologies, processes, and best practices for planning, architecting, and deploying storage networking solutions—including within a virtualized environment. This course builds on the technology concepts and principles learned in the Information Storage and Management (ISM) course and enables participants to apply their knowledge to real-world scenarios. Lectures and workshop style case studies provide a thorough exposure to Storage Networking requirement analysis, business value justification, and technology design considerations. It also provides an overview on processes and practices for Storage Networking project implementation and testing.

Course Objectives

Section 1: Analysis and Planning for Architecting Storage Networking Solution
- Requirement and business value analysis
- Gathering requirements by classifying applications
- Case studies on business value analysis

Section 2: Storage Network Design Considerations
- Fibre Channel Storage Area Network
- Network Attached Storage
- Hybrid (iSCSI, FCIP, FCoE) Storage Networking technologies
- Design for storage virtualization and Cloud Computing
- Case studies on designing FC SAN and NAS solutions

Section 3: Host and Storage System Design Considerations
- Design considerations and best practices for Host system
- Design considerations and best practices for Storage system
- Storage design for Database (Oracle) and Email (MS Exchange 2010) applications
- Case studies on designing storage solution for MS Exchange 2010 environment

Section 4: Implementation Planning and Test Procedure for a Storage Networking Project
- Analysis and Planning for Storage Networking Project Implementation
- Test Procedure for a Storage Networking Project

Instructor-Led Training

For more information on delivery modes, see page 10

Purchase Options

EMCDCA Storage Networking Design and Mgmt
CE-EMCDCASNDM $5,000 or (50 TU)
Includes one Instructor-Led course.

For more information on purchase options, see page 11

Information Availability

Benefits storage architects, administrators, or managers; CIOs or project managers; or recent additions to information and storage management teams.

You will learn to make informed decisions across multiple technologies involving SAN, NAS, CAS, IP-SAN, Backup and Recovery, Business Continuity, Security, and Virtualization.

Prepare for your Data Center Architect Certification.

Certification Alignment

Expert	N/A
Specialist	E20-017
Associate	E20-001 Exam See Page 15

Courses

Information Availability Design
(5 Days)
(50 TU)

Information Availability Design course provides a comprehensive learning experience on all aspects of planning, designing, and deploying Information Availability solutions. In addition to covering business continuity options such as Backup, Local and Remote replication, this course also covers compliance requirements and design of data archiving solutions to meet those requirements. This course builds on the technology concepts and principles learned in the Information Storage and Management course and enables participants to apply their knowledge to real-world scenarios. Lectures and workshop style case studies provide a thorough exposure to the technology components, design considerations, and best practices on various aspects of Information Availability.

Course Topics

Section 1: Analysis and Establishing of Information Availability
- Introduction to Information Availability and business value analysis
- Establishing Information Availability
- Case study on data classification and Information Availability metrics

Section 2: Designing Backup/Recovery Solutions
- Backup technology overview
- Backup design considerations
- Backup in a virtualized environment
- Backup management tools
- Case study on designing and deploying backup and recovery solutions

Section 3: Designing Replication Solution
- Planning for replication
- Local replication solution design
- Remote replication solution design
- Advanced remote replication technologies
- Replication in NAS environment
- Replication of virtual machines
- Case studies on designing and deploying replication solutions

Section 4: Designing Data Archiving Solutions
- Data archiving technologies and compliance
- Archiving design considerations

Instructor-Led Training

For more information on delivery modes, see page 10

Purchase Options

EMCDCA Information Availability Design and Mgmt
CE-EMCDCAIADM $5,000 or (50 TU)
Includes one Instructor-Led course.

For more information on purchase options, see page 11

Storage Service Management

Benefits IT professionals and managers who focus on managing storage within the ITIL best practices framework.

Learn how to apply ITIL best practices to the management of storage as a service in your environment for processes within the Service Design, Service Transition, and Service Operation phases of ITIL. Gain perspective on challenges and opportunities when planning the tiering of storage services and understand key factors and best practices for design of secure information storage solutions.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Expert	N/A
Specialist	E20-022*
Associate	E20-001 Exam See Page 15

*Coming Early 2011

Courses	Course Objectives
Storage Service Management Design (5 Days) This course focuses on storage as a service, combining ITIL processes with EMC best practices to enable tight integration with the business and streamlined day-to-day operations to provide real benefits, reduced costs and risk when deploying solutions, and increased quality of services and customer satisfaction. It provides a roadmap to standardize the provisioning and delivery of storage services through a quality management approach that maximizes investment for classic, virtualized, and cloud environments. Lectures and workshop style case studies provide participants with opportunity to apply the learning to real world situations and gain insight into the development of processes, policies, and measurements to manage and support storage service delivery.	• Describe the benefits of process-based storage service management to an IT organization, its Customers, and the overall business • List storage service management best practices for the major ITIL processes, including the policies, activities, and measurements • Describe three perspectives of process responsibility that support Storage Service Management, and how they interact to deliver high quality storage service levels • Apply best practices when managing storage as a service, demonstrating a clear understanding of policies, activities, measurements, and how information flows across the three perspectives of process responsibility • Apply training and supporting collateral to contribute to the introduction or improvement of storage service levels within an IT organization
The Instructor-Led Course above is supported by the following prerequisites:	
ITIL V3 Foundations Certification Course (3 Days) Concepts, terms, definitions, objectives, relationships, and benefits within the core ITIL V3 lifecycle framework; includes foundations exam	• Describe Service Management as a practice and the service lifecycle • Explain key principles and models as well as generic concepts • Describe ITIL V3 processes, roles, and functions • Describe ITIL V3 technology and architecture • Explain the ITIL V3 qualification scheme and certification program • Prepare for foundations exam with practice tests
Information Security Solutions Design Concepts V4 (1.5 Hrs) Factors critical in the design process for secure SAN and NAS solutions; data to gather, analyze and interpret; best practices for design and validation of storage security solutions	• Describe technical data to gather concerning a business's information security needs and ways to interpret it • List ways to gather this information and tools that can be used to control and manage storage security • Articulate best practices for configuring and deploying storage security • Describe design pitfalls and overall risks associated with storage security • Identify how security events are incorporated into audit trails • Explain the role of data loss prevention in an overall security program

Instructor-Led Training Video-ILT (VILT) e-Learning

For more information on delivery modes, see page 10

Purchase Options

ITIL ValuePak
CE-VALPAKITIL $5,000 or (50 TU)
Includes one Instructor-Led, one Video-ILT and one e-Learning course.

ITIL V3 Foundations Certification Course
CE-VILTITILF $1,000 or (10 TU)
Includes one Video-ILT.

Information Storage Security

This curriculum focuses on the intersection of information security, data storage, and networking to enable you to holistically apply security best practices in the context of business strategy, regulatory compliance, organizational structure and security policy, people and skills, processes, and technology.

It builds your knowledge and develops your skills to successfully design, implement, monitor and manage information storage security solutions to meet business requirements.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Expert	N/A
Specialist	E20-021*
Associate	E20-001 Exam See Page 15

*Coming Early 2011

Course Objectives

Information Storage Security Design
(5 Days)

This course builds knowledge and skills required to successfully architect, design, implement, monitor, and maintain information storage security solutions to meet the needs of a business. It details a comprehensive, holistic, process-based approach that integrates business and technical factors to consider in the design of information storage security solutions to enhance their acceptability and business value. The course encompasses business strategy and its key criteria and perspectives, regulatory compliance, technical criteria, best practices, organizational structure, processes, people skills, and security posture. Included is a discussion of information security challenges and solutions in virtualized and cloud environments. Workshop style case studies at each design stage provide participants with an opportunity to apply their learning to real world situations.

- Identify various regulations, legislation and standards that affect a customer's information infrastructure and the customer's security issues
- Explain the role of an enterprise security policy, and its critical components
- Describe the importance of a security development lifecycle on the creation of secure products and the effect on operational security
- Explain how Security Configuration guides can be used to understand an organization's security problems
- Articulate the critical design decisions that support a secure storage environment
- List various implementation strategies for securely integrating storage products into a storage ecosystem.
- Explain the role of information storage security within virtualized environments
- Articulate how to maximize information storage security with Cloud computing
- Describe the role of secure logging in security auditing and SIEM
- Define vulnerability management and the process of reporting weaknesses
- List the key areas of data loss prevention
- List common characteristics of digital forensics when working with storage subsystems

The Instructor-Led Course above is supported by the following e-Learning prerequisite:

Assessing Information Security Risk
(1.5 Hrs)

Information-centric security, risk management and their application to the analytics of information assets, vulnerability assessments as a way to determine the most critical IT components to maintain confidentiality, integrity and availability of information

- Explain how information-centric security enhances the process of managing information through its lifecycle
- List the elements of risk management
- Describe the different classes of controls and how they work to mitigate risk
- Explain the role of assessing vulnerabilities in determining risk

RSA Authentication, Authorization, and Key Management
(1.5 Hrs)

Authentication and authorization, concepts in practice: RSA authentication products, key management, concepts in practice: RSA key manager

- List business drivers for identity and access management (I&AM)
- Explain the differences between authorization and authentication
- Explain the benefits of federated identity
- Describe the problems associated with incorporating encryption into an enterprise

Network Security and the ESRS Gateway
(1 Hr)

ESRS installation, connecting to EMC, EMC backend Environment, EMC Call Home Process flow, EMC Remote Access Process, Symmetrix Service Credentials

- Explain how the ESRS gateway utilizes network security mechanisms like SSL and digital certificates to secure remote access communications
- Describe the network protocols and services used to implement the gateway solution
- Describe the use of Service Credentials for the Symmetrix storage array

Security Overview for EMC Products
(3 Hrs)

Securing the infrastructure: instantiating the policy, security feature/functions by product category (tiered storage, switch fabric, NAS, BURA, replication, virtualization, and storage resource management)

- Articulate the major security functional areas covered in the EMC product security policy
- Describe the security feature/functions of EMC's major product lines
- Cite examples of how security features benefit a business

Information Security Solutions Design Concepts V4
(1.5 Hrs)

Factors critical in the design process for secure SAN and NAS solutions; data to gather, analyze and interpret; best practices for design and validation of storage security solutions

- Describe technical data to gather concerning a business's information security needs and ways to interpret it
- List ways to gather this information and tools that can be used to control and manage storage security
- Articulate best practices for configuring and deploying storage security
- Describe design pitfalls and overall risks associated with storage security
- Identify how security events are incorporated into audit trails
- Explain the role of data loss prevention in an overall security program

Cloud Computing Security Overview
(1 Hr)

Introduction to cloud computing, cloud infrastructure, security concerns and challenges of cloud

- Define and understand cloud computing, its types, benefits, and services
- Discuss cloud infrastructure and its components
- Describe security challenges and concerns with cloud computing

Instructor-Led Training Online ILT e-Learning

For more information on delivery modes, see page 10

Purchase Options

Information Storage Security Design and Management ValuePak
CE-VALPAKDSS $5,000 or (50 TU)
Includes one Instructor-Led or one Online ILT and six self-paced e-Learning courses.

Virtualized Infrastructure

With multifold growth of digital information and emergence of technologies to manage the information growth, IT professionals are challenged to choose the right technologies, and designing optimal business infrastructures. Not only are IT professionals and Service Providers required to work with multiple technologies, they are also required to have the knowledge to design information infrastructures and enable cloud services environments.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Expert	N/A
Specialist	E20-018*
Associate	E20-001 Exam See Page 15

*Coming Early 2011

Courses

Course Objectives

(5 Days)
(50 TU)

Virtualized Data Center and Cloud Infrastructure
This course will cover in-depth details and considerations for planning, designing, and migrating to Virtualized Data Centers (VDC) and Cloud environments. This course will enable data center technology professionals to design VDC and Cloud infrastructures maintaining the most robust and elastic compute, network, and storage environments. The course will be premised on an 'open' architecture focusing on core components, principles, and technologies constituting both VDC and Cloud deployments utilizing best-of-breed EMC examples. This training is designed to be at the forefront of the changing IT landscape as traditional physical data centers evolve and morph into virtual entities and cloud environments.

- Describe and differentiate between virtualization and cloud concepts and capabilities including core VDC components and cloud elements
- Describe the overall management strategy of a VDC or Cloud environment
- Incorporate and list the critical aspects of cloud services as elements of cloud infrastructure planning
- Describe how business process and service requirements will impact VDC and cloud planning and design
- Identify key governance, audit and compliance considerations

Instructor-Led Training

For more information on delivery modes, see page 10

Purchase Options

Virtualized Infrastructure ValuePak
CE-VALPAKVI $5,000 or (50 TU)
Includes one Instructor-Led course.

ITIL Certification and Best Practices

Benefits IT professionals and managers responsible for implementing ITIL best practices.

Learn the basics of Service Management and ITIL, become certified in ITIL foundations and intermediate lifecycle and capability streams, and understand how EMC Ionix products enable processes in the ITIL framework.

Certification Alignment

The ITIL (V3) Foundations Certification Courses include the ITIL certification exam.

Accredited Training Provider
EXIN Advanced Certificates

Foundation Certification Courses	Course Objectives
ITIL V3 Foundations Certification Course (3 Days) Concepts, terms, definitions, objectives, relationships, and benefits within the core ITIL V3 lifecycle framework; includes foundations exam	• Describe Service Management as a practice and the service lifecycle • Explain key principles and models as well as generic concepts • Describe ITIL V3 processes, roles, and functions • Describe ITIL V3 technology and architecture • Explain the ITIL V3 qualification scheme and certification program • Prepare for foundations exam with practice tests
ITIL v3 Foundations Certification Course w/Polestar Simulation (3 Days) Interweaves ITIL V3 foundations certification lecture with an interactive experiential simulation of a 'real-life' Business/IT scenario; goes beyond conceptual understanding of ITIL V3 to a solid understanding of benefits of ITIL V3 to IT and business; includes foundations exam	• Describe Service Management as a practice and the service lifecycle • Explain key principles and models as well as generic concepts • Describe ITIL V3 processes, roles, and functions • Discuss ITIL V3 technology and architecture • Explain the ITIL V3 qualification scheme and certification program • Prepare for foundations exam with practice tests

Additional Courses	Course Objectives
ITIL V2 to V3 Foundations Bridge Course (1 Day) Assumes you are already ITIL V2 foundations certified; concepts, terms, definitions, objectives, relationships, and benefits within the core ITIL V3 Service lifecycle framework that have changed or been added since ITIL V2; includes bridge exam	• Describe Service Management as a practice and the service lifecycle • List new and changed ITIL processes, roles and functions • Discuss ITIL V3 technology and architecture • Explain the ITIL V3 qualification scheme and certification program • Prepare for V3 bridge exam with practice tests
ITIL V3 Executive Awareness (4 Hrs) High-level executive awareness of benefits and challenges when implementing ITIL; key concepts, terms, definitions, objectives, relationships and benefits within the core ITIL V3 service lifecycle framework	• Discuss ITIL and IT Service Management • Describe the benefits of ITIL and a service management philosophy • Explain the five stages of the ITIL V3 service lifecycle • Relate overall criteria for a successful ITIL implementation
ITIL V3 One-Day Overview (1 Day) Basic concepts and benefits of ITIL; key concepts, terms, definitions, objectives, relationships, and benefits within the core ITIL V3 Service lifecycle framework	• List major differences between ITIL V2 and V3 • Describe five ITIL V3 Service lifecycle stages • Identify key processes and functions in each ITIL V3 Service lifecycle stage • Discuss considerations for implementing ITIL
ITIL v3 Polestar Simulation (1 Day) Interactive experiential simulation of a 'real-life' Business/IT scenario to understand the need for and the benefits of IT processes to IT and the business; brief coverage of key ITIL processes and functions	• Discuss the purpose of ITIL and its business benefits • Identify the phases of the IT Service Management lifecycle • Identify key ITIL V3 processes relating to the Polestar simulation • Describe possible approaches to ITIL implementation
Intermediate Lifecycle and Capability Courses (5 Days) Expands foundations knowledge; in-depth focus on specific clusters of ITIL V3 processes or on a specific lifecycle stage; role-based hands-on experience; includes intermediate exams	• Describe and discuss ITIL V3 best practices, technology and implementation considerations, challenges, critical success factors and risks for a Service Capability cluster or a Service lifecycle stage
Enabling ITIL with EMC Ionix and Supporting Technologies (2 Hrs) High-level introduction to how EMC Ionix products support technology domains; review ITIL process objectives & map EMC Ionix products to those they support; understand EMC Ionix value proposition	• Summarize features of EMC Ionix products that support ITIL processes • Articulate how to position EMC Ionix and supporting products to align with an ITIL strategy • Discuss the meaning of "certification" and "compliance" endorsements when evaluating products to support specific ITIL processes

Instructor-Led Training

Purchase Options

ITIL V3 Foundations Certification Course
CE-VILTITILF $1,000 or (10 TU)
Includes one Video-ILT.

If you are interested in scheduling an Instructor-Led class or would like our qualified Instructor to deliver this course at your company's location, or EMC's closest training facility, please contact your EMC Sales Representative or a Training Registrar at 1-888-EMC-TRNG.

For more information on purchase options, see page 11

Realize the Benefits of Unified Storage and EMC Unisphere

The move toward a virtual data center has brought with it ever-growing storage requirements.

EMC Unified Storage and Unisphere provide a simple, integrated experience for managing both EMC CLARiiON and EMC Celerra storage systems in physical and virtual environments. Leveraging EMC Unisphere's advanced technology features ensures that your storage environment is optimized for performance at the lowest possible cost.

Simplify SAN Deployment and Management

CLARiiON Business Continuity Learning Path (Unisphere and FLARE 30.x)

Deploy and manage CLARiiON SAN environments using Unisphere and functionalities introduced in FLARE 30 release. Prepare for your EMC Proven Professional certification.

You will learn how to:

- Configure SAN switches and CLARiiON family of storage
- Integrate Windows, Linux, Unix servers using PowerPath
- Configure and perform local and remote data replication operations using SnapView, MirrorView, and SAN copy
- Install EMC SAN Copy on a supported CLARiiON array
- Manage and monitor SAN Copy sessions
- Configure CLARiiON to support the use of layered applications
- Apply best practices for integrating Microsoft Exchange and CLARiiON
- Implement Microsoft Exchange replication solutions using EMC Replication Manager
- Apply best practices for integrating SQL Server and CLARiiON
- Configure VMware ESX /EXSI Server base connectivity to a CLARiiON for a vSphere Server and Guest VMs

For more details, go to page 29

CLARiiON FLARE 30 and Unisphere Differences Course

This Online Instructor-led Training course provides a broad overview of the new functionality available in the CLARiiON FLARE 30 and Unisphere Manager release.

You will learn how to:

- manage a CLARiiON environment using the Unisphere interface
- integrate Unisphere Management with Celerra
- create Storage Objects using the Unisphere interface
- define FAST Cache operations and configuration limits
- ...and more

Lab exercises include

- Creating RAID Groups and Storage Pools
- Creating FLARE LUNs and Pool LUNs
- ...and more.

For more details, go to page 29

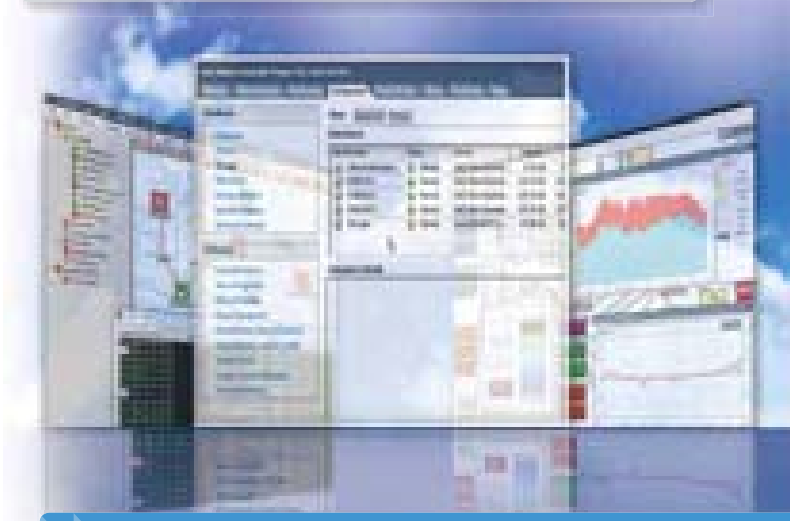
Staying with Navisphere Manager and CLARiiON (FLARE 29.x)?

Our CLARiiON Management ValuePak provides the training you need to get the most out of your CLARiiON SAN environment using Navisphere Manager running FLARE 29.x. This cost-effective ValuePak includes one Instructor-Led course and four self-paced e-Learning courses.

You will learn:

- how SnapView makes LUN copies
- how to configure Snapshots
- how SnapView make Clones of LUNs
- how to explain the operation of the Clone Private LUN?

CLARiiON (FLARE 29.x) BC Video ValuePak
CE-VIDVPKCBC $3,000 or (30 TU)
Includes one Video-ILT* and five self-paced e-Learning courses.



Simplify Unified Storage (SAN/NAS)

Celerra Unified Storage

Deploy and manage CLARiiON SAN and Celerra NAS environments using

You will learn how to:

- Configure and manage SAN switches, unified storage platforms, servers, and PowerPath for block level access
- Integrate open systems hosts into CLARiiON environment
- Implement Data Mover failover
- Configure Snapshots
- Use Navisphere Manager and components in a practical environment

EMC Proven Professional Impact

Value of EMC Proven Professional training and certification realized by EMC Customers, Partners, and Industry Professionals.

For more information, visit http://education.emc.com/ProvenImpact

Simplify NAS Deployment and Management

Celerra DART 6.0 and Unisphere Differences Course

This Online Instructor-led Training course provides lecture and lab exercises to highlight Celerra DART 6.0 features.

You will learn how to:

- manage a Celerra environment using the Unisphere interface
- integrate Unisphere Management with CLARiiON
- monitor SNMPv3 using new server_snmpd command
- implement Control Station Auditing enhancements
- ...and more

Lab exercises include

- Navigating the Unisphere GUI
- Configuring SNMPv3 monitoring
- ...and more

Details to be announced

NAS Celerra Learning Path (Unisphere and DART 6.x)

Deploy and manage Celerra NAS environments using Unisphere and functionalities introduced in DART 6.0 release. Prepare for your EMC Proven Professional certification.

You will learn how to:

- Configure Windows (CIFS) and Unix (NFS) based file systems using Unisphere, considering file system quota and other attributes
- Implement Virtual Data Movers, SnapSure, and Celerra Replicator
- Perform Data Mover failover to ensure high availability
- Define methodologies of performing backups
- Configure a NAS SRDF environment in conjunction with TimeFinder/FS using a Celerra with a Symmetrix back-end
- Configure a Microsoft Windows DR plan using EMC Celerra VDMs and Replicator
- Configure Celerra virtual provisioning
- Install, configure, and manage VMware SRM product using EMC Celerra Replicator replication technology
- Diagnose and troubleshoot NAS performance issues related to poor file system layout, network problems, and EMC features

For more details, go to page 24

Deployment and Management

Learning Path

Unisphere and functionalities introduced in FLARE 30/ DART 6.0 release.

- Configure and manage Celerra using CIFS, NFS, and iSCSI protocols
- Configure Celerra Networking features
- Implement Virtual Data Movers
- Implement Data Mover failover and basic network configurations
- Export Celerra file systems for NFS and CIFS access

For more details, go to pages 26-27

Staying with Celerra Manager and Celerra (DART 5.x)?

Our Celerra Video ValuePak provides the training you need to get the most out of your Celerra NAS environment using Celerra Manager 5.x. This cost-effective ValuePak includes two Video Instructor-led Training courses and six self-paced e-Learning courses.

You will learn:

- how to implement Data Mover failover and basic network configurations
- how to configure and manage Celerra file systems
- how to implement Celerra file systems for NFS and CIFS access
- how to configure Celerra Networking features

Celerra (DART 5.x) Video ValuePak
CE-VIDVPKNS $3,000 or (30 TU)
Includes one Video-ILT and six self-paced e-Learning courses.

Network-Attached Storage (NAS Celerra) Learning Path

Benefits any storage professional who deploys and manages network-attached storage (NAS) solutions in Microsoft Windows, UNIX, or iSCSI environments using EMC Celerra.

You will learn to configure and manage Celerra using CIFS, NFS, and iSCSI protocols; and consider availability, security, and NAS data replication.

Prepare for your Specialist-level Storage Administrator NAS Certification.

Certification Alignment

Expert	N/A
Specialist	E20-538 Exam
Associate	E20-001 Exam See Page 15

Specialist Courses	Course Objectives
NAS Operations and Management with Celerra (5 Days) Unisphere, Data Mover Failover, Basic Network configuration, configuring file systems, exporting file systems to UNIX, Usermapper, configuring CIFS, virtual data movers, managing permissions on CIFS only environment, authentication, file systems quotas, CIFS features, networking features, Celerra and ISCSI, Snapsure, Celerra Replicator, Celerra CLI	• Implement Data Mover failover and basic network configurations • Configure and manage Celerra file systems • Export Celerra file systems for NFS and CIFS access • Implement Virtual Data Movers, file system quotas on the Celerra, CIFS features, Celerra in an iSCSI environment, SnapSure, and Celerra Replicator • Configure Celerra Networking features
The Instructor-Led Course above is supported by the following e-Learning prerequisites:	
Celerra Platforms Architectural Overview (2 Hrs) Celerra overview, Celerra series component connectivity, NX4, NS-120, NS-480, and NS-G2 systems, NS-960 and NS-G8 systems, VG2 and VG8 systems, appendix for legacy Celerra platforms	• List the main components of a Celerra • Describe basic Celerra operations • Identify component connections • List storage capacities for the Celerra Platforms
Celerra AntiVirus Agent (1 Hr) What is a virus and how it infects a system, CAVA concept and functionality, components and scanning methodology, features and considerations, tools and utilities	• Describe the Celerra AntiVirus Agent purpose, functionality, and methodology • Describe the CAVA components and concepts, tools, and utilities
NAS Backup Concepts (2 Hrs) Backup terminology, tape as a backup medium, backup evolution, NAS backup methodologies, NDMP backup	• Describe the backup process using industry-recognized terminology • List the various challenges faced in the Industry surrounding backups • Define the various methodologies of performing backup • Explain the role of Network Data Management Protocol (NDMP)
CLARiiON Foundations (2 Hrs) CLARiiON models and components, management options, features	• Identify supported CLARiiON RAID Types • Identify CLARiiON data integrity and availability features • Identify CLARiiON management options and storage provisioning objects
Connectrix Foundations (1 Hr) Storage connectivity overview, SAN architecture and components, SAN fabric topologies, EMC's Connectrix range, securing a SAN, SAN management tools, IP-based SAN extension, SAN technical positioning	• Components, services, and FC Protocol used in a storage area network • Identify fabric topologies and different types of Connectrix Products • Explain how to secure a SAN using series-specific solutions
Celerra Foundations (2 Hrs) Celerra architecture, operations, EMC Celerra platforms, Celerra benefits and requirements	• Identify the concepts, architecture, terminology, and environmental aspects of NAS using the Celerra • Describe Celerra features, functions, and management software offerings • Discuss different Celerra business continuity options and backup solutions

Instructor-Led Training Video-ILT (VILT) e-Learning

For more information on delivery modes, see page 10

Purchase Options

Celerra ValuePak
CE-VALPAKNS $5,000 or (50 TU)
Includes one Instructor-Led course and six self-paced e-Learning courses.

Celerra Video ValuePak*
CE-VIDVPKCUF $3,000 or (30 TU)
Includes one Video-ILT and six self-paced e-Learning courses.
*Available late February 2011

For more information on purchase options, see page 11

Network-Attached Storage (NAS Celerra) Learning Path (continued)

The expert courses benefit specialist-level professionals requiring additional knowledge and experience to manage and troubleshoot CIFS, NFS, and multi-protocol environments, including data backup and replication.

Expert Courses	Course Objectives
Celerra MPFS Solution Design and Implementation Workshop (4 Days) (40 TU) MPFS architectural basics and applications, Celerra MPFS performance characterization, iSCSI overview, Fibre Channel overview, implementing Celerra MPFS over iSCSI, Celerra MPFS best practices applied, solution configuration tool, configuration management tool, testing and assessing Celerra MPFS, MPFS basic troubleshooting, high performance file system assessment deployment, using the Celerra MPFS service kits and qualifier, EMC Celerra MPFS and media applications business	• Discuss and understand the integration of solution components into production environments • Describe the basic iSCSI and Fibre Channel architecture and technology involved with an MPFS implementation • Successfully configure MPFS for iSCSI with the CLARiiON combo card, with a Cisco MDS switch, and for Fibre Channel with a Fibre Channel switch • Understand and discuss the components and scope of the EMC Technology Solutions service kits for MPFS
Celerra Multi-Path File System Overview (1 Hr) (2 TU) Celerra MPFS technology overview	• Describe the protocols used to communicate between client and server • Explain and discuss the MPFS with iSCSI/FC concept and architecture • Explain benefits of the Celerra MPFS with iSCSI solution for production environments • Describe the functionality and usage of the Celerra MPFS Configuration Manager
Celerra Replicator - CIFS Disaster Recovery (5 Days) (50 TU) CIFS Disaster Recovery Introduction, CIFS Overview, Usermapper, Virtual Data Mover Management, Celerra Replicator V1, Celerra Replicator V1 to V2 Coversion, Celerra Replicator V2	• Describe CIFS Replication with DR • Plan for Disaster Recovery in a Microsoft Windows environment • Configure a Microsoft Windows DR plan using EMC Celerra VDMs and Replicator • Implement a Microsoft Windows DR plan using EMC Celerra VDMs and Replicator
Celerra Replicator Concepts (1 Hr) (2 TU) Local replication, remote location, failover and failback, configuration, theory of operation, business solutions	• Describe the features and functions of Celerra IP Replicator • Understand the solution benefits of a Celerra Replicator implementation • Describe a typical business solution using Celerra Replicator

Additional Courses	Course Objectives
VMware vSphere Integration with Celerra (5 Days) (50 TU) VMware vSphere 4 integration with NAS Storage, using NFS protocol with VMware, using iSCSI protocol with VMware, Celerra business continuity applications, VMware SRM integration with Celerra Replicator	• Prepare EMC Celerra unified storage for VMware ESX 4 host connectivity • Provision Celerra datastore using Celerra Plug-ins • Configure Celerra virtual provisioning • Install, configure, and manage VMware SRM product using EMC Celerra Replicator replication technology
NAS Performance Workshop (4 Days) (40 TU) Performance overview, CLARiiON array considerations, host considerations, network environment considerations, workload considerations, EMC features considerations	• Use IOMeter, Navisphere Manager, Navisphere Analyzer, and Celerra Manager to diagnose and troubleshoot NAS performance issues • Explain the operation of Automated Volume Management (AVM) • Diagnose and troubleshoot NAS performance issues related to poor file system layout, network problems, and EMC features
Upper Layer Network Operations (5 Days) Information and support services, file access and transfer protocols, monitoring and messaging protocol	• Build, configure, and observe key client/server-based network services in a distributed computing environment • Build a simple CIFS environment and observe its operations • Evaluate network services and data access operations • Construct a simple NFS environment and observe its operations
Celerra NDMP Backup Solutions Workshop (4 Days) (40 TU) Backup overview, backup solutions, NDMP theory of operations, Celerra with EMC backup environment, tape unit configuration	• Successfully configure EMC Celerra systems for NDMP backup participation using both a local and a three-way implementation • Successfully configure an EMC Disk Library (EDL) to be the target for a system backup • Successfully configure and use the Celerra Virtual Tape Library (VTL)
EMC FMA Planning and Implementation (2 Days) (20 TU) Archival sources and destinations, FMA planning and design, FMA installation and initial configuration, FMA implementation and troubleshooting	• Describe how FMA policies work and are created • Configure FMA with file servers and NAS repositories • Identify FMA limitations and performance considerations • Plan for an FMA DR solution • Identify key log files and scripts available for troubleshooting
EMC FMA Architecture and Management (4 Hrs) (3 TU) FMA and Tiered Storage Management, Configuring File Servers with the FMA, FMA and Fault Tolerance, File Level Archiving and Recall, Orphan files and Stub file recovery, Security, LDAP, RADIUS, and TACACS+ Support, Alerts, Reports, & Monitoring, Troubleshooting, Celerra Replicator Benefits	• Explain FMA hardware and software architecture • Define orphan files, stub files, and delayed stubbing • Explain FMA security • Describe user authentication • Define FMA alerts, reporting, and monitoring options
EMC File Virtualization Appliance Architecture and Overview (1.5 Hrs) (2 TU) FVA introduction, theory of operations, and features and deployment	• Describe the Active Band technology • Describe the functionality of FVA and its theory of operation • Identify potential FVA deployment solutions

Celerra Unified Storage Learning Path

Benefits any storage professional who deploys and manages EMC Celerra unified storage platforms (NS-120, NS-480 and NS-960) for filesystem (NAS) and block (SAN and iSCSI) access.

You will learn to configure and manage unified storage platforms (using Unisphere) with CIFS and NFS, protocols for file system level access; and consider availability and security, as well as configure SAN switches, unified storage platforms (using Unisphere), servers and PowerPath for block level access; and consider availability.

Additional Courses	Course Objectives
Celerra Unified Storage Implementation and Management (5 Days) CLARiiON Security and Basic Management, CLARiiON Storage Provisioning and Management, Host Integration Basics, Host Integration – Windows, Host Configuration – Linux, Advanced Storage Pool and LUN Concepts, Alerts and Event Monitoring, Unisphere, Basic Network Configuration, Configuring File Systems, Exporting File Systems to UNIX, Configuring CIFS, Virtual Data Movers, Managing Permissions on CIFS only Environment, Usermapper, Control Station Administration CIFS Features, Celerra Startup Assistant with Provisioning Wizard	• Understand concepts related to CLARiiON hardware and software features • Integrate open systems hosts into CLARiiON environments • Describe the functionality of Unisphere • Implement Data Mover failover • Implement Basic network configurations as well as configure and manage Celerra file systems • Export Celerra file systems for NFS and CIFS access • Implement Virtual Data Movers • Implement file system quotas on the Celerra • Implement CIFS features • Configure Celerra Networking features
The Instructor-Led Course above is supported by the following e-Learning prerequisites:	
Celerra Foundations (2 Hrs) Celerra architecture, theory of operations, features and functions, business continuity and backup solutions, platforms, benefits and requirements	• Identify the concepts, architecture, terminology, and environmental aspects • Describe Celerra features, functions, and management software offerings • Discuss different Celerra business continuity options and backup solutions
Celerra Platforms Architectural Overview (1 Hr) Celerra overview, Celerra series component connectivity, NX4, NS-120, NS-480, and NS-G2 systems, NS-960 and NS-G8 systems, VG2 and VG8 systems, appendix for legacy Celerra platforms	• List the main components of a Celerra • Describe basic Celerra operations • Identify component connections • List storage capacities for the Celerra Platforms
Celerra AntiVirus Agent (1 Hr) How a virus infects a system, CAVA's components, features, tools, and utilities	• Describe the Celerra AntiVirus Agent purpose, functionality, and methodology • Describe the CAVA components and concepts, tools, and utilities
NAS Backup Concepts (2 Hrs) Backup terminology, tape as a backup medium, backup evolution, NAS backup methodologies, NDMP backup	• Describe the backup process using industry-recognized terminology • List the various challenges faced in the Industry surrounding backups • Define the various methodologies of performing backup • Explain the role of Network Data Management Protocol (NDMP)
CLARiiON Foundations (2 Hrs) CLARiiON disk array, CLARiiON data protection options, I/O management, and high-availability features	• Describe the basic architecture and features of a CLARiiON disk array • Illustrate the key high availability features of the CLARiiON • Use Unisphere to perform common management tasks
Connectrix Foundations (1 Hr) EMC Connectrix B-Series, and MDS-Series, EMC SAN Manager, Connectrix Manager, native switch management tools	• Describe the architecture and key features of the Connectrix B-, and MDS-Series switches and directors • List and explain EMC and native switch management tools
PowerPath Foundations (1 Hr) PowerPath terminology, architecture, theory of operations and management	• Discuss the features and benefits of PowerPath • Explain how it achieves transparent recovery of host to storage channels

Instructor-Led Training e-Learning Online ILT

For more information on delivery modes, see page 10

Purchase Options

Celerra Unified Storage ValuePak
CE-VALPAKUFST $5,000 or (50 TU)
Includes one Instructor-Led or one Online ILT course and seven self-paced e-Learning courses.

Celerra Unified Storage Learning Path (Continued)

Benefits any storage professional who deploys and manages CLARiiON SAN environments as well as NAS solutions in Microsoft Windows, UNIX, or iSCSI environments using EMC Celerra.

You will learn to configure SAN switches, CLARiiON family of storage, and servers including PowerPath and local and remote replication, as well as configuring and managing a Celerra using CIFS, NFS, and iSCSI protocols; and consider availability, security, and NAS data replication.

Specialist Courses	Course Objectives
CLARiiON Host Integration and Management with Navisphere Manager (40 Hrs) Overview of CLARiiON CX3/CX4 Models, Security and Basic Management, Storage Provisioning and Management, Host Integration Basics, Host Integration - Windows, Host Configuration—Linux, Advanced Storage Pool and LUN Concepts, Alerts and Event Monitor, Navisphere Analyzer, Navisphere Quality of Service Manager (NQM), SnapView Principles, SnapView Snapshots, SnapView Clones	• Use EMC Navisphere Manager and other components of the EMC Navisphere suite in a practical environment • Explain how SnapView makes copies of LUNs • Configure Snapshots • Explain how SnapView makes Clones of LUNs • Explain the operation of the Clone Private LUN
The Instructor-Led Course above is supported by the following e-Learning prerequisites:	
CLARiiON Foundations (2 Hrs) CLARiiON disk array, CLARiiON data protection options, I/O management, and high-availability features	• Describe the basic architecture and features of a CLARiiON disk array • Illustrate the key high availability features of the CLARiiON • Use Navisphere to perform common management tasks
Connectrix Foundations (1 Hr) EMC Connectrix B-Series, and MDS-Series, EMC SAN Manager, Connectrix Manager, native switch management tools	• Describe the architecture and key features of the Connectrix B-, and MDS-Series switches and directors • List and explain EMC and native switch management tools
PowerPath Foundations (1 Hr) PowerPath terminology, architecture, theory of operations and management	• Discuss the features and benefits of PowerPath • Explain how it achieves transparent recovery of host to storage channels
SnapView Foundations (1 Hr) SnapView Snapshots, SnapView Clones	• Identify SnapView business uses • Identify SnapView snapshot and clone functions and operation
MirrorView and SAN Copy Foundations (2 Hrs) MirrorView, SAN Copy	• Identify remote replication functions and operations • Identify the management options for remote replication software • Identify a business case for remote replication products
AND	
NAS Operations and Management with Celerra Manager v5.6 (40 Hrs) Celerra Manager, Celerra CLI, basic network config, configuring file systems, exporting file systems to UNIX, usermapper, configuring CIFS, virtual data movers, managing permissions on CIFS-only environment, authentication, file systems quotas, CIFS features, networking features, celerra and ISCSI, SnapSure	• Implement Data Mover failover and basic network configurations • Configure and manage Celerra file systems • Export Celerra file systems for NFS and CIFS access • Implement Virtual Data Movers, file system quotas on the Celerra, CIFS features, Celerra in an iSCSI environment, SnapSure, and Celerra Replicator
The Instructor-Led Course above is supported by the following e-Learning prerequisites:	
Celerra Platforms Architectural Overview (1 Hr) Celerra overview, Celerra series component connectivity, NX4, NS-120, NS-480, and NS-G2 systems, NS-960 and NS-G8 systems, VG2 and VG8 systems, appendix for legacy Celerra platforms	• List the main components of a Celerra • Describe basic Celerra operations • Identify component connections • List storage capacities for the Celerra Platforms
Celerra AntiVirus Agent (1 Hr) What is a virus and how it infects a system, CAVA concept and functionality, components and scanning methodology, features and considerations, tools and utilities	• Describe the Celerra AntiVirus Agent purpose, functionality, and methodology • Describe the CAVA components and concepts, tools, and utilities
NAS Backup Concepts (2 Hrs) Backup terminology, tape as a backup medium, backup evolution, NAS backup methodologies, NDMP backup	• Describe the backup process using industry-recognized terminology • List the various challenges faced in the Industry surrounding backups • Define the various methodologies of performing backup • Explain the role of Network Data Management Protocol (NDMP)
Celerra Foundations (2 Hrs) Celerra architecture, operations,EMC Celerra platforms, Celerra benefits and requirements	• Identify the concepts, architecture, terminology, and environmental aspects of NAS using the Celerra • Describe Celerra features, functions, and management software offerings • Discuss different Celerra business continuity options and backup solutions

Purchase Options

Celerra Unified Storage Video ValuePak
CE-VIDVPKUFS $5,000 or (50 TU)
Includes two Video-ILT courses and nine self-paced e-Learning courses.

For more information on purchase options, see page 11

Video-ILT (VILT)

e-Learning

CLARiiON Management (SAN) Learning Path

Benefits any storage professional who deploys and manages CLARiiON SAN environments.

You will learn to configure SAN switches, the CLARiiON family of storage, and servers, including PowerPath.

Courses	Course Objectives
(4 Days) **CLARiiON Host Integration and Management with SnapView** CLARiiON Security and Basic Management, Storage Provisioning and Management, Host Integration Basics, Host Integration - Windows, Host Configuration – Linux, ESX Server Storage Provisioning, Advanced Storage Pool and LUN Concepts, Alerts and Event Monitor, Navisphere Analyzer, Navisphere Quality of Service Manager (NQM), SnapView Principles, SnapView Snapshots, SnapView Clones	• Revise and reinforce concepts related to CLARiiON hardware features • Revise and reinforce concepts related to CLARiiON software features • Integrate open systems hosts into CLARiiON environments • Use EMC Unisphere and other components of the Unisphere suite • Successfully complete the lab exercises
The Instructor-Led Course above is supported by the following e-Learning prerequisites:	
(2 Hrs) **CLARiiON Foundations** CLARiiON models and components, management options, features	• Identify supported CLARiiON RAID Types • Identify CLARiiON data integrity and availability features • Identify CLARiiON management options and storage provisioning objects
(1 Hr) **Connectrix Foundations** EMC Connectrix B-Series, and MDS-Series, EMC SAN Manager, Connectrix Manager, native switch management tools	• Describe the architecture and key features of the Connectrix B-, and MDS-Series switches and directors • List and explain EMC and native switch management tools
(1 Hr) **PowerPath Foundations** PowerPath terminology, features, architecture, theory of operations and management	• Discuss the features and benefits of PowerPath • Explain how PowerPath achieves transparent recovery of host to storage channels
(1 Hr) **SnapView Foundations** SnapView Snapshots, SnapView Clones	• Identify SnapView business uses • Identify SnapView snapshot and clone functions and operation

Additional Courses	Course Objectives
(24 Hrs) **CLARiiON Solutions for Small and Medium Enterprises** CLARiiON Foundations, SAN Foundations, Basic CLARiiON Management, Access Logix, PowerPath, Windows Integration, Advanced LUN Concepts, Event Monitor, EMC Navisphere Analyzer, SnapView Snapshots, SnapView Clones	• Configure storage objects and the CLARiiON storage system cache features with Manager and CLI • Configure the CLARiiON storage system to allow access to LUNs by Windows hosts • Configure PowerPath to ensure continued application availability • Implement Navisphere 6.x security • Configure SnapView cache and snapshots

Instructor-Led Training Video-ILT (VILT) e-Learning

For more information on delivery modes, see page 10

Purchase Options

CLARiiON Management ValuePak
CE-VALPAKCLN $4,000 or (40 TU)
Includes one Instructor-Led course and four self-paced e-Learning courses.

CLARiiON Solutions for Small and Medium Enterprises
CE-VILTCLNSME $2,400 or (24 TU)
Includes one Video-ILT.

For more information on purchase options, see page 11

CLARiiON Business Continuity (SnapView, MirrorView) Learning Path

Benefits any storage professional who deploys and manages CLARiiON SAN environments.

Prepare for your Specialist-level Storage Administrator CLARiiON Solutions Certification.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Expert	E20-822 Exam
Specialist	E20-522 Exam
Associate	E20-001 Exam See Page 15

Specialist Courses

Course Objectives

CLARiiON Host Integration and Management with SnapView (4 Days)
CLARiiON Security and Basic Management, Storage Provisioning and Management, Host Integration Basics, Host Integration - Windows, Host Configuration – Linux, ESX Server Storage Provisioning, Advanced Storage Pool and LUN Concepts, Alerts and Event Monitor, Navisphere Analyzer, Navisphere Quality of Service Manager (NQM), SnapView Principles, SnapView Snapshots, SnapView Clones

- Revise and reinforce concepts related to CLARiiON hardware features
- Revise and reinforce concepts related to CLARiiON software features
- Integrate open systems hosts into CLARiiON environments
- Use EMC Unisphere and other components of the Unisphere suite
- Successfully complete the lab exercises

The Instructor-Led Course above is supported by the following e-Learning prerequisites:

CLARiiON Foundations (2 Hrs)
CLARiiON models and components, management options, features

- Identify supported CLARiiON RAID Types
- Identify CLARiiON data integrity and availability features
- Identify CLARiiON management options and storage provisioning objects

Connectrix Foundations (1 Hr)
EMC Connectrix B-Series, and MDS-Series, EMC SAN Manager, Connectrix Manager, native switch management tools

- Describe the architecture and key features of the Connectrix B-, and MDS-Series switches and directors
- List and explain EMC and native switch management tools

PowerPath Foundations (1 Hr)
PowerPath terminology, features, architecture, theory of operations and management

- Discuss the features and benefits of PowerPath
- Explain how PowerPath achieves transparent recovery of host to storage channels

SnapView Foundations (1 Hr)
SnapView Snapshots, SnapView Clones

- Identify SnapView business uses
- Identify SnapView snapshot and clone functions and operation

AND

MirrorView & SAN Copy Configuration & Management (1 Day)
SAN Copy and Incremental SAN Copy, MirrorView/A and MirrorView/S

- Describe the MirrorView connectivity options
- Explain how MirrorView makes remote copies of LUNs
- List the required steps in MirrorView administration
- Identify the features and functions of EMC SAN Copy
- Install EMC SAN Copy on a supported CLARiiON array

MirrorView and SAN Copy Foundations (2 Hrs)
MirrorView, SAN Copy

- Identify remote replication functions and operations
- Identify the management options for remote replication software
- Identify a business case for remote replication products

Additional Courses

Course Objectives

New! CLARiiON FLARE 30 and Unisphere Differences (1 Day)
Unisphere management interface overview, storage object management overview, clone time of fracture, FAST, FAST cache, compression, additional Unisphere features and functions, additional features including certificate validation, rebuild avoidance, RAID 6 Parity, iSCSI logins, vStorage and SATA Flash Drives

- Manage a CLARiiON environment utilizing the new Unisphere user interface
- Create storage objects include RAID Groups, Storage Pools, LUNs, Storage groups, using the Unisphere Interface
- Discuss clone time of fracture and the cases for which it will be displayed
- Discuss FAST operations
- Define FAST cache operations and configuration limits
- Define the compression process, states, limits and restrictions

Instructor-Led Training | Video-ILT (VILT) | e-Learning | Online ILT

For more information on delivery modes, see page 10

Purchase Options

CLARiiON Business Continuity ValuePak
CE-VALPAKCBC $5,000 or (50 TU)
Includes two Instructor-Led courses and five self-paced e-Learning courses.

CLARiiON Business Continuity Video ValuePak*
CE-VIDVPKCLS $3,000 or (30 TU)
Includes one Video-ILT* and five self-paced e-Learning courses.
*Available late February 2011

CLARiiON and Unisphere Differences Course
CE-DiffCLNUni $1,000 or (10 TU)
Includes one Online ILT course.

For more information on purchase options, see page 11

CLARiiON Business Continuity (SnapView, MirrorView) Learning Path (continued)

The Expert courses benefit Specialist-level professionals who integrate storage with applications.

You will learn to integrate local and remote replication technologies with Microsoft Exchange and/or Microsoft SQL Server.

Prepare for your Expert-level Storage Administrator CLARiiON Solutions Certification.

Certification Alignment

Expert	E20-822 Exam
Specialist	E20-522 Exam
Associate	E20-001 Exam See Page 15

Expert Courses

Course Objectives

CLARiiON Remote Replication Advanced Workshop
(3 Days)
(30 TU)

SAN Copy and Incremental SAN Copy, MirrorView/A and MirrorView/S, FC/IP Protocols, Remote Replication Hardware

- Manage and monitor SAN Copy sessions
- Configure MirrorView/A and MirrorView/S for CLARiiON-to-CLARiiON data transfer
- Manage and monitor MirrorView/A and MirrorView/S mirrors
- Configure McData Eclipse 1620 and Cisco MDS 9000 switches to support remote data replication

AND

CLARiiON Performance Workshop
(3 Days)
(30 TU)

CLARiiON performance monitoring, environment-related performance issues, CLARiiON-related performance issues, CLARiiON layered applications and performance, backup-to-disk in CLARiiON environments

- Use Navisphere Analyzer and other performance tools to gather performance-related information from CLARiiON storage systems
- Recommend correct data layout for storage environment
- Configure CLARiiON storage systems to support the use of layered applications
- Make sizing recommendation for storage environments

AND one of the following

Microsoft Exchange Integration with CLARiiON Workshop
(4 Days)
(40 TU)

CLARiiON and Exchange Review, Best Practices for the Integration of Exchange and CLARiiON, Exchange Local Replication using EMC Replication Manager, EMC Remote Replication Solutions for Exchange 2007

- Apply stated best practices when implementing Microsoft Exchange
- Demonstrate the ability to implement Exchange replication solutions using EMC Replication Manager
- Appraise an Exchange environment in order to recommend a given remote replication solution based on RPO/RTO considerations
- Use the skills learned to implement and recover Exchange in a remote replication environment

OR

Microsoft SQL Server Integration with CLARiiON Workshop
(3 Days)
(30 TU)

CLARiiON and SQL Server Review, Best Practices for the Integration of SQL Server and CLARiiON, SQL Server Local Replication using EMC Replication Manager, EMC Remote Replication Solutions for SQL Server 2005

- Demonstrate the ability to implement SQL Server replication solutions using EMC Replication Manager
- Appraise a SQL Server environment in order to recommend a given remote replication solution based on RPO/RTO considerations
- Use the skills learned to implement and recover SQL Server in a remote replication environment

Additional Courses

Course Objectives

VMware vSphere Integration with CLARiiON
(5 Days)
(50 TU)

VMware and CLARiiON integration overview, VMware and CLARiiON connectivity, storage provisioning, business continuity with VMware and CLARiiON Arrays, migration and disaster recovery with VMware and CLARiiON Arrays, Site Recovery Manager with CLARiiON Arrays

- Configure VMware ESX®/ESXi Server base connectivity to a CLARiiON for a vSphere Server and Guest VMs
- Install and configure array management software within a virtual machine and ESX/ESXi Server
- Provision storage to an ESX Server virtual machine and examine specifics of migrating/expanding VM storage
- Examine storage visibility via ESX/ESXi and CLARiiON utilities
- Discuss, configure and test the different options for ESX/ESXi multipathing
- Integrate CLARiiON Replication Software with ESX Server, and test migration, failover and failback operations involving virtual machines

CLARiiON AX4-5 Management
(2 Hrs)
(2 TU)

Navisphere Storage System Initialization Tool, Navisphere Server Utility, Navisphere Express Utility, Creating and Managing Disk Pools and Hot Spares, Creating and Managing Virtual Disks

- Identify the steps required to create and manage AX4-5 disk pools
- Identify the steps required to create and monitor virtual disks
- Identify the hot-spare functionality and advanced software
- Describe diagnostic file creation on an AX4-5
- Identify AX4-5 iSCSI management features

CLARiiON AX4-5 Fundamentals
(2 Hrs)
(2 TU)

Software and hardware options, installation guidelines, Host-attach options, PowerPath installation options, Service Pack options

- Describe the software and hardware features of the CLARiiON AX4-5
- Describe procedures for installing an AX4-5
- Explain startup and shutdown procedures for the AX4-5
- Identify Host attach options and PowerPath features
- Describe the AX4-5 Service pack release options

Introduction to FAST Lun Migrator for CLARiiON
(2 Hrs)
(2 TU)

FAST LUN Migrator for CLARiiON along with an overview and analysis of the migration solution

- Explain FAST LUN Migrator for CLARiiON and highlight its benefits
- Discuss how to evaluate a customer's environment to determine potential performance enhancement with FAST LUN Migrator for CLARiiON
- Perform CLI commands associated with FAST LUN Migrator for CLARiiON to analyze and to migrate LUNs

Content-Addressed Storage (CAS) (EMC Centera) Learning Path

Benefits any storage professional who deploys and manages a Centera content-addressed storage (CAS) environment.

You will learn to configure Centera Virtual Pools and set retention policies and other archival settings to reconcile an overall tiered storage environment.

Courses	Course Objectives
CAS Management Centera management, day-to-day tasks, and basic troubleshooting steps (3 Days)	• Explain how data is stored, retrieved, and replicated on EMC Centera • Perform day-to-day management tasks on an EMC Centera using the native tools, and create/test virtual pools and access profiles • Perform EMC Centera replication and basic performance and networking troubleshooting
The Instructor-Led Course above is supported by the following e-Learning prerequisites:	
Archive Technology Foundations Content-addressed storage (CAS), EmailXtender overview, DiskXtender for Windows overview (2 Hrs)	• Describe the functions and features of content-addressed storage (CAS), EmailXtender, DiskXtender
Basic Network Environment Operational capabilities, service delivery, details of server installation, configuration, basic setup, and usage (5 Hrs)	• Describe the components of a typical network infrastructure • Identify basic network concepts that will help to configure and manage EMC products
EMC Centera Console Implementation Overview Operational capabilities, service delivery, details of server installation, configuration, basic setup and usage (2 Hrs)	• Describe features, functionality, and benefits of the EMC Centera Console • Install, configure, and navigate Centera Console to identify operational characteristics of an EMC Centera environment
CAS Solution Strategies Activating archives, business areas for CAS, mainframe solutions, SDK and CAG solutions, business continuity, and disaster recovery (2 Hrs)	• Explain the types of data that should be stored on fixed media and identify business areas where CAS is the optimum solution • Discuss SDK and CAG solutions and theory of operations including replication and restore

Additional Courses	Course Objectives
Centera FastStart Fundamentals Introduction to Centera, Centera operational overview (8 Hrs) (2 TU) OR (2 Hrs) (2 TU)	• Define fixed content • State the challenges of managing fixed content • List the 11 terms of the Centera solution and list EMC CentraStar™ software features • Define read, write, and query operations • List the available Centera interface tools and define the Centera security profiles

Instructor-Led Training | Video-ILT (VILT) | e-Learning | Online ILT

For more information on delivery modes, see page 10

Purchase Options

CAS ValuePak
CE-VALPAKCAS $3,000 or (30 TU)
Includes one Instructor-Led or one Online ILT course, and four self-paced e-Learning courses.

CAS Video ValuePak
CE-VIDVPKCAS $1,800 or (18 TU)
Includes one Video-ILT and four self-paced e-Learning courses.

Centera FastStart Fundamentals Site License
CE-FSTSRTCAS $5,000 or (50 TU)
Includes Online ILT training for up to 12 individuals.

For more information on purchase options, see page 11

Storage Area Network (SAN Connectrix) Learning Path

Benefits any storage professional who deploys and manages multi-site, multi-vendor SAN environments.

You will learn to configure Brocade and/or Cisco SAN switches, CLARiiON and/or Symmetrix storage and server configurations, including PowerPath.

Prepare for your Specialist-level Storage Administrator Storage Area Network (SAN) Certification.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Expert	N/A
Specialist	E20-532 Exam
Associate	E20-001 Exam See Page 15

Specialist Courses — Course Objectives

(4 Days)	**SAN Management** Native tools for managing Connectrix B, and MDS series switches and EMC SAN and storage management tools (i.e., Solutions Enabler SYMCLI, ControlCenter SAN Manager, Navisphere Manager, and PowerPath), legacy tools (ESN Manager and FibreZone)	• Perform switch management tasks using native switch tools • Manage SAN environment (hosts, switches, and storage) using EMC tools • Explain SAN management best practices including performance, monitoring, and reporting
	The Instructor-Led Course above is supported by the following e-Learning prerequisites:	
(2 Hrs)	**Symmetrix Foundations** Symmetrix disk array architecture, volume protection, I/O path, connectivity, vaulting and high-availability features	• Draw and describe the basic architecture of Symmetrix • Explain Symmetrix theory of operations, connectivity options, and key features
(2 Hrs)	**CLARiiON Foundations** CLARiiON models and components, management options, features	• Identify supported CLARiiON RAID Types • Identify CLARiiON data integrity and availability features • Identify CLARiiON management options and storage provisioning objects
(1 Hr)	**PowerPath Foundations** PowerPath terminology, features, architecture, theory of operations, and management	• Discuss the features and benefits of PowerPath in an open systems host environment • How PowerPath achieves transparent recovery of host to storage channels
(5 Hrs)	**Basic Network Environment** ARPA network architecture, network and transport layers, application layer, and troubleshooting	• Describe the components of a typical network infrastructure • Identify basic network concepts that will help to configure and manage EMC products
(4 Hrs)	**SAN Storage Protocols** Fibre Channel, iSCSI, FCIP, FCoE	• Define name resolution and addressing • Explain potential SAN topology solutions through examples
(2 Hrs)	**PowerPath Configuration and Administration** Features and functionality of PowerPath across multiple UNIX and Windows platforms, for both Symmetrix and CLARiiON storage platforms	• Describe PowerPath architecture and its load balancing policies • Explain PowerPath connectivity and configuration in both SCSI and Fibre Channel environments
(2 Hrs)	**Connectrix B Series Architecture and Management** Common switch architecture, model hierarchy and functionality, native switch tools, optional switch tools, switch security	• Describe the various B-Series switch models and their architectures • Identify the tools available for configuring and managing the B-series switches
(2.5 Hrs)	**Connectrix MDS-Series Switch Architecture and Management** MDS configuration, basic implementation, and ongoing management interfaces, switch segmentation with VSANs and scalability with SAN extension	• Describe the various MDS-Series switch models and their architectures • Identify the tools available for configuring and managing the MDS-series switches

Additional Courses — Course Objectives

(3 Days) (30 TU)	**New! Brocade: Introduction to L2 Fibre Channel Administration and Theory** Introduction to Fibre Channel, switch installation and configuration, zoning, Inter-Switch Links (ISLs), routing, ISL Trunking, updating switch firmware, backing up switch configurations, and basic troubleshooting, Brocade management tools, management tools and interfaces, error messages, commands, and diagnostics	• Describe physical layer SAN components • Install, configure, and verify the functionality Brocade switches • Discuss RADIUS and LDAP usage • Perform maintenance tasks • Configure, verify, administer, and describe Brocade zoning • Evaluate layer 2 fabric routing • Implement multi-switch fabric trunking and Implement distance solutions
(3 Days) (33 TU)	**New! Brocade: Advanced Fibre Channel Administration and Theory** Fibre Channel-to-Fibre Channel Routing (FC-FC ROUTING), Fibre Channel over Internet Protocol (FCIP), Adaptive Networking, Access Gateway, fabric security policies and Brocade management tools, management tools and interfaces, error messages, commands, and diagnostics	• Discuss virtual connectivity using NPIV and Access Gateway • Implement Fabric OS security policies • Managing advanced features using DCFM • Identify Brocade switch and director platforms • Describe Fabric OS long distance and interoperability options • Implement multi-switch fabric trunking and Implement distance solutions

Purchase Options

SAN ValuePak
CE-VALPAKSAN $4,000 or (40 TU)
Includes one Instructor-Led course and eight self-paced e-Learning courses.

SAN Video ValuePak
CE-VIDVPKSAN $2,400 or (24 TU)
Includes one Video-ILT and eight self-paced e-Learning courses.

BROCADE Intr.to L2 Fibre Channel Admin. & Theory
CE-BRCDL2FCAT $3,000 or (30 TU)
Includes one Online-ILT

BROCADE Adv. Fibre Channel Admin and Theory
CE-BRCDAFCAT $3,300 or (33 TU)
Includes one Online-ILT

Storage Area Network (SAN Connectrix) Learning Path (continued)

Instructor-Led Training | Video-ILT (VILT) | e-Learning | Online ILT

Additional Courses	Course Objectives
Host to Storage SAN Implementation (5 Days) (50 TU) Pre-implementation tasks, SAN and switch configuration, host configuration part 1, storage configuration, host configuration part 2, advanced topics, post-implementation tasks such as documentation, maintenance, and troubleshooting	• Configure a SAN switch and perform management operations • Configure a CLARiiON and Symmetrix storage array • Perform advanced host operations such as multipathing with PowerPath, volume management, and file systems • Provide an overview of post-implementation tasks
Advanced SAN Implementation (5 Days) (50 TU) Heterogeneous Fabric Migration, Fibre Channel Boot from SAN, Fibre Channel Routing, Virtualizing a SAN Environment, Securing a Fibre Channel SAN, Trace Analysis, Advanced iSCSI Configuration, Fibre Channel over Ethernet (FCoE), Connectrix Encryption, Fibre Channel over IP (FCIP)	• Describe start to end configuration of an advanced multiprotocol fabric • Configure VSANs and Virtual Fabrics • Configure B-Series and MDS-Series Fibre Channel Routing • Secure iSCSI with CHAP, IPSEC and IKE • Describe functionality, benefits and hardware requirements of Connectrix Encryption
Advanced SAN Design Workshop (4 Days) (40 TU) SAN Assessment and Planning, Fibre Channel SAN Design, iSCSI SAN Design, FCoE SAN Design, SAN Extension Design, EMC Process	• Design FC, iSCSI, FCIP, and FCoE SANs • Modify existing SAN designs for consolidation or expansion • Design security protection for designed SANs
Troubleshooting Storage Area Networks (5 Days) (50 TU) SAN Troubleshooting, Troubleshooting Methodology, Fibre Channel Troubleshooting, iSCSI Troubleshooting, FCIP Extension Troubleshooting, FCoE SAN Troubleshooting. This course should be completed after Advanced SAN Implementation or Advanced SAN Design Workshop.	• Analyze and correct ISL issues and fabric merge failures • Show how to find and resolve virtualized SAN issues • Analyze and correct Virtual Fabric and VSAN and iSCSI Discovery issues • Analyze and correct IP Bridging devices • Use tools to trace errors for root cause determination
SAN Monitoring and Policy Management (3 Hrs) (4 TU) Overview of SAN monitoring and policy management, using EMC ControlCenter SAN Manager, using EMC VisualSAN, OEM tools	• Provide a generic overview of policy management • Describe SAN management standards, key features and benefits • Provide a detailed overview of SAN monitoring and policy management
PowerPath Encryption with RSA Implementation (2 Hrs) (4 TU) Solution and Architecture Overview, Features and Functionality, Configuring the Environment, Planning and Design	• Describe the features and functionality of PowerPath Encryption with RSA • Discuss the planning and design considerations for PowerPath Encryption with RSA • Configure and implement a PowerPath Encryption with RSA environment
PowerPath Migration Enabler Implementation (2.5 Hrs) (4 TU) PowerPath Migration Enabler Overview, Performing a PowerPath Migration, Troubleshooting and Advanced Topics	• Explain how PowerPath Migration Enabler Works • Perform a PowerPath Migration • Troubleshoot issues with migrations
PowerPath/VE Installation and Configuration (2.5 Hrs) (3 TU) Introducing PowerPath/VE, Features and Functionality, Installation and Configuration, Design Considerations	• Explain the new Electronic License Management model, and its influence on PowerPath/VE deployment • Discuss planning and design, implementation, and integration considerations for PowerPath/VE on all supported platforms
Implementing Cisco Storage Networking Solutions 3.0 (5 Days) (35 TU) MDS 9000 platform overview, system installation and initial configuration, building VSANs, managing SAN traffic, implementing FCIP, troubleshooting tools and scenarios, the Fibre Channel protocol, installation and configuration reference	• Implement a SAN with multiple virtual fabrics using the full range of features and capabilities provided by the Cisco MDS platform • Configure and use fabric management, performance management, and security services on the Cisco MDS platform • Diagnose and correct software configuration issues and inoperable hardware
Implementing Cisco Advanced Storage Networking Solutions 3.0 (5 Days) (35 TU) Building Enterprise SAN Fabrics, Implementing Management and Security Services, Advanced Troubleshooting, Implementing iSCSI	• Implement a SAN with multiple virtual fabrics using the full range of features and capabilities provided by the Cisco MDS platform • Configure and use fabric management, performance management, and security services on the Cisco MDS platform • Diagnose and correct software configuration issues and inoperable hardware components, so that the problems are resolved with minimal disruption
New! Cisco Systems: Implementing Cisco Data Center Networking Infrastructure 2 (5 Days) (35 TU) Cisco Nexus 7000 in Data Center Networks, Virtual Device Contexts, NX-OS Layer 2 Protocols, NX-OS Layer 3 Protocols, NX-OS Quality of Service, Security, Troubleshooting, Cisco Nexus 5000 and 2000, Understanding Fibre Channel, Implementing an FCoE Network	• Deploy, configure and troubleshoot data center networks using the Cisco Nexus Platform Family including the Cisco Nexus 7000, 5000, and 2000 • Understand the enhancements associated with the Cisco NX-OS Software • Describe the migration of data center architectures, including unified I/O and unified fabric

Purchase Options

Implementing Cisco Storage Networking Solutions
CE-CISCOICSNS $3,500 or (35 TU)
Includes one Instructor-Led course.

Implementing Cisco Advanced Storage Networking
CE-CISCOICASN $3,500 or (35 TU)
Includes one Instructor-Led course.

Cisco Systems: Implementing Cisco Data Center Network Infrastructure
CE-CISCODCNI $3,500 or (35 TU)
Includes one Instructor-Led course.

Symmetrix Solutions (VMAX and DMX) Learning Path

Benefits storage professionals deploying and managing Symmetrix DMX/VMAX™, TimeFinder, SRDF, and Open Replicator in open systems environments. Drive efficient utilization of your storage resources using Symmetrix Management Console (SMC) and Solutions Enabler (command line interface). Configure and manage the local and remote data replication capabilities offered by TimeFinder, SRDF, and Open Replicator.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Expert	N/A
Specialist	E20-517 Exam
Associate	E20-001 Exam See Page 15

Specialist Courses

Course Objectives

Symmetrix Configuration Management (4 Days)
Symmetrix configuration and device masking overview, configuration planning, device creation and mapping, metrics, attributes and pool management, masking and auto-provisioning, configuration management with Symmetrix Management Console, virtual provisioning concepts and planning, virtual LUN migration

- Create and delete regular and meta devices
- Map and unmap devices
- Change Symmetrix metrics and RDF group attributes
- Mask devices to hosts
- Perform storage migration using Virtual LUNs
- Implement Virtual Provisioning

The Instructor-Led Course above is supported by the following e-Learning prerequisites:

Symmetrix Management Console (SMC) Fundamentals (2 Hrs)
Documentation and Installation, SMC Interface, Configuration, Replication Operations, SMC comparison to other Symmetrix management tools, Troubleshooting

- Symmetrix configuration and replication operations
- SMC Differences with Solutions Enabler SYMCLI

PowerPath Foundations (1 Hr)
Terminology, features, architecture, theory of operations and management

- Explain how PowerPath achieves transparent recovery of host to storage channels

Connectrix Foundations (1 Hr)
SAN Architecture and Components, SAN Fabric Topologies, EMC's Connectrix Range, Securing a SAN, SAN Management Tools, IP-Based SAN Extension

- Components, services, and FC Protocol used in a storage area network
- Identify Fabric Topologies and different types of Connectrix products
- Explain how to secure a SAN using series-specific solutions

Symmetrix Business Continuity Management (5 Days)
Symmetrix business continuity management and integration with Windows and UNIX hosts. TimeFinder local replication, SRDF two site remote replication, and Open Replicator inter-array data migration and replication

- Perform SRDF Synchronous and SRDF Asynchronous operations
- Perform Open Replicator operations (push/pull; hot/cold)
- Describe open systems host considerations for Symmetrix business continuity
- Describe consistency technologies for Symmetrix business continuity

The Instructor-Led Course above is supported by the following e-Learning prerequisites:

Solutions Enabler Installation and Configuration (2 Hrs)
Host Configuration, mapping, zoning and masking, environment variables, options file, daemon options file, gatekeeper management

- Describe Solutions Enabler installation procedure
- List commonly used environment variables
- Explain the use of the options file and daemon options file

Open Replicator Fundamentals (2 Hrs)
Features, architecture, theory of operations, and benefits of Open Replicator

- Explain the concepts and benefits of Open Replicator
- Describe the architecture, terminology and operations of Open Replicator

SRDF Foundations (2 Hrs)
Features, architecture, theory of operations, and benefits of the SRDF family of Symmetrix remote replication solutions

- Describe architectural components and theory of operations of SRDF
- Explain how various replication options of SRDF can be integrated into Symmetrix business continuity/disaster recovery environments

TimeFinder Foundations (2 Hrs)
Features, architecture, theory of operations, and benefits of the TimeFinder family of Symmetrix local replication solutions

- Describe the architectural components and theory of operations of TimeFinder
- Explain how various replication options of TimeFinder can be integrated into Symmetrix business continuity/disaster recovery environment

Symmetrix Foundations (2 Hrs)
Symmetrix disk array architecture, volume protection, I/O path, connectivity, vaulting and high-availability features

- Draw and describe the basic architecture of Symmetrix
- Explain Symmetrix theory of operations, connectivity options, and key features

Additional Course

Course Objectives

New! Symmetrix VMAX Series Differences (1 Day) (10 TU)
Symmetrix Enginuity architecture and theory of operations, Symmetrix V-Max Series hardware, Symmetrix FAST & VP , Symmetrix SRDF & usability enhancements

- Discuss planning, design, implementation, and integration considerations
- Present the VMAX Logical architecture and theory of operations
- Discuss Fully Automated Storage Tiering, (FAST) and Virtual Provisioning enhancements

Purchase Options

Symmetrix Management ValuePak
CE-VALPAKSMGT $4,000 or (40 TU)
Includes one Instructor-Led or one Online ILT course and three self-paced e-Learning.

Symmetrix Management Video ValuePak
CE-VIDVPKSMGT $4,000 or (40 TU)
Includes one Video-ILT* and three self-paced e-Learning.
*Symmetrix Configuration Management

Symmetrix Business Continuity ValuePak
CE-VALPAKBC $5,000 or (50 TU)
Includes one Instructor-Led or one Online ILT and five self-paced e-Learning.

Symmetrix Business Continuity Video ValuePak
CE-VIDVPKBC $3,000 or (30 TU)
Includes one Video-ILT* and five self-paced e-Learning.
*Symmetrix Business Continuity Management

Symmetrix VMAX Series Differences Course
CE-DiffVMAX $1,000 or (10 TU)

Instructor-Led Training
Video-ILT (VILT)
e-Learning
Online ILT

Symmetrix Solutions (VMAX and DMX) Learning Path (continued)

Additional Courses	Course Objectives
Symmetrix Performance Workshop Performance overview and measurements, tools, analysis, front-end, system/cache, back-end, business continuance (4 Days) (40 TU)	• Describe the performance benefits of Optimizer and PowerPath • Identify the architectural components of a Symmetrix array, describe their performance characteristics, and differentiate between Symmetrix 8000 and DMX family arrays
VMware vSphere Integration with Symmetrix Integration architecture overview, preparing Symmetrix for ESX/ESXi 4 host, ESX/ESXi 4 preparation, business continuity and non-disruptive storage migration, Virtual Infrastructure backup and recovery, performance consideration, VMware vSphere Site Recovery Manager (SRM) (5 Days) (50 TU)	• Install and configure EMC PowerPath/VE on ESX 4 host for FC channel path failure protection and load balancing and install and configure Storage viewer for end-to-end pictorial view of storage LUN to virtual machine datastore relationship • Install, configure, and manage VMware SRM product using EMC SRM storage replication technology
Symmetrix Integration with Microsoft Exchange Workshop Review of Exchange and Symmetrix, Exchange 2007 Best Practices, TimeFinder Exchange integration Module (TF/EIM) Local, TimeFinder Exchange Integration Module (TF/EIM) Remote, Replication Manager (3 Days) (30 TU)	• Install, configure, and execute backups using TimeFinder Exchange Integration Module (TF/EIM) on a single Symmetrix VMAX and across multiple arrays using SRDF • Perform server recovery from a Microsoft Exchange Server 2007 backup host by utilizing Business Continuance Volumes
Symmetrix Integration with SQL Server Workshop Review of Microsoft SQL Server and VMAX, SQL Server Best Practices for VMAX, Solutions Enabler DBSRM and TimeFinder Integration Module for SQL Server (TF/SIM), Replication Manager, Remote Solutions (3 Days) (30 TU)	• Understand the configuration of backups using Solutions Enabler (DBSRM) and TimeFinder Integration Module foe SQL Server (TF/SIM) on a single array • Perform recovery from a Replication Manager mount host by utilizing clone volumes • Configure and execute backups using Replication Manager across multiple arrays using Symmetrix Remote Data Facility (SRDF) • Discuss methods of effectively troubleshooting replication issues with SQL Server
Symmetrix Integration with Oracle Workshop SIO Integration, Oracle Integration DMX/VMAX Overview, Oracle Overview, TimeFinder, SRDF, Oracle Integration, Replication Manager "Application Sets" and "Jobs" in an Oracle/5.2 RM environment, Oracle Integration, Creating Linux File Systems (4 Days) (40 TU)	• Recommend an optimal performance layout for an Oracle 10*g* database application in a Symmetrix DMX/VMAX and Solaris environment • Identify features and the relationship between volume management and an Oracle database application environment • Perform TimeFinder/Mirror Clone and Snap operations using SYMCLI commands against a replicated Oracle database application
Symmetrix FAST Configuration and Management FAST theory of operations, implementing FAST using SYMCLI, implementing FAST using Symmetrix Management Console, iiewing storage group performance statistics using SPA (1 Day) (10 TU)	• Explain the features and benefits of FAST for Symmetrix • Describe FAST managed objects • Describe algorithms used by FAST • Explain the relationship between FAST and Symmetrix Optimizer • Describe the use of Symmetrix Performance Analyzer to view statistics
SRDF/Star and Cascaded SRDF - Implementation and Management Consistency and the role of the SRDF daemon, cascaded SRDF and SRDF/EDP, preparations for running Star in concurrent mode, concurrent SRDF/Star normal operation, dealing with transient faults while running concurrent Star, dealing with workload site disaster while running concurrent Star, preparations for Star in cascaded mode, bringing-up cascaded Star in a normal configuration, recovery from faults in a cascaded Star configuration, maintenance activities such as changing the Star configuration (4 Days) (40 TU)	• List EMC SRDF Three Data Center Solutions • Describe Cascaded SRDF Solutions including SRDF/EDP • Set up an SRDF/Star configuration • Operate an SRDF/Star configuration under normal and fault conditions • Perform routine maintenance work on a Star configuration
SRDF/Star and Cascaded SRDF Solutions Cascaded SRDF and SRDF/EDP, Underlying technologies that support SRDF/Star, Using SRDF Star (2 Hrs) (4 TU)	• Explain the underlying technologies for SRDF/Star • Explain Concurrent and Cascaded SRDF/Star concepts • Describe the steps needed to perform under normal, transient fault, and major fault conditions
Symmetrix Security Concepts Symmetrix Security Introduction, methods of securing Symmetrix information, unauthorized host data access, unauthorized access of data in flight, data erasure options, access monitoring and auditing (2 Hrs) (2 TU)	• Explain possible methods to prevent unauthorized access of information from the SAN, iSCSI network, and SRDF network • List EMC Data Erasure options
Symmetrix - Managing Performance Theory of operations and benefits of Symmetrix Optimizer, Dynamic Cache Partitioning, Symmetrix Priority Controls and Copy Quality of Service (2 Hrs) (3 TU)	• Describe the theory of operations and uses of EMC Symmetrix Optimizer • Describe the theory of operations and uses of Dynamic Cache Partitioning and Symmetrix Priority Controls

Symmetrix Mainframe Business Continuity (Symmetix, TimeFinder, SRDF) Learning Path

The Symmetrix Mainframe Business Continuity certification formally validates your knowledge, skills, and expertise in configuring and managing Symmetrix VMAX business continuity solutions in a z/OS environment. This curriculum covers business continuity implementation and management for both Symmetrix VMAX arrays in an z/OS environment.

Prepare for your Symmetrix Mainframe Business Continuity Certification.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Product/Technology Specific
E22-220 Exam

Specialist Courses

Specialist Courses	Course Objectives
Symmetrix Mainframe Business Continuity Management (5 Days) TimeFinder/Mirror Base, TimeFinder/Mirror Mainframe Snap Facility, TimeFinder/Mirror Utility, SRDF/S, SRDF/CG, SRDF/AR, Transmit Idle, Delta Set Extension, Write Pacing and Automated Recovery	• Describe and demonstrate TimeFinder management operations, including TimeFinder/Mirror, TimeFinder Snap/Clone Facility and TimeFinder Utility • Explain important host considerations for successful implementations of local and replication solutions using TimeFinder and SRDF in z/OS environments • Describe and demonstrate SRDF configuration, management and recovery operations for the SRDF/S and SRDF/A base products and the add-on products SRDF/CG and SRDF/AR • Describe the advanced SRDF/A features of Transmit Idle, Delta Set Extension, Write Pacing and Automated Recovery • Describe the architecture and operations of Cascaded SRDF as well as SRDF/EDP

The Instructor-Led Course above is supported by the following e-Learning prerequisites:

AutoSwap Architecture and Operations (Post-requisite) (2 Hrs) Introduction, Considerations, Swap Operations, AutoSwap Parameters, AutoSwap Commands	• Explain the purpose and operation of AutoSwap • Use AutoSwap capabilities for planned and unplanned Swap
Introduction to Mainframe Resource Pack Base (2 Hrs) Presentations and demonstrations using the EMC's ResourcePak Base (RPB) product	• Describe ResourcePak Base functions and uses • Use Symmetrix Control Facility (SCF) commands to perform operations • Describe the considerations for use on z/OS hosts
TimeFinder Foundations (2 Hrs) Features, architecture, theory of operations, and benefits of the TimeFinder family of Symmetrix local replication solutions	• Describe the architectural components and theory of operations of TimeFinder • Explain how various replication options of TimeFinder can be integrated into Symmetrix business continuity / disaster recovery environment
SRDF Foundations (1 Hr) Features, architecture, theory of operations, and benefits of the SRDF family of Symmetrix remote replication solutions	• Describe architectural components and theory of operations of SRDF • Explain how various replication options of SRDF can be integrated into Symmetrix business continuity/disaster recovery environments
Symmetrix Foundations (2 Hrs) Symmetrix disk array architecture, volume protection, I/O path, connectivity, vaulting and high-availability features	• Draw and describe the basic architecture of Symmetrix • Explain Symmetrix theory of operations, connectivity options, and key features

Additional Courses

Additional Courses	Course Objectives
Mainframe Business Continuity—SRDF/Star Solutions (5 Days) (50 TU) Introduction to Star business continuity solutions, SRDF/CG - Consistency Groups, SRDF/A—Asynchronous, SRDF/A Multi-Session Consistency, SRDF/Star—Symmetrix Triangular Asynchronous Replication, SRDF/Star Recovery Panels, business continuity solutions summary	• Describe the benefits, architecture, and management of ResourcePak Base Symmetrix Control Facility in z/OS environments • Demonstrate SRDF management operations, build a complete three-site star configuration • Explain host considerations for successful implementations of Star replication solutions such as Concurrent SRDF in z/OS environments
EMC Disk Library for Mainframe (DLm) Operations and Administration (2 Days) (20 TU) Introduction to DLm, DLm operation, using DLm with z/OS, back-end tape, data exchange, volume handling	• Describe the DLm and its strategic positioning • Describe and demonstrate the benefits, architecture, and management of the DLm product in z/OS environments • Describe and demonstrate DLm Implementation issues, management, usage, and recovery operations for the tape to disk environment

Instructor-Led Training e-Learning Online ILT

For more information on delivery modes, see page 10

Purchase Options

Mainframe ValuePak
CE-VALPAKMF $5,000 or (50 TU)
Includes one Instructor-Led or one Online ILT course, and five self-paced e-Learning courses.

For more information on purchase options, see page 11

Replication Manager Learning Path

Benefits any storage professional who manages integrated and automated data replications using Replication Manager.

You will learn to integrate and automate TimeFinder, SRDF, SnapView, MirrorView, and other replication technologies into application environments.

Working knowledge of array-based local and remote data replication technologies is a prerequisite to this Learning Path.

Courses	Course Objectives
Replication Manager Workshop (5 Days) (50 TU) Overview, planning and installation, administration, operations, remote replications, troubleshooting	• Install Replication Manager software • Configure a Replication Manager environment • Perform administrative functions using Replication Manager software • Perform operational functions using Replication Manager software • Perform basic troubleshooting in a Replication Manager environment
The Instructor-Led Course above is supported by the following e-Learning prerequisite:	
Replication Manager Implementation and Management Overview (2 Hrs) (3 TU) Replication Manager planning, licensing, installation, administration, logging, and troubleshooting	• Review the need for Replication Manager, plan and deploy • Describe how Replication Manager is licensed • Install, administer, and troubleshoot Replication Manager

	Course Objectives
Symmetrix Integration with Microsoft Exchange Workshop (3 Days) (30 TU) Review of Exchange and Symmetrix, Exchange 2007 Best Practices, TimeFinder Exchange integration Module (TF/EIM) Local, TimeFinder Exchange Integration Module (TF/EIM) Remote, Replication Manager	• Install, configure, and execute backups using TimeFinder Exchange Integration Module (TF/EIM) on a single Symmetrix VMAX • Perform server recovery from a Microsoft Exchange Server 2007 backup host by utilizing Business Continuance Volumes • Install, configure, and execute backups using TimeFinder Exchange Integration Module (TF/EIM) across multiple arrays using Symmetrix Remote Data Facility (SRDF) • Discuss methods of effectively troubleshooting replication issues with Exchange 2007 on Symmetrix VMAX
Symmetrix Integration with SQL Server Workshop (3 Days) (30 TU) Review of Microsoft SQL Server and VMAX, SQL Server Best Practices for VMAX, Solutions Enabler DBSRM and TimeFinder Integration Module for SQL Server (TF/SIM), Replication Manager, Remote Solutions	• Understand the configuration of backups using Solutions Enabler (DBSRM) and TimeFinder Integration Module foe SQL Server (TF/SIM) on a single array • Configure and execute backups locally using Replication Manager • Perform recovery from a Replication Manager mount host by utilizing clone volumes • Configure, and execute backups using Replication Manager across multiple arrays using Symmetrix Remote Data Facility (SRDF) • Discuss methods of effectively troubleshooting replication issues with SQL Server on Symmetrix VMAX
Symmetrix Integration with Oracle Workshop (4 Days) (40 TU) SIO Integration, Oracle Integration DMX/VMAX Manager, Oracle Integration, Creating Linux File Systems	• Recommend an optimal performance layout for an Oracle 10*g* database application in a Symmetrix DMX/VMAX and Solaris environment • Perform SRDF operations using SYMCLI commands against an Oracle database application • Perform TimeFinder/Mirror Clone and Snap operations using SYMCLI commands against a replicated Oracle database application • Create Replication Manager "Application Sets" and "Jobs"
Microsoft Exchange Integration with CLARiiON Workshop (4 Days) (40 TU) CLARiiON and Exchange Review, Best Practices for the Integration of Exchange and CLARiiON, Exchange Local Replication using EMC Replication Manager, EMC Remote Replication Solutions for Exchange 2007	• Demonstrate the ability to implement Exchange replication solutions using EMC Replication Manager • Appraise an Exchange environment in order to recommend a given remote replication solution based on RPO/RTO considerations • Use the skills learned to implement and recover Exchange in a remote replication environment
Microsoft SQL Server Integration with CLARiiON Workshop (3 Days) (30 TU) CLARiiON and SQL Server Review, Best Practices for the Integration of SQL Server and CLARiiON, SQL Server Local Replication using EMC Replication Manager, EMC Remote Replication Solutions for SQL Server 2005	• Demonstrate the ability to implement SQL Server replication solutions using EMC Replication Manager • Appraise a SQL Server environment in order to recommend a given remote replication solution based on RPO/RTO considerations • Use the skills learned to implement and recover SQL Server in a remote replication environment

Purchase Options

Replication Manager ValuePak
CE-VALPAKRM $5,000 or (50 TU)
Includes one Instructor-Led course and one self-paced e-Learning course.

For more information on purchase options, see page 11

Instructor-Led Training
e-Learning
Online ILT

For more information on delivery modes, see page 10

Data Domain Learning Path

Benefits any IT professional who deploys and manages data deduplication technology using EMC Data Domain.

You will learn to configure Data Domain in backup and recovery environments to reduce storage, network, and other backup resource requirements.

Courses	Course Objectives
Data Domain System Administration (3 Days) Data Domain system concepts, configuring and integrating systems into an existing environment, upgrading systems, connecting to the network and interoperating with backup software solutions, performing data backups, replicating data to offsite locations, restoring data, and recovering from a disaster	• Describe Data Domain features, benefits, system sizing, network placement and integration • Configure basic settings, CIFS shares and NFS mounts • Analyze and project capacity utilization • Manage and optimize cleaning, sanitize data • Verify steady state operation • Configure replication • Use autosupports, logs, and alerts • Monitor via SNMP • Recover data • Select typical installation methods, models, and network locations • Configure VTL and/or Open Storage • Configure data access rights and permissions • Upgrade system software, rebuild file systems • Manage software licenses • Explain integration with third-party backup solutions
The Instructor-Led Course above is supported by the following e-Learning module:	
Data Domain Technology and Systems Introduction (1 Hr) Introduction to Data Domain inline deduplication systems, product overview, system capacities, common hardware features, and system differences, Data Domain operating system including: system login, management and licensing options overview, data protection features including: hardware redundancy, autosupports, alerts and file protection features	• List the challenges behind conventional backup technology and describe how inline deduplication addresses them • Describe the product family of Data Domain systems and distinguish the difference between Data Domain appliances and Gateway systems • Describe the basic features of the Data Domain Operating System and list the four optional licenses available • Describe system data protection measures and list the four file system data protection measures that ensure customer data integrity • Show the common networking layouts employed for Data Domain systems and list the common protocols supported

Build a reliable, efficient, and cost-effective data protection architecture using EMC Data Domain Deduplication Storage

- Achieve long-term data retention at the cost of tape
- Integrate easily with existing information infrastructure
- Leverage its compatibility with all leading enterprise backup software

Instructor-Led Training e-Learning Online ILT

For more information on delivery modes, see page 10

Purchase Options

Data Domain Deduplication ValuePak
CE-VALPAKDD $3,000 or (30 TU)
Includes one Instructor-Led or one Online ILT course and one self-paced e-Learning course.

Backup and Recovery— Avamar Learning Path

Benefits any storage professional who deploys and manages data deduplication technology using EMC Avamar.

You will learn to configure EMC Avamar® in backup and recovery environments to reduce storage, network and other backup resource requirements.

Certification Alignment

Expert	N/A
Specialist	E20-598 Exam
Associate	E20-001 Exam See Page 15

Courses

Course Objectives

EMC Avamar Administration (3 Days)
Avamar fundamentals, Avamar administration, Avamar backups, Avamar restores, system monitoring and maintenance, replication, troubleshooting, and reporting

- Describe the Avamar advantage over traditional backup systems
- Define Avamar terminology
- Describe the major cycles in the snapup process
- Describe Avamar system architecture, components, and processes
- Install Avamar Administrator and Client software
- Create a group policy
- Run on-demand backups from the Avamar Administrator and the Avamar Client interfaces
- Restore files using Avamar Administrator and Avamar Web Restore interfaces
- Describe Avamar daily maintenance activities: checkpoints, HFS checks, and garbage collection
- Use Avamar tools

The Instructor-Led Course above is supported by the following e-Learning prerequisites:

EMC Avamar Overview (2 Hrs)
Avamar fundamentals, Avamar backups and restores, maintaining, monitoring, and reporting

- Describe Avamar features and architecture
- Describe the Avamar backup and restore process
- Explain how to perform backups and restores
- Describe Avamar maintenance activities
- Describe Avamar monitoring and reporting capabilities

EMC Avamar Virtual Edition Overview (1 Hr)
EMC Avamar fundamentals, EMC Avamar editions, EMC Avamar virtual edition installation

- Describe EMC Avamar features and architecture
- Discuss EMC Avamar server configurations
- Describe EMC Avamar Virtual Edition solution installation
- Discuss differences between EMC Avamar Virtual Edition and Data Store Edition

Additional Courses

Course Objectives

EMC Avamar Integration and Performance Management (3 Days) (30 TU)
Avamar software installation, integration with databases, NDMP and NetWorker, performance management, virtual environments, root-to-root replication, and clustered environments

- Describe Avamar server and client software installation considerations and best practices
- Install, configure, and run on-demand backups and restores of supported Avamar applications
- Install, configure, and run on-demand backups and restores using the Avamar NDMP Accelerator
- Install, configure, and run on-demand NetWorker deduplication backups and restores
- Describe recommended practices for Avamar performance management including sizing client caches and recovering from server capacity issues
- Install and configure Avamar Virtual Edition software
- Use Avamar root-to-root replication to migrate an Avamar single-node server

New! EMC Avamar 5.0 Differences (1 Day) (10 TU)
Avamar server and client enhancements

- Identify the major new and enhanced features in Avamar 5.0
- Describe how to use the new features

Avamar Data Transport Management (1 Hr) (2 TU)
ADT Fundamentals, ADT Administration

- Describe Avamar Data Transport features and system components
- Explain ADT transport and restore operations, sizing and design practices, administration activities, and ADT monitoring and reporting capabilities

Instructor-Led Training | Video-ILT (VILT) | e-Learning | Online ILT

For more information on delivery modes, see page 10

Purchase Options

EMC Avamar Administration ValuePak
CE-AVAXIADMIN $3,000 or (30 TU)
Includes one Instructor-Led or one Online ILT and two self-paced e-Learning courses.

EMC Avamar Administration Video ValuePak
CE-VIDVPKAV $1,800 or (18 TU)
Includes one Video-ILT and two self-paced e-Learning courses.

EMC Avamar Differences Course
CE-DiffAvamar $1,000 or (10 TU)
Includes one Online ILT course.

Backup and Recovery—NetWorker Learning Path

Benefits any storage professional who deploys and manages NetWorker-based backup and recovery in Windows and/or UNIX environments.

You will learn to conduct backups over LAN and/or SAN to targets including tape libraries (physical and virtual), disk and cloud storage systems. Also learn to configure and optimize the backup of your applications and databases. Prepare for your Specialist-level Storage Administrator Backup and Recovery Certification.

Certification Alignment

Expert	N/A
Specialist	E20-597 Exam
Associate	E20-001 Exam See Page 15

Specialist Courses	Course Objectives
EMC NetWorker Administration for UNIX and Microsoft Windows (5 Days) EMC NetWorker 7.x installation, configuration, maintenance, management, backup, recovery, autochanger configuration and management, save-set cloning and staging, generate reports	• Install and administer NetWorker and NetWorker Management Console • Perform and customize backups • Manage standalone devices, autochangers, databases, and media • Recover client data and a NetWorker server
The Instructor-Led Course above is supported by the following e-Learning prerequisites:	
EMC NetWorker Integration with Backup-to-Disk Technologies (2 Hrs) Overview, NetWorker and backup-to-disk, configuration	• Identify the editions of EMC NetWorker software, its architecture and terms • List the requirements for a successful backup-to-disk integration • State the differences between NetWorker's "file type device" and "advance file type device"
EMC NetWorker Foundations (2 Hrs) NetWorker architecture, features, and functionality	• Describe the EMC NetWorker solution, its advantages, and the NetWorker hosts and their roles • Explain NetWorker backup and recovery processes and types
EMC NetWorker Modules Overview (1 Hr) NetWorker modules (Database, E-mail, Enterprise Applications, SnapShot)	• Describe the EMC NetWorker Module solution and list the advantages • Explain NetWorker Module architecture and describe the functionality of each of the modules

Instructor-Led Training | Video-ILT (VILT) | e-Learning | Online ILT

For more information on delivery modes, see page 10

Purchase Options

Backup and Recovery ValuePak
CE-VALPAKBR $5,000 or (50 TU)
Includes one Instructor-Led or one Online ILT course and three self-paced e-Learning courses.

Backup and Recovery Video ValuePak
CE-VIDVPKBR $3,000 or (30 TU)
Includes one Video-ILT and three self-paced e-Learning courses.

For more information on purchase options, see page 11

Backup and Recovery—NetWorker Learning Path (continued)

These additional courses benefit Specialist-level professionals who apply NetWorker 7.x backup and recovery capabilities in particular application and storage environments.

Additional Courses	Course Objectives
Backup and Recovery Design using EMC NetWorker (3 Days) (30 TU) Administrative Interfaces, Customizing the Backup Environment, Media Management, Configuring and Managing Autochangers, Configuring and Managing Standalone Devices, Databases, Cloning and Staging, EMC NetWorker Modules Overview, Firewalls, Clustering Overview, License Manager, PowerSnap Overview, NDMP Overview, Deduplication and VMware Backups, Solution Design and Systems Sizing, Performance Tuning	• Identify backup and recovery design challenges and considerations • Identify and describe different backup and recovery infrastructure • Describe NetWorker features and capabilities • List numerous factors that affect NetWorker backup and recovery performance • Design a NetWorker-based backup and recovery infrastructure • List qualifying questions for NetWorker design
EMC AlphaStor Implementation, Configuration and Management (3 Days) (30 TU) Overview and features, installing AlphaStor, configuring AlphaStor, integrating with NetWorker, managing media, managing resources, troubleshooting AlphaStor	• Explain the AlphaStor solution • Install and configure AlphaStor • Integrate AlphaStor and NetWorker • Manage media and resources • Troubleshoot AlphaStor
Data Protection Advisor for Backups Implementation and Management (3 Days) (30 TU) Overview, installation, configuration, administration, and management	• Install and configure the different EBA components • Manage the product through the GUI • Run and customize report
EMC NetWorker Module for Oracle Implementation and Configuration (2 Days) (20 TU) NetWorker Module for Oracle Overview, Installing NetWorker Module for Oracle, Backing up Oracle data, Restoring Oracle data, Troubleshooting NetWorker Module for Oracle	• Discuss NetWorker Module for Oracle overview, features, and benefits • Plan and install NetWorker Module for Oracle • Use NetWorker configuration wizard • Create RMAN and NMO scripts to perform backups and restores • Perform manual and scheduled Oracle backups • Perform basic troubleshooting for NMO
EMC NetWorker Module for Microsoft Applications (2 Days) (20 TU) Features and functionality, installation and configuration overview, setup and configuration for SQL; Exchange and SharePoint	• Describe the features and functionalities of EMC NetWorker Module for Microsoft Applications • Describe how EMC NetWorker Module for Microsoft Applications works with Microsoft VSS to deliver a unified protection for Microsoft applications • Describe the roles of NetWorker Module for Microsoft Applications and its benefits • Describe how to back up and restore Microsoft applications (SQL; Exchange and SharePoint Server) with EMC NetWorker Module for Microsoft Applications
New! EMC NetWorker Module for Databases and Applications (3 Days) (30 TU) Overview and features, installation, configuration overview, setup and configuration for DB2, for Lotus Notes / Domino, and for Oracle, and Applications troubleshooting	• Describe the usage of the EMC NetWorker Module for Databases and Applications configuration wizard • Describe how to back up and restore database applications (DB2; Lotus Notes Domino and Oracle) with EMC NetWorker Module for Databases and Applications
Backing Up and Recovering Clusters with EMC NetWorker (2 Hrs) (2 TU) Basics of a cluster, cluster nodes as NetWorker storage nodes, configure a NetWorker server in a cluster, NetWorker server works in a cluster	• Describe how to configure a NetWorker client in a cluster • Explain how to recover a clustered client's data and cluster licensing • Describe how to configure cluster nodes as NetWorker storage nodes
EMC NetWorker Module for Microsoft Exchange Server (4 Hrs) (1 TU) NME overview, installing NME , backing up Exchange data with NME, recovering data from a backup, disaster recovery	• Describe the benefits of employing NetWorker Module for Exchange Server (NME) • Describe how to install and configure NME • Describe how to backup and restore data from an Exchange server • Describe how to backup and recover mailboxes and public folders
EMC NetWorker Module for Microsoft SQL Server (3 Hrs) (2 TU) Overview and features, Installing NMSQL, backing up SQL data with NMSQL, restoring SQL data with NMSQL, disaster recovery	• Describe the architecture and internal design of the NetWorker Module for Microsoft SQL Server (NMSQL) • List the steps to install NMSQL
Implementing EMC License Manager (1 Hr) (2 TU) Benefits of using EMC Legato License Manager (LLM), install and configure LLM	• List the benefits of using EMC Legato License Manager (LLM) • Describe how to install and configure LLM
EMC NetWorker Module for SAP R/3 with Oracle (2 Hrs) (2 TU) NMSAP overview and features, installing NMSAP, back up and restore with NMSAP	• Describe the architecture and internal design of NetWorker Module for SAP R/3 with Oracle (NMSAP) • List the steps to install NMSAP • Describe how to backup and restore SAP R/3 data using NMSAP
EMC NetWorker Deduplication (2 Hrs) (1 TU) NetWorker deduplication overview, configuring and running deduplication backups, monitoring, replication and reporting	• Describe the NetWorker deduplication components and backup data flow • List the steps required to configure NetWorker for deduplication backups • Describe the options for backing up VMware environments with NetWorker traditional and deduplication backup methods

RecoverPoint Learning Path

Benefits any storage professional who manages EMC RecoverPoint continuous data protection (CDP) and continuous remote replication (CRR) appliances.

You will learn how to configure RecoverPoint's CDP and CRR capabilities in multi-vendor, multi-site SAN environments. Working knowledge of multi-vendor, multi-site SAN configuration and management is a prerequisite to this learning path. For more information on SAN, see page 23.

Courses	Course Objectives
EMC RecoverPoint Operations and Management (3 Days) RecoverPoint overview, consistency groups, failover and failback operations, advanced configurations (SANTap and Cluster), event notification, and troubleshooting	• Articulate and explain both design and architecture principles of the RecoverPoint platform • Implement the RecoverPoint appliance/solution in complex EMC SAN environments • Provide details and knowledge transfer on conducting both CDP and CRR configuration and operations
The Instructor-Led Course above is supported by the following e-Learning prerequisite:	
EMC RecoverPoint Architecture and Management Overview (2 Hrs) Overview of EMC RecoverPoint, architecture of EMC RecoverPoint, planning and design considerations implementation overview	• State key features of EMC RecoverPoint • Describe the architecture of the RecoverPoint solution for CRR and CDP implementations • Apply suitable design guidelines to create a supported RecoverPoint solution • Describe the steps to configure replication using EMC RecoverPoint

Instructor-Led Training e-Learning Online ILT

For more information on delivery modes, see page 10

Purchase Options

EMC RecoverPoint ValuePak
CE-VALPAKRP $3,000 or (30 TU)
Includes one Instructor-Led or one Online ILT course and one self-paced e-Learning course.

For more information on purchase options, see page 11

EMC Disk Library and B2D Learning Path

Benefits any storage professional who deploys and manages virtual tape libraries in a backup and recovery environment.

You will learn to create EMC Disk Library virtual resources (libraries, drives, and tapes) and integrate them with common operating systems and backup products.

Working knowledge of backup and recovery products is a prerequisite to this learning path.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Product/Technology Specific
E22-315 Exam

Courses	Course Objectives
EMC Disk Library Implementation and Management (3 Days) Configuration, management, OS and backup software configuration, advanced configuration, troubleshooting and considerations	• Implement an EMC Disk Library • Manage an EMC Disk Library • Use troubleshooting features
The Instructor-Led Course above is supported by the following e-Learning prerequisites:	
EMC Disk Library Fundamentals (1 Hr) EMC Disk Library features and positioning, EMC Disk Library architecture	• Explain general tape library features and benefits • Explain EDL positioning and solution target • List EDL models and components • Describe EDL hardware and software architecture • Describe EDL features
EMC NetWorker Integration with EMC Backup-to-Disk Technologies (2 Hrs) Overview, NetWorker and backup-to-disk, configuration	• Identify the editions of EMC NetWorker software, its architecture and terms • List the requirements for a successful backup-to-disk integration • State the differences between NetWorker's "file type device" and "advance file type device"
Veritas NetBackup Integration with EMC Backup-to-Disk Technologies (2 Hrs) Overview, NetBackup and B2D configuration	• Identify the editions of Veritas NetBackup software, its architecture and terms • List the requirements for a successful backup-to-disk integration • Describe the NetBackup backup-to-disk features • Configure disk backup using Veritas NetBackup
IBM TSM Integration with EMC Backup-to-Disk Technologies (2 Hrs) Overview, TSM and backup-to-disk, configuration	• Identify the editions of IBM Tivoli Storage Manager software, its architecture and terms • Identify the requirements for a successful backup-to-disk integration • Configure disk backup using Tivoli Storage Manager
SAN Backup-to-Disk Overview (2 Hrs) SAN backup to disk overview, recommendations and EMC offerings, performance and sizing considerations, CLARiiON and Symmetrix implementations	• Discuss the advantage of disk-based backups in a SAN environment • Identify performance and sizing considerations
LAN Backup-to-Disk Overview (2 Hrs) LAN backup-to-disk overview and recommendations, backup via storage nodes, backup to Celerra NS arrays	• Describe disk-based backups in a LAN environment, including network considerations • Discuss recommendations for backup-to-disk with EMC Celerra

Additional Courses	Course Objectives
Data Protection Advisor for Backups Implementation and Management (3 Days) Overview, Installation, Configuration and Administration, Management, Advanced Administration and Troubleshooting	• Install and configure the different DPA components • Manage the product through the GUI • Run and customize reports
The Instructor-Led Course above is supported by the following e-Learning prerequisite:	
EMC Data Protection Advisor Fundamentals (2 Hrs) Overview and positioning, architecture	• Describe Data Protection Advisor Architecture • Identify platform requirements • Discuss application and device support • Explain how data gathering works
New! Data Protection Advisor Custom Reporting (2 Days) (20 TU) Configuring Reports, Creating Custom Reports, Customizing the Appearance of a Report, Advanced Report Writing	• Create custom reports by modifying existing ones or working from scratch • Describe the use of common operators and data sources

Purchase Options

EMC Disk Library 4000 ValuePak
CE-VALPAKEDL $2,000 or (20 TU)
Includes one Online ILT* and six self-paced e-Learning courses.

Data Protection Advisor ValuePak
CE-VALPAKDPA $3,000 or (30 TU)
Includes one Online ILT and one self-paced e-Learning course.

For more information on purchase options, see page 11

Online ILT
e-Learning

DiskXtender for Windows Learning Path

Benefits any storage professional who plans and deploys EMC DiskXtender in a Windows environment.

You will learn to configure DiskXtender to archive and manage file systems and data using SAN-, NAS-, and CAS-connected devices. Working knowledge of Windows operating systems and networking is a prerequisite to this learning path.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Product/Technology Specific
E22-310 Exam

Courses	Course Objectives
EMC DiskXtender for Windows Installation, Configuration, and Management (3 Days) DiskXtender overview, installing DiskXtender, configuring File System Manager, storage media, and media services, DiskXtender with Centera, managing data using DiskXtender, DiskXtender search module, disaster recovery for DiskXtender, high-availability solutions for DiskXtender, troubleshooting DiskXtender	• Explain the DiskXtender solution, benefits, and components • Install and configure DiskXtender File System Manager • Describe storage media types and DiskXtender media services • Configure NAS and Centera media • Manage data using DiskXtender • Search the archive using DiskXtender Search Module • Configure DiskXtender for disaster recovery and high availability environments • Troubleshoot DiskXtender
The Instructor-Led Course above is supported by the following e-Learning prerequisite:	
EMC DiskXtender for Windows Concepts (2 Hrs) Introduction to archiving, the DiskXtender solution, DiskXtender architecture, DiskXtender features	• Differentiate between backup and archive • Explain the DiskXtender solution • List the components of DiskXtender software • Describe various DiskXtender media services and media types • Identify features and benefits of DiskXtender

Instructor-Led Training Video-ILT (VILT) e-Learning

For more information on delivery modes, see page 10

Purchase Options

DiskXtender for Windows ValuePak
CE-VALPAKDX $3,000 or (30 TU)
Includes one Instructor-Led course and one self-paced e-Learning course.

DiskXtender for Windows Video ValuePak
CE-VIDVPKDX $1,800 or (18 TU)
Includes one Video-ILT and one self-paced e-Learning course.

For more information on purchase options, see page 11

VMware Integration with EMC Storage and Replication Technologies

Derive maximum value from your virtualized information infrastructure by enabling and optimizing business continuity and disaster recovery solutions from EMC.

You will learn to integrate Celerra, CLARiiON, and/or Symmetrix local and remote replication technologies with VMware ESX Server functionality.

Additional Courses	Course Objectives
VMware vSphere Integration with CLARiiON VMware and CLARiiON integration overview, VMware and CLARiiON connectivity, storage provisioning, business continuity with VMware and CLARiiON arrays, migration and disaster recovery with VMware and CLARiiON arrays, Site Recovery Manager with CLARiiON arrays (5 Days) (50 TU)	• Configure VMware ESX/ESXi Server base connectivity to a CLARiiON for a vSphere Server and Guest VMs • Install and configure array management software within a virtual machine and ESX/ESXi Server • Provision storage to an ESX Server virtual machine and examine specifics of migrating/expanding VM storage • Examine storage visibility via ESX/ESXi and CLARiiON utilities • Discuss, configure, and test the different options for ESX/ESXi multi-pathing • Integrate CLARiiON Replication Software with ESX Server, and test migration, failover, and failback operations involving virtual machines • Configure VMware vSphere Site Recovery Manager (SRM) in a CLARiiON environment
VMware vSphere Integration with Symmetrix Integration architecture overview, preparing Symmetrix for ESX/ESXi 4 host, ESX/ESXi 4 preparation, business continuity and non-disruptive storage migration, virtual infrastructure backup and recovery, performance consideration, VMware vSphere Site Recovery Manager (SRM) (5 Days) (50 TU)	• Install and configure EMC PowerPath/VE on ESX 4 host for FC channel path failure protection and load balancing and install and configure Storage viewer for end-to-end pictorial view of storage LUN to virtual machine datastore relationship • Install, configure, and manage VMware SRM product using EMC SRM storage replication technology
VMware vSphere Integration with Celerra VMware vSphere 4 integration with NAS storage, using NFS protocol with VMware, using iSCSI protocol with VMware, Celerra VMware Plug-in, Celerra business continuity applications, VMware SRM integration with Celerra Replicator (5 Days) (50 TU)	• Prepare EMC Celerra unified storage for VMware ESX 4 host connectivity • Provision Celerra NFS file systems for ESX Datastore use • Provision Celerra iSCSI file systems for ESX Datastore • Provision Celerra datastore using Celerra Plug-ins • Replicate file systems • Install, configure, and manage VMware SRM

Purchase Options

VMware vSphere Integration with CLARiiON
$5,000 or (50 TU)
One Instructor-Led or one Online ILT course.

VMware vSphere Integration with Symmetrix
$5,000 or (50 TU)
One Instructor-Led or one Online ILT course.

VMware vSphere Integration with Celerra
$5,000 or (50 TU)
One Instructor-Led or one Online ILT course.

VMware vSphere

Derive maximum value from your virtualized information infrastructure by investing in VMware education and certification.

You will learn to install, configure, secure, and analyze the VMware suite of server virtualization technology.

Prepare to become a VMware Certified Professional (VCP).

Certification Alignment

These courses are aligned to VMware Certified Professional (VCP).

Instructor-Led Training | Online ILT

Courses	Course Objectives
VCP: VMware vSphere: Install, Configure, Manage (5 Days) 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	• Install and configure vCenter Server • Configure and manage ESX networking and storage using vCenter Server • Increase scalability and monitor resource usage using vCenter Server • Apply patches using VMware vCenter Update Manager • Manage higher availability and data protection using vCenter Server
VCP: VMware vSphere: Troubleshooting (4 Days) ESXi command-line troubleshooting methods, ESX, ESXi, and vCenter Server log files, network troubleshooting, management troubleshooting, vMotion troubleshooting, VMware infrastructure troubleshooting, vSphere 4 DRS Cluster troubleshooting	• Use the VMware vSphere Client and service console commands to configure or diagnose and rectify problems on ESX • Use the vSphere Client and the VMware vSphere Management Assistant (vMA) appliance to configure or diagnose and rectify problems on ESX and ESXi hosts • Create and use a network sniffer to capture and display virtual switch network traffic
VMware vSphere: Manage Availability (1 Day) Business continuity, virtual machine clustering, VMware high-availability clusters, VMware fault tolerance, VMware vCenter Server heartbeat	• Describe Microsoft Windows 2003 and 2008 cluster configurations • Configure a VMware High Availability (HA) cluster using nondefault options • Deploy fault-tolerant virtual machines using VMware Fault Tolerance (FT)
VMware vSphere: Manage Scalability (1 Day) Thin provisioning, host profiles, VMware Distributed Resource Scheduler Clusters, VMware vCenter Linked Mode, VMware ESX Scripted Installation	• Using Host Profiles to keep ESX/ESXi hosts uniformly configured and manage compliance • Configuring VMware DRS clusters with non-default options and distributed power management • Managing more than one vCenter Server from the same vSphere Client
VMware vSphere: Manage for Performance (3 Days) Performance in a virtualized environment, CPU performance, memory performance, guidelines for DRS and resource controls, network performance, storage performance, virtual machine performance, application performance	• Explain the performance impact of using different monitor modes • Use vSphere tools to monitor the performance of ESX/ESXi hosts • Diagnose performance problems relating to CPU, memory, network, and storage on an ESX/ESXi host • Discuss how to achieve an optimal virtual machine configuration
VMware vSphere: Manage and Design for Security (3 Days) Security in a virtual environment, secure virtual networking, protecting the management environment, protecting VMware ESX/ESXi host systems, hardening virtual machines, configuration and change management	• Use vSphere tools to monitor the performance of ESX/ESXi hosts • Diagnose performance problems relating to CPU, memory, network, and storage on an ESX/ESXi host • Discuss how to achieve an optimal virtual machine configuration • Discuss guidelines for monitoring application performance
VMware vSphere: Design Workshop (3 Days) Design process overview, ESX/ESXi host design, vSphere virtual datacenter design, vSphere network design, vSphere storage design, virtual machine design, management and monitoring design, design workshop	• Identify design goals, requirements, and constraints • Identify useful information for making design decisions • Recognize and analyze best practice recommendations • Analyze alternative design choices
VMware vSphere: Automation with vSphere PowerCLI (2 Days) Introduction to vSphere PowerCLI, automating ESX host configuration, virtual machine provisioning, configuration, and protection, automating cluster operations, automating reporting	• Automate VMware® ESX® configuration • Automate the provisioning of virtual machines • Automate changes to virtual machine configuration • Automate cluster operations and reporting
New! VMware vSphere: Skills for Operators (2 Days) Introduction to VMware virtualization, virtual machine creation and management, virtual machine resource monitoring, using Update Manager to update virtual machines, migrating virtual machines, troubleshooting virtual machines	• Automate VMware® ESX® configuration • Automate the provisioning of virtual machines • Automate changes to virtual machine configuration • Automate cluster operations and reporting

Purchase Options

VMware vSphere: Install, Configure, Manage
CE-VMvSphIC5 $3,500 or (35 TU)
Includes one Instructor-Led or one Online ILT course.

VMware vSphere: Troubleshooting
CE-VMvSphTRS $3,300 or (33 TU)
Includes one Instructor-Led course.

VMware vSphere: Manage Availability
CE-VMvSphMGA $800 or (8 TU)
Includes one Instructor-Led or one Online ILT course.

VMware vSphere: Manage Scalability
CE-VMvSphMGS $800 or (8 TU)
Includes one Instructor-Led or one Online ILT course.

VMware vSphere: Manage for Performance
CE-VMVSPHMP $2,500 or (25 TU)
Includes one Instructor-Led or one Online ILT course.

VMware vSphere: Manage and Design for Security
CE-VMvSphMDS $2,500 or (25 TU)
Includes one Instructor-Led or one Online ILT course.

VMware vSphere: Design Workshop
CE-VMVSPHDW $2,300 or (23 TU)
Includes one Instructor-Led or one Online ILT course.

VMware vSphere: Automation with vSphere PowerCLI
CE-VMvSphACLI $1,600 or (16 TU)
Includes one Instructor-Led or one Online ILT course.

VMWare vSphere: Skills for Operators
CE-VMVSPhSFO $1,500 or (15 TU)
Includes one Instructor-Led or one Online ILT course.

VMware vCenter

IT professionals can simplify IT management with VMware vCenter virtualization and cloud management solutions.

This training will help you accelerate IT service delivery, transform operational efficiency, automatically assure compliance, and reduce business risks.

Courses	Course Objectives
New! Intro to VMware vCenter Configuration Manager Workshop Introduction to Configuration Manager: overview and concepts, console for Windows, Configuration Manager reports, compliance for Windows, Server Advisor, administration (3 Days)	• Describe why a collection is important • Soft, filter, and pivot data in a Configuration Manager grid • Change and explain the importance of machine groups • Create and run Wizard-based SRS tables • Grid and graph reports, and create simple SQL reports • Explain the different areas of reporting with the Reports Slider • Compare and contrast the SRS report and SQL report • Interpret the results of compliance templates • Create simple rules, filters, and templates to monitor configuration compliance • Explain the bulletin update process • Deploy patches within network environment • Create new filters and filter sets to collect custom data • Create Automatic Discovery Rules of all types • Manually add machines to the database
New! Advanced VMware vCenter Configuration Manager Workshop SCM administration, advanced SQL, SQL Server reporting services, remote commands (3 Days)	• Modify Settings as required to optimize their Configuration Manager installation • Create new filters and filter sets to collect custom data • Create Automatic Discovery Rules of all types • Manually add machines to the database • Create Alternate Sources to deploy agents • Use SQL Server 2005 tools and administer SQL Server 2005 for optimal performance • Understand the Configuration Manager database structures and critical background jobs • Create an SSRS report using the SSRS wizard, from scratch and modify SSRS reports • Look at and modify Configuration Manager provided reports • Create a Remote Command to run script
New! VMware vCenter Configuration Manager Bundle Workshop Overview and concepts, console for windows, Configuration Manager reports, compliance for windows, server advisor, Configuration Manager administration, advanced SQL, SQL Server reporting services, remote commands (5 Days)	• Describe how machines are discovered and licensed • Define a collection and describe why a collection is important • Soft, filter, and pivot data in a Configuration Manager grid • Change machine groups and explain the importance of using machine groups • Create and run Wizard-based SRS tables • Grid and graph reports and create simple SQL reports • Run compliance templates and interpret the results • Create simple rules, filters, and templates to monitor configuration compliance • Explain the bulletin update process and deploy patches within network environment • Modify Settings as required to optimize their Configuration Manager installation • Create Automatic Discovery Rules of all types • Understand SQL Server 2005 tools and how to administer SQL Server 2005 • Create an SSRS data source compatible with Configuration Manager • Create data sets for SSRS • Import a created report into Configuration Manager

Instructor-Led Training Online ILT

Purchase Options

Intro to Vmware vCenter Configuration Manager
CE-VMVINTVCM $3,000 or (30 TU)
Includes one Instructor-Led or one Online ILT course.

Advanced Vmware vCenter Configuration Manager
CE-VMVADVVCM $3,000 or (30 TU)
Includes one Instructor-Led course.

VMware vCenter Configuration Manager Bundle
CE-VMVVCMBUND $5,000 or (50 TU)
Includes one Instructor-Led or one Online ILT course.

VMware View, Site Recovery Manger and Service Manager

Invest in VMware education and realize maximum value from your virtualized information infrastructure.

You will learn the value of desktop end user computing, infrastructure and operations management, and datacenter and cloud infrastructure.

Courses	Course Objectives
VMware View Install, Configure, Manage (3 Days) VMware View overview, View Connection Server, View Desktops, client options, managing View Manager, Linked Clones, unified access, virtual printing, View Security Server, View Replica Server, VMware ThinApp, sizing and best practices	• Create persistent and nonpersistent desktop pools • Configure authentication using devices such as smart cards or cryptographic authentication fobs • Use VMware View Composer to build and manage Linked Clone virtual desktops • Package applications using VMware ThinApp • Find design and sizing guidance for VMware virtual desktop infrastructures
VMware Site Recovery Manager (2 Days) SRM overview, introduction to disaster recovery, SRM planning, SRM installation, array managers, inventory mappings, protection group, recovery plans, SRM alarms and site status, troubleshooting, failover testing and failover, failback (our recommended prerequisite to attend this course is "VMware Infrastructure 3: Install and Configure" based on ESX Server 3.x)	• Create a disaster recovery workflow for your virtual machines using SRM • Configure SRM storage replication adapters • Configure SRM protected and recovery sites and array managers • Define SRM inventory mappings • Create and test SRM recovery plans
New! VMware View: Design Best Practices (1 Day) Course introduction, design methodology, design considerations	• Define the recommended design process • Describe the layered architecture design model and the reference framework • Design considerations to meet business needs • VMware's best practices for a View deployment
New! VMware Service Manager (5 Days) Technical architecture, troubleshooting, installing service manager, standard configuration, advanced configurations, API web services, stored procedures, customer portal, upgrading customizations, data import wizard	• Customize your VMware Service Manager system • Install, configure and poll external resources via Integration connectors • Trace the application for issues or performance, and query or extend the relational database

Instructor-Led Training Online ILT e-Learning

For more information on delivery modes, see page 10

Purchase Options

VMware View: Install, Configure, Manage
CE-VMVIEWIC $2,300 or (23 TU)
Includes one Instructor-Led or one Online ILT course.

VMware Site Recovery Manager
CE-VMWSRM $1,700 or (17 TU)
Includes one Instructor-Led or one Online ILT course.

Vmware Service Manager
CE-VMVSERMGR $5,000 or (50 TU)
Includes one Instructor-Led course.

VMware View: Design Best Practices
CE-VMVIEWDBP $1,000 or (10 TU)
Includes one Instructor-Led course.

VPLEX

Benefits storage professionals and IT managers involved in managing EMC VPLEX to enhance enterprise data mobility and access between and across data centers.

Courses	Course Objectives
(3 Days) (30 TU) **New! VPLEX Operations and Management** Product and technology overview, management interfaces (GUI and CLI), major features and functionality, planning and design, monitoring, maintenance and Troubleshooting	• Describe common VPLEX terms • Describe the available VPLEX system configuration options, hardware components and software architecture • Explain data flow within a VPLEX system at a high level • Bring up and use Element Manager GUI • Run VPlexcli commands • Provision new VPLEX virtual storage to hosts • Perform one-for-one encapsulation of existing, live production SAN storage volumes into VPLEX volumes • Execute VPLEX mobility jobs (extent, device, and batched) • Perform routine VPLEX monitoring tasks • Describe integration and interoperability considerations that apply when preparing to deploy VPLEX into a net-new or an existing data center • State common VPLEX best practices

Additional Courses	Course Objectives
(2 Hrs) (2 TU) **New! EMC VPLEX Architectural Overview** VPLEX Technology and Applications, Architecture – Physical and Logical Components, VPLEX Functionality and Management, Integration Considerations	• Describe VPLEX system architecture and configuration options • Explain solutions utilizing VPLEX, and describe their benefits • Describe key VPLEX features, how they can be effectively used, and high-level tasks for implementing them • Explain how VPLEX can be integrated into your production environment • Perform planning for VPLEX deployments
(2 Hrs) (2 TU) **New! EMC VPLEX Administration and Storage Provisioning** VPLEX features including storage provisioning, data mobility and remote and distributed device creation, claim storage, create virtual volumes and provision volumes to hosts	• Create and provision VPLEX virtual volumes to a host • Encapsulate production native array volumes into VPLEX volumes • Perform mobility in VPLEX Local and VPLEX Metro environments • Configure and provision VPLEX Metro distributed devices and remote devices • Perform basic monitoring and health check activities on a VPLEX system

Online ILT e-Learning

For more information on delivery modes, see page 10

Purchase Options

VPLEX ValuePak
CE-VALPAKVPX $3,000 or (30 TU)
Includes one Online ILT course.

Vblock

Benefits IT professionals responsible for initializing, deploying, and managing Vblock infrastructures.

You will learn the Vblock Architecture, fundamental initialization, deployment and management tasks, along with the pertinent details. Detailed lab exercises will guide you through the initial steps involved in performing the necessary tasks to bring a new Vblock solution into production

Courses	Course Objectives
(4 Days) **New! Vblock 1/0 Initialize, Deploy and Manage** Vblock 1 and Vblock 0 infrastructure package – architecture and components, securing and configuring the UCS, VMware and Vblock 1/0 storage architecture overview, preparing CLARiiON for ESX/ESXi 4 Host, preparing Celerra for ESX/ESXi 4 NFS datastore, Vblock 1 initialization and deployment - fibre Channel, iSCSI and NFS	• Discuss the initialization tasks and identify the necessary environmental configuration data prerequisites for Vblock initialization • Discuss the SAN interconnect configuration, both the Fibre Channel and IP based interconnects, for Vblock 1 and Vblock 0 initialization • Describe the basic storage requirements and management interfaces for the Vblock 1 and Vblock 0 initialization • Create and deploy simple Cisco UCS server profiles, RBAC user profile, CLARiiON Fibre Channel boot LUNs for Vblock initialization, Celerra NFS file systems and exports for NFS datastores, VMware ESX and ESXi instances to Cisco UCS blades in a fibre channel and local boot configuration, • Perform simple management and monitoring functions for the Vblock1 and Vblocko using Navisphere / Unisphere, vCenter, UCSM (Cisco UCS Manager), EMC UIM v1
(3 Days) **New! Vblock 2 Initialize, Deploy and Manage** Vblock 2 infrastructure package – architecture and COmponents, VMware and Symmetrix architecture overview, preparing Symmetrix for ESX/ESXi 4 host, Vblock 2 initialization and deployment, managing UCS users, monitoring for events, backup and restore of UCS, introduction to UIM v1.0	• Discuss the initialization tasks and identify the necessary environmental configuration data prerequisites for Vblock initialization • Discuss the SAN interconnect configuration with Fibre Channel for Vblock 2 initialization • Describe the basic storage requirements and management interfaces for the Vblock 2 initialization • Create and deploy simple Cisco UCS server profiles, RBAC user profile, Symmetrix boot LUNs for Vblock initialization using SMC, VMware ESX to Cisco UCS blades in a Fibre Channel boot configuration • Perform simple management and monitoring functions for Vblock 2 using Symmetrix Configuration Manager (SMC), vCenter, UCSM (Cisco UCS Manager), EMC UIMv1
(2 Days) (20 TU) **New! Vblock Infrastructure Management and Monitoring Overview** Vblock build and manage, Vblock 0 administrative interfaces and best practices, Vblock 1 administrative interfaces and best practices, Vblock 2 administrative interfaces and best practices, UCS management, VMware vCenter management and monitoring, EMC Ionix Unified infrastructure management v1 overview	• Obtain working knowledge of EMC Vblock administration interfaces • Discuss EMC storage options for Vblock infrastructures • Discuss the additional administrative capabilities of the EMC Ionix Unified Infrastructure Management tool • Discuss monitoring options available via the various administrative interfaces for the Vblock infrastructure
(1 Hr) **New! Vblock Infrastructure Overview** Vblock Overview – features and benefits, Vblock architecture – components and design, Vblock build and manage – managing the components of Vblock systems	• Understand features and benefits of Vblock systems • Describe the architecture and components of Vblock systems • Describe the various aspects of managing a Vblock environment
(5 Days) (35 TU) **New! Cisco Systems: Data Center Unified Computing Implementation** Architecture and benefits of the Cisco Unified Computing System, connectivity and management, system manager, compute node connectivity, implementation of server resources, system maintenance, system deployments, networks in a virtual server environment	• Obtain working knowledge of EMC Vblock administration interfaces • Discuss EMC storage options for Vblock infrastructures • Discuss the additional administrative capabilities of the EMC Ionix Unified Infrastructure Management tool • Discuss monitoring options available via the various administrative interfaces for the Vblock infrastructure
(4 Days) (40 TU) **New! EMC Ionix Unified Infrastructure Manager (UIM) Management and Reporting** Overview, dashboard, provisioning Center, configuration center, integration, troubleshooting, theory of operation and logical and physical components that comprise a Vblock 1 Infrastructure with UIM 2.0	• Perform Prerequisite General Configuration • Administer Provisioning Center and Configuration Center • Monitor and Customize Dashboard • Explain External APIs • Troubleshoot Application

Instructor-Led Training Online ILT e-Learning

Purchase Options

For more information on delivery modes, see page 10

Cisco:Data Center Unified Computing Implementation
CE-CISCOUCSI $3,500 or (35 TU)
Includes one Instructor-led course.

EMC Ionix Unified Infrastructure Manager (UIM) Management and Reporting
CE-VALPAKUIM $4,000 or (40 TU)
Includes one Instructor-Led course.

Greenplum

Benefits a database team (administrators and architects) preparing to deploy the Greenplum database system, or database professionals new to an existing Greenplum environment. Students will learn the key elements of the unique Greenplum architecture and become familiar with terminology, data distribution and high level optimization methods. Next students will gain hands-on exposure to the installation, configuration upgrade and ongoing maintenance of the Greenplum database system, including all critical administration and monitoring tasks. Lastly, the course explores hands-on' "how to" projects with a Greenplum database system, including applying best practices for design, partitioning, queries and reports.

By-Request-Only Course	Course Objectives
Greenplum Architecture, Administration, and Implementation (5 Days) This instructor led course will introduce the student to the architecture, configuration and nomenclature of Greenplum systems. It provides a high level knowledge of the "Shared Nothing" MPP environment and data warehousing techniques. During the class the student will install, upgrade, and maintain the Greenplum database system by evaluating logical models and business requirements in order to determine the best physical design for a small Greenplum database and write well tuned detailed business intelligence reports and queries. The labs within this course will guide the student through an implementation during which they will learn the skills and techniques particular to Greenplum databases.	• Describe Greenplum architecture and components • Define a PostgreSQL open source databases and the relationship with Greenplum • Review SQL related similarities and differences between PostgreSQL and Greenplum • Review basic Greenplum utilities and client tools • Describe the Greenplum Database architecture, components, features, and capabilities • Perform common database activities within the Greenplum Database • Administer and troubleshoot your Greenplum Database system • Create a Greenplum Database and Schemas • Evaluate Logical and Physical Data Models • Determine appropriate Distribution Keys and create tables • Determine and implement partitioning and indexing strategies • Determine and implement optimal load methodologies • Create detail and summary reports using OLAP functions • Create and use temporary tables • Write basic PostGREs functions and create data types • Identify and optimize problem queries

Instructor-Led Training

For more information on delivery modes, see page 10

Purchase Options

If you are interested in scheduling an Instructor-Led class or would like our qualified Instructor to deliver this course at your company's location, or EMC's closest training facility, please contact your EMC Sales Representative or a Training Registrar at 1-888-EMC-TRNG.

For more information on purchase options, see page 11

Ionix for Storage Resource Management (ControlCenter) Learning Path

Benefits any storage professional who deploys and manages an information and storage infrastructure using EMC ControlCenter and Symmetrix Management Console (SMC).

You will learn to monitor and manage users, alerts, and performance reports. You will also learn about SAN configuration, storage provisioning, and business continuity operations.

Prepare for your Specialist-level Storage Administrator Storage Management Certification.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Expert	N/A
Specialist	E20-582 Exam
Associate	E20-001 Exam See Page 15

Specialist Courses	Course Objectives
ControlCenter Management (5 Days) Administration, user management, alert management, reporting, performance management, Symmetrix and CLARiiON configuration management, SAN management, Symmetrix business continuance operations, host management, automated pathing, and storage provisioning	• Determine and administer ControlCenter security, users, resource allocation/utilization, and data collection policies • Manage alerts and autofixes, customize reports, and leverage performance management tools • Perform configuration management tasks for SAN and storage devices and business continuity operations
The Instructor-Led Course above is supported by the following e-Learning prerequisites:	
Symmetrix Foundations (2 Hrs) Symmetrix disk array architecture, volume protection, I/O path, connectivity, vaulting and high-availability features	• Draw and describe the basic architecture of Symmetrix • Explain Symmetrix theory of operations, connectivity options, and key features
TimeFinder Foundations (2 Hrs) TimeFinder terminology, features, architecture, theory of operations and management, TimeFinder Mirror, Clone, and Snap local replication solutions	• Describe the architectural components and theory of operations of TimeFinder • Explain how various replication options of TimeFinder can be integrated into Symmetrix business continuity/disaster recovery environments
SRDF Foundations (1 Hr) Symmetrix business continuity solutions for remote replication, features, functionality, and benefits of the SRDF family of products	• Describe architectural components and theory of operations of SRDF • Explain how various replication options of SRDF can be integrated into Symmetrix business continuity/disaster recovery environments
CLARiiON Foundations (2 Hrs) CLARiiON models and components, management options, features	• Identify supported CLARiiON RAID Types • Identify CLARiiON data integrity and availability features • Identify CLARiiON management options and storage provisioning objects
Connectrix Foundations (1 Hr) Storage connectivity overview, SAN architecture and components, SAN fabric topologies, EMC's Connectrix range, securing a SAN, SAN management tools, IP-based SAN extension, SAN technical positioning	• Components, services, and FC protocol used in a storage area network • Identify fabric topologies and different types of Connectrix products • Explain how to secure a SAN using series-specific solutions
Celerra Foundations (2 Hrs) Celerra architecture, operations,EMC Celerra platforms, Celerra benefits and requirements	• Identify the concepts, architecture, terminology, and environmental aspects of NAS using the Celerra • Describe Celerra features, functions, and management software offerings • Discuss different Celerra business continuity options and backup solutions
CLARiiON Basic Management (2 Hrs) Navisphere Manager and CLI, basic management functions, CLARiiON storage platform	• Describe the utilities used to manage CLARiiON arrays and the Navisphere Manager GUI • Create and manage storage objects with Navisphere Manager
ControlCenter Foundations (2 Hrs) ControlCenter terminology, features, architecture, theory of operations and management	• Describe the architectural components and theory of operations of ControlCenter • Use ControlCenter to carry out common storage management tasks
ControlCenter Install and Upgrade (2 Hrs) Planning for, installing, and upgrading ControlCenter	• Identify the references for planning and installing ControlCenter • Prepare the necessary information to install or upgrade ControlCenter
Symmetrix Management Console (SMC) Fundamentals (5 Hrs) Documentation and installation, SMC–Symmetrix configuration, SMC–replication operations, SMC differences with SYMCLI, troubleshooting, SMC interface	• Install and configure the SMC Server and use various SMC views • Perform Symmetrix configuration and replication tasks with SMC • Troubleshoot SMC
ControlCenter StorageScope Reporting (2.5 Hrs) ControlCenter StorageScope, basic reporting scenarios, advanced reporting scenarios	• Describe StorageScope architecture, data processing, and repository maintenance • Utilize StorageScope SRM views, dashboard snaphots, and reports • Use the Query Builder to create custom queries

Instructor-Led Training | Video-ILT (VILT) | e-Learning | Online ILT

For more information on delivery modes, see page 10

Purchase Options

ControlCenter ValuePak
CE-VALPAKCC $5,000 or (50 TU)
Includes one Instructor-Led course and 11 self-paced e-Learning courses.

ControlCenter Video ValuePak
CE-VIDVPKCC $3,000 or (30 TU)
Includes one Video-ILT and 11 self-paced e-Learning courses.

For more information on purchase options, see page 11

Ionix for Storage Resource Management (continued)

These additional courses benefit Specialist-level professionals who manage Symmetrix SAN environments, storage performance monitoring, availability, and policies.

They also benefit those who provide guidance for optimal capacity expansion and change management.

Additional Courses	Course Objectives
ControlCenter Alerts, Monitoring and Framework Integration (12 Hrs) (20 TU) Introduction, alert management review, health alerts, capacity alerts, performance alerts, framework integration	• Understand the benefits of ControlCenter alerts • Configure, monitor, and handle ControlCenter alerts • Enumerate the ControlCenter alerts available in ControlCenter • Understand the methodology and considerations for setting up health, capacity, and performance-related alerts • Integrate ControlCenter alerts with SNMP framework applications
Symmetrix Performance Workshop (4 Days) (40 TU) Performance overview and measurements, tools, analysis, front-end, system/cache, back-end, business continuance	• Fully utilize features of ControlCenter Performance Manager and Console to analyze Symmetrix performance • Describe the performance benefits of Optimizer and PowerPath • Identify the architectural components of a Symmetrix array, describe their performance characteristics, and differentiate between Symmetrix 8000 and DMX family arrays • Use the standard Symmetrix roadmap of key measures to quickly identify performance problems
Ionix Storage Configuration Advisor (SCA) Configuration and Management (3 Days) (30 TU) Setup and installation of SCA, user administration, discovery, compliance policies, breach and configuration management, search and reports, database administration	• Create a virtual machine on which to install the Ionix Storage Configuration Advisor (SCA) appliance • Install SCA software on the SCA appliance • Manage SCA users and roles • Configure discovery and re-discovery profiles • Configure compliance policies and rules • Investigate and manage policy breaches • Monitor and review reported configuration changes • Analyze various reports • Backup SCA repositories

Ionix ControlCenter StorageScope

Benefits any storage professional who creates tailored reports based on the StorageScope schema using StorageScope Query Builder or an external reporting tool.

You will learn to write effective reports using the EMC ControlCenter StorageScope Repository, join and filter commonly-used tables to create useful results, research the StorageScope documentation, and use Query Builder to investigate the environment's data to develop a reporting solution.

Additional Courses	Course Objectives
ControlCenter StorageScope Reporting Workshop (4 Days) StorageScope architecture, properties tables, trend tables, group tables, relationship tables	• Use the StorageScope documentation to locate the tables and columns needed to produce a report • Join tables to show trend data, object groups, and data path relations • Query the StorageScope Repository data using Query Builder, Crystal Reports, Microsoft Query, Microsoft Access, or Microsoft Excel • Use Query Builder to prototype SQL code for use in Snapshots or Reports • Use Crystal Reports Developer to create RPT files that can be included in the StorageScope reporting server
The Instructor-Led Course above is supported by the following e-Learning prerequisites:	
ControlCenter StorageScope Reporting (2 Hrs) ControlCenter StorageScope, basic reporting scenarios, advanced reporting scenarios	• Describe StorageScope architecture, data processing, and repository maintenance • Utilize StorageScope SRM Views, Dashboard Snapshots, and built-in reports to obtain detailed and high level information about your storage environment • Use the Query Builder to create custom queries and extract detailed information about your storage environment
ControlCenter 6.0 Differences (2 Hrs) Overview, StorageScope, usability enhancements, managed object enhancements	• Discuss the function and data paths of new architecture components • Describe data collection and processing in StorageScope • Use StorageScope views, reports, and queries to report on your environment • Use ControlCenter Console usability enhancements effectively • Enumerate managed object support changes • Manage Cisco VSANs using ControlCenter • Monitor VMware servers using ControlCenter

Instructor-Led Training e-Learning Online ILT

For more information on delivery modes, see page 10

Purchase Options

StorageScope ValuePak
CE-VALPAKSS $4,000 or (40 TU)
Includes one Instructor-Led or one Online ILT course and two self-paced e-Learning courses.

For more information on purchase options, see page 11

Ionix for Network Configuration Manager (formerly Voyence) Learning Path

Benefits any IT professional who installs, administers, or manages Network Configuration Manager solutions.

Courses	Course Objectives
EMC Ionix Network Configuration Manager Installation and System Administration (2 Days) (20 TU) EMC Ionix NCM overview, architecture and design, installation, configuration and discovery, common system administration tasks, command line interface, integration modules	• Describe the basic capabilities and architecture of EMC Ionix NCM • List platform support and security considerations for deploying EMC Ionix NCM • Describe the distributed and combo EMC Ionix NCM architectures • Explain the sizing, security, and port considerations for a EMC Ionix NCM implementation • List the steps to install EMC Ionix NCM via command-line interface, graphical user interface, and silent installation scripts • Configure EMC Ionix NCM for an initial network discovery • Create and discover a network • Describe common system administration tasks
AND	
EMC Ionix Network Configuration Manager Application and Device Management (3 Days) (30 TU) EMC Ionix NCM console overview, network discovery, global environment, device management, editors, automation library and templates, automation library, compliance wizard, attributed model, workspaces and template merge, report advisor	• Manage configuration and change management of devices in an EMC Ionix NCM Network • Describe the Attributed Model and Multi-Configuration • Create and enforce network policies • Determine device state using device properties • Manage devices using the Config Editor, Configlet Editor, Command Editor, and Interface Editor • Use EMC Ionix NCM to roll credentials on network devices • Create Attributed Queries and Compliance Tests • Use the EMC Ionix NCM Event Manager to monitor network system, security, and device events • Create and Enforce Network Policies • Use Engineering Workspaces to plan changes to a network configuration • Configure Voyence Report Advisor and run reports on the state of the network
EMC Ionix Network Configuration Manager PCI Advisor Overview (1 Hr) (1 TU) PCI Advisor overview and architecture, installation, reporting options	• Describe the purpose of PCI Advisor • Explain how to install PCI Advisor • List the key components of PCI Advisor • Describe how to adapt PCI Advisor to individual environments • Describe the reporting options offered by PCI Advisor
EMC Ionix Network Configuration Manager Network Advisor Technical Overview (1 Hr) (3 TU) NCM Reporting Structure, accessing and navigating Report Advisor, Reports	• Describe the Network Configuration Manager reporting architecture • Explain the purpose of NCM Report Advisor • List the Advisory Series plug-ins available for Report Advisor • Describe private and public reports and dashboards • Explain how to customize Pre-made reports • Describe how to make an Ad Hoc report

Instructor-Led Training e-Learning Online ILT

For more information on delivery modes, see page 10

Purchase Options

The courses listed above can be purchased individually with a subscription, Training Units, or credit card.

For more information on purchase options, see page 11

Ionix for IT Operations Intelligence (formerly Smarts) Learning Path

Benefits any IT professional who deploys and leverages end-to-end network management solutions.

You will learn to configure the EMC Ionix for IT Operations Intelligence suite of software, view and understand the diagnostic analysis results, and resolve network and service issues. Prepare for your Network Management (Smarts) Certification.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Product/Technology Specific
E22-250 Exam

Courses	Course Objectives
EMC Ionix Service Assurance Manager Training (Smarts) (3 Days) Install, configure, and administer EMC Ionix Service Assurance Manager (SAM); create user profiles, configure SAM to connect other domains. Configure Business Impact Manager to view topology and events in the context of the business services they support	• View the results of the EMC Ionix diagnostic analysis and understand the network and service impacts caused by failures • Automate actions to respond to failure notifications • Incorporate customer and service information into Service Assurance Manager to manage infrastructure in the context of business
AND	
EMC Ionix IP Manager Administrator (Smarts) Training (2 Days) Install and configure EMC Ionix IP Management Suite; configure and perform topology discoveries; enable and configure auto-discoveries; set up desired management policies using Polling and Threshold Groups	• Install and configure EMC Ionix software • Understand how to start and stop EMC Ionix for IP Domain Manager with the various options • Launch the powerful EMC Ionix Discovery process
The Instructor-Led Courses above are supported by the following e-Learning prerequisites:	
EMC Ionix IT Operations Intelligence Overview (2 Hrs) EMC Ionix IT Operations Intelligence introduction and architecture, domain managers, ITOps Service Assurance Manager, additional domain managers, EMC Ionix ITOps Performance Reporter	• Describe the EMC Ionix IT Operations Intelligence suite, and the value it brings to IT management • Discuss the architecture of the ITOps suite of network monitoring products, the value of automation, and automatic root-cause analysis • Identify the different Domain technologies supported, and describe the function of Cross Domain correlation
EMC Ionix Service Assurance Global Console (Smarts) (4 Hrs) Service Assurance Manager Global Console, customization of a global console, the Notification Log Console, the Topology Browser, the Map View	• View and explore the results of the EMC Ionix diagnostic analysis • Maintain user logins and associated user profiles • Automate actions to respond to failure notifications • Incorporate customer and service information into SAM to manage infrastructure in the context of business
EMC Ionix Service Assurance Global Console (Smarts) Advanced (4 Hrs) Business Impact Manager, understanding groups, the Summary View, the Status Table View, Context Sharing	• Respond to failure notifications • Customize the layout of the EMC Ionix Console

Instructor-Led Training Video-ILT (VILT) e-Learning Online ILT

For more information on delivery modes, see page 10

Purchase Options

EMC Smarts SAM/IP Administrator ValuePak
CE-VALPAKSMT $5,000 or (50 TU)
Includes two Instructor-Led or Online ILT courses and three self-paced e-Learning courses.

EMC Smarts Global Console ValuePak
CE-VALPAKGCL $700 or (7 TU)
Includes three self-paced e-Learning courses.

EMC Smarts SAM/IP Administrator Video ValuePak
CE-VIDVPKSMT $3,000 or (30 TU)
Includes two Video-ILTs and three self-paced e-Learning courses.

For more information on purchase options, see page 11

Ionix for IT Operations Intelligence (formerly Smarts) Learning Path (continued)

	Additional Courses	Course Objectives
(4 Days) (40 TU)	**New! EMC Ionix Unified Infrastructure Manager (UIM) Management and Reporting** Overview, dashboard, provisioning Center, configuration center, integration, troubleshooting, theory of operation and logical and physical components that comprise a Vblock 1 Infrastructure with UIM 2.0	• Perform Prerequisite General Configuration • Administer Provisioning Center and Configuration Center • Monitor and Customize Dashboard • Explain External APIs • Troubleshoot Application
(2 Days) (20 TU)	**EMC Ionix Service Assurance Adapter Platform Training (Smarts)** Introduction to Smarts adapters, the command-line interface functions, SNMP trap receiver, advanced processing using a hook script, Syslog adapter, notification adapters, notification adapter processing	• Configure and customize the Service Assurance Manager Platform • Use the command-line interface to process data from multiple sources • Configure and run the SNMP Trap Receiver to process SNMP Traps • Configure and run the EMC Ionix Syslog Adapter to process syslog messages and adapters to export information from an EMC Ionix server
(2 Days) (20 TU)	**EMC Ionix Application Discovery Manager (formerly Smarts)** Introduction to ADM, host and business application grouping, using the map and reporting, configuration, administration, and basic troubleshooting, passive discovery configuration, detail discovery configuration & policies, change tracking	• Configure and troubleshoot the ADM solution • View the information available in the ADM console • Configure and perform a Passive discovery • Perform a detail discovery and set detail discovery policies
(1 Day) (10 TU)	**EMC Ionix ITOps ASL (Smarts) for Service Assurance Manager Training** Understanding the EMC Ionix architecture, enhancing SAM with ASL, developing data exchange adapter hookscripts, importing information into SAM, utilizing imported information	• Populate user-defined attributes • Access Information from the originating server • Import information into SAM • Enhance your notifications
(1 Day) (10 TU)	**EMC Ionix ITOps ASL (Smarts) Training** Introduction to adapters, the EMC Ionix Common Model, types of adapters, how to save output to a file, how to run sm_adapter	• Write ASL scripts to pull information from the Domain Manager • Use scripts to set values of attributes in the ICIM topology • Read data from files for input • Write adapters to modify discovery behavior
(2 Days) (20 TU)	**EMC Ionix MPLS Manager (Smarts)** Introduction to EMC Ionix technology, MPLS/VPN fundamentals, Introduction to EMC Ionix MPLS Manager, object model, discovery and monitoring with EMC Ionix MPLS Manager, overlapping IP networks, EMC Ionix Cisco ISC adapter	• Explain how EMC Ionix MPLS Manager fits within the EMC Ionix suite of products • Analyze the impact of physical connectivity failure on logical connectivity • Explain how EMC Ionix MPLS Manager can leverage the analysis performed by other EMC Ionix applications • Configure and manage remote ICMP pings
(2 Days) (20 TU)	**EMC Ionix Network Protocol Manager (Smarts)** OSPF fundamentals, Ionix Protocol Services Manager, BGP fundamentals, EMC Ionix Protocol Services Manager, diagnostic analysis, impact analysis, Ionix Protocol Services Manager administration	• Understand how EMC Ionix Protocol Services Manager diagnoses connectivity failures at the protocol layer • Explore how EMC Ionix Protocol Services Manager cross-correlates physical connectivity failures with protocol layer failures • Navigate through the comprehensive view of the network domain maintained by EMC Ionix Service Assurance Manager
(2 Days) (20 TU)	**EMC Ionix Storage Insight for Availability (Smarts)** Overview of Storage Insight for Availability, SIA architecture and theory of operation, SIA performance and scalability, EMC ControlCenter requirements for SIA, SIA installation, configuration and startup, discovery, console views, topology, and maps, monitoring, troubleshooting and log files	• Explain SIA architecture, theory of operation, performance and scalability requirements • Perform an SIA installation and configure an SIA environment • Perform an SIA discovery and explain console views, topology, and maps • Monitor a data center environment using SIA and identify and understand SIA log files
(3 Days) (30 TU)	**EMC Ionix VoIP Performance Manager and Performance Reporter (Smarts)** Architecture, node topology, planning an installation, displays, databases, setting and using thresholds, understanding configurations, web publishing, managing security, understanding analysts, managing Cisco Unity and Microsoft Exchange, Managing Cisco Unified Callmanager version 4, maintenance and troubleshooting	• Install the product • Administer user groups • Configure the product • Navigate the interface • Set and use thresholds • Manage security settings
(2 Days) (20 TU)	**EMC Ionix Application Connectivity Monitor (Smarts)** Overview of EMC Ionix, the application domain, fundamentals of application connectivity monitor, ACM installation, the discovery process, management policies, the topology builder, integrating third-party events	• Use EMC Ionix Application Connectivity Monitor to monitor TCP-based hosted applications for availability and analyze the impact of physical connectivity failure on TCP connectivity • Use EMC Ionix Application Connectivity Monitor to perform automatic discovery of TCP-based software services and to leverage the analysis performed by other EMC Ionix applications

Purchase Options

If you are interested in attending this class or would like our qualified Instructor to deliver this course at your company's location, or EMC's closest training facility, please contact your EMC Sales Representative or a Training Registrar at 1-888-EMC-TRNG.

For more information on purchase options, see page 11

EMC Technology Foundations Learning Path

ETF introduces the basic architecture and features of EMC's Celerra, Connectrix, Symmetrix, CLARiiON, and Centera technology. Plus it addresses, backup, archive, information availability, virtualization, network management, and replication considerations.

Prepare for your Associate-Level Certification.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Product/Technology Specific
E20-040 Exam

Courses	Course Objectives
EMC Technology Foundations (ETF) This course covers the following modules listed below: (5 Days) (25 Hrs) (Total)	
OR receive the same content in the following self-paced e-Learnings Courses	
CLARiiON Foundations CLARiiON models and components, management options, features	• Identify supported CLARiiON RAID Types • Identify CLARiiON management options and storage provisioning objects
SnapView Foundations SnapView Snapshots, SnapView Clones	• Identify SnapView business uses • Identify SnapView snapshot and clone functions and operation
MirrorView and SAN Copy Foundations MirrorView, SAN Copy	• Identify remote replication functions and operations • Identify the management options for remote replication software • Identify a business case for remote replication products
Symmetrix Foundations Symmetrix disk array architecture, volume protection, I/O path, connectivity, vaulting and high-availability features	• Draw and describe the basic architecture of Symmetrix • Explain Symmetrix theory of operations, connectivity options, and key features
TimeFinder Foundations TimeFinder terminology, features, architecture, theory of operations and management, TimeFinder Mirror, Clone, and Snap local replication solutions	• Describe the architectural components and theory of operations of TimeFinder • Explain how various replication options of TimeFinder can be integrated into a Symmetrix DMX business continuity/disaster recovery environment
SRDF Foundations Symmetrix business continuity solutions for remote replication, features, functionality, and benefits of the SRDF family of products	• Describe architectural components and theory of operations of SRDF • Explain how various replication options of SRDF can be integrated into a Symmetrix DMX business continuity/disaster recovery environment
Connectrix Foundations EMC Connectrix B-Series, and MDS-Series, EMC SAN Manager, Connectrix Manager, native switch management tools	• Describe the architecture and key features of the Connectrix B-, and MDS-Series switches and directors • List and explain EMC and native switch management tools
PowerPath Foundations PowerPath terminology, features, architecture, theory of operations and management	• Discuss the features and benefits of PowerPath in an open systems host environment • Explain how PowerPath achieves transparent recovery of host to storage channels
Celerra Foundations Celerra architecture, operations,EMC Celerra platforms, Celerra benefits and requirements	• Identify the concepts, architecture, terminology, and environmental aspects of NAS using the Celerra • Describe Celerra features, functions, and management software offerings • Discuss different Celerra business continuity options and backup solutions
Storage Virtualization Foundations Invista SAN virtualization, Rainfinity NAS virtualization	• Describe the architecture and key features of EMC storage virtualization products • Explain common deployments of EMC storage virtualization products
EMC Backup Technologies Foundations NetWorker, EMC Disk Library, DiskXtender, Avamar, EMC Backup Advisor architecture, and key features	• Describe the architecture and key features of EMC backup technologies and products • Explain common deployments of core EMC backup products
ControlCenter Foundations ControlCenter features, architecture, theory of operations, and management	• Describe the architectural components and theory of operations of ControlCenter • Use ControlCenter to carry out common storage management tasks
Archive Technology Foundations Content-addressed storage (CAS), EmailXtender Overview, DiskXtender For Windows Overview	• Describe the functions and features of content-addressed storage (CAS), EmailXtender, DiskXtender
Replication Technology Foundations RecoverPoint, Replication Manager, Open Replicator, RepliStor overview	• Identify the concepts, value, and environmental aspects of RecoverPoint, Replication Manager, Open Replicator, RepliStor
IT Management Technology IT Management Technology Foundations	• Describe the goals of IT management systems • Explain the EMC Smarts architectural concepts • Discuss individual domain silos that comprise an overall IT infrastructure

Purchase Options

EMC Technology Foundations
30 Training Units
$3,000 or (30 TU)
18 Training Units or $1,800 or (18 TU)

EMC Technology Foundations eValuePak
CE-VALPAKETF $2,000 or (20 TU)
Includes 15 self-paced e-Learning courses.

For more information on purchase options, see page 11

Instructor-Led Training
Video-ILT (VILT)
e-Learning

For more information on delivery modes, see page 10

RSA Learning Paths

Benefits system, security, or help desk administrators who need to administer and support RSA products. Also for technical personnel who install, service, and support RSA installations.

Prepare for your RSA SecurID Administrator Certification and RSA SecurID Systems Engineer Certification.

Certification Alignment

Select courses below are aligned to RSA Certification.

RSA SecurID

(2 Days)	**RSA SecurID Administration** This course provides an overview of the administrative responsibilities associated with an RSA SecurID system; the working principles behind RSA Authentication Manager software and RSA SecurID authenticators are discussed, including product architecture, time synchronization, using external identity sources, and exploring all aspects of an administrative structure; extensive hands-on labs reinforce the administrative tasks involved in managing a user population and token assignment; the subject matter in this course prepares students with the classroom component recommended for the RSA SecurID Certified Administrator certification	• Explain the basic architecture and theory of operation • Describe the configuration required for RSA Authentication Manager system operations • Perform the administration functions and populate and manage users • Perform report functions and user troubleshooting • Perform ongoing maintenance requirements • Set up and use the software authenticators • Use of the RSA Credential Manager function
(2 Days)	**RSA SecurID Installation & Configuration** This course offers hands-on training on the installation and configuration of RSA Authentication Manager software, Authentication Agents, and other RSA SecurID system components; this course assumes that the student has attended the RSA SecurID Administration course or has equivalent operations experience with RSA Authentication Manager—operations are not covered as part of this course; the subject matter in this course prepares students with the classroom component recommended for the RSA SecurID Certified Systems Engineer certification	• Plan and perform the pre-installation tasks to prepare for RSA Authentication Manager installation in a Microsoft Windows environment or RSA SecurID Appliance • Use the RADIUS interface functions of the RSA Authentication Manager system • Establish Identity Sources for external user repositories (Active Directory and LDAP) • Create redundant/failover RSA Authentication Manager replica servers and understand the role and management of replica server instances • Install and configure RSA Authentication Agent hosts for local workstation and web access protection • Perform RSA Authentication Agent host configurations to accomplish system load balancing

RSA enVision

	RSA enVision	Course Objectives
(3 Days)	**RSA enVision Administration and Operations** This course provides a rigorous hands-on approach to the overall administrative and operation aspects of the RSA enVision® product; students learn the essentials of the product architecture, data collection, analysis, and the details involved in setting up alerts and comprehensive reports; students who successfully complete this course will be capable of administering their RSA enVision appliance and performing basic forensic analysis of the network, server, and security events collected by enVision	• Explain the basic architecture and integration of RSA enVision in an enterprise environment • Describe the management functions used for collecting and viewing data. • Establish parameters for data queries to retrieve data for analysis and reporting • Establish system alert triggers and functions
(1 Day)	**RSA enVision Universal Device Support Development** This course provides an understanding of the process to add additional device support to the RSA enVision engine as well as providing a deeper insight into enVision's ability to parse message data; students will acquire the knowledge to add support for undefined messages and unknown devices to their system, enhancing the usage of the compliance and security capabilities provided by enVision; this class is lab-intensive; more time will be spent working on lab exercises than in lectures; this course assumes that the student has attended the RSA enVision Administration and Operations course or has equivalent operations experience with RSA enVision	• Demonstrate the process of extending RSA enVision support for unknown devices • Map data to RSA enVision fields • Describe how to plan for unknown devices • Create a device by defining events and messages in a .xml file

RSA Data Loss Prevention

	RSA Data Loss Prevention	Course Objectives
(3 Days)	**RSA Data Loss Prevention - Installation and Configuration** This course provides comprehensive instruction in the installation and configuration the RSA Data Loss Prevention (DLP) Suite. This course is intended for technologists who are involved in planning and deploying the RSA DLP product suite. Theory and product basics such as the RSA DLP Suite architecture, integration of RSA DLP components, and the importance of various configuration parameters are discussed. Students are presented with hands-on exercises that build on the basic concepts and allow practical experience in building an RSA DLP system	• Explain the technical details of the RSA DLP Suite architecture • Describe the processes required for performing a successful installation and configuration of the RSA DLP components • Explain the configuration parameters that can be used to tailor and optimize the RSA DLP components • Perform installation and configuration tasks in lab exercises within a virtual network environment

Instructor-Led Training

For more information on delivery modes, see page 10

Purchase Options

* The purchase options described in this catalog do not apply to this offering. Visit http://education.emc.com › Other EMC Sites, for purchase options.

EMC SourceOne System Administrator

Ideally suited for EMC SourceOne™ administrators with responsibility for installing, configuring, and troubleshooting EMC SourceOne Email Management, eDiscovery – Kazeon, or SourceOne for Microsoft SharePoint. Day-to-day administrative tasks such as creating various activities around e-mail archiving, searching for and restoring archived items, tuning and monitoring of the servers are also covered.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Product/Technology Specific
E22-185, E22-186, E22-189 Exams

Courses	Course Objectives
The following curriculum is recommended for candidates preparing to take the EMC Proven Professional – SourceOne Email Management Administration (E22-185).	
EMC SourceOne Email Management (5 Days) EMC SourceOne overview, EMC SourceOne architecture, pre-installation planning, installation, install, and configure domino support, EMC SourceOne administration console, configuring archives, configuring mapped business folders, managing organizational policies, configuring and managing activities, journaling activities, managing jobs, managing worker servers, EMC SourceOne search, configuring and managing rules, PST and NSF Processing activities, shortcut processing activities, user-directed archive activities, debugging and troubleshooting, maintaining EMC SourceOne	• Install and Configure EMC SourceOne • Configure Worker Servers and Repositories • Manage Archives, Tasks, Activities, and Jobs • Create and manage business policies • Verify message archival • Perform Basic Searches
The following curriculum is recommended for candidates preparing to take the EMC Proven Professional – SourceOne for Microsoft SharePoint Administration Exam (E22-186).*	
EMC SourceOne for Microsoft SharePoint (2 Days) SourceOne for SharePoint EBS Provider - overview, architecture, configuration and installation, EBS troubleshooting and maintenance, archiving SharePoint content - overview, architecture and configuration, SharePoint Archive Search - overview, architecture and configuration, archiving and Search Troubleshooting and maintenance	• Examine product architecture • Deploy the EMC SourceOne for Microsoft SharePoint EBS provider • Configure archival activities that will archive SharePoint content into the EMC SourceOne Native Archive • Configure the EMC SourceOne for Microsoft SharePoint search components that allow end users to search on content stored in the EMC SourceOne Native Archive directly from Microsoft SharePoint • Execute troubleshooting and maintenance techniques
The following curriculum is recommended for candidates preparing to take the EMC SourceOne eDiscovery - Kazeon Administration exam. (E22-189).*	
EMC SourceOne eDiscovery - Kazeon Administration Fundamentals (2 Days) Introduction to EMC Source One eDiscovery - Kazeon, Hardware Installation and Configuration, Software Configuration and Sizing, Connectors and Installation, Command-line Interface (CLI), User Management, Data Management and Data Repositories, Jobs and Crawls, Introduction to the Legal Application, Searching, Data Export Workflows, Reporting, Extraction and Assignment Rules, Operational Best Practices	• Install and configure the appliance servers • Install license keys • Start the cluster • Discover file systems • Test and verify the system • Conduct deep crawls • Perform searches • Tag and cull items • Create reports • Extract responsive data

* To earn the EMC SourceOne for Microsoft SharePoint Administrator credential, you must earn a passing score on both the E22-185 EMC SourceOne Email Management Administration and the E22-186 EMC SourceOne for Microsoft SharePoint Administration exams.

Instructor-Led Training e-Learning Online ILT

For more information on delivery modes, see page 10

Purchase Options

* The purchase options described in this catalog do not apply to this offering. Visit http://education.emc.com › Other EMC Sites, for purchase options.

Content Management System Administration (Documentum) Learning Path

This certification track is for application developers who develop and customize Content Management-related Web applications using the Documentum Web Development Kit (WDK). Detailed customization examples are presented in the advanced portion of the curriculum.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Expert	N/A
Specialist	E20-465 Exam
Associate	E20-120 Exam

Associate Courses

Course Objectives

Technical Fundamentals of Documentum
(5 Days)

Enterprise Content Management, Managing Content, Working with Content, Working with the Repository, Objects and Types, Users and Privileges, Groups and Roles, Object Security, Searching, Architecture, System Administration Overview, Webtop Presets, Documentum Projects and Alias Sets (Documentum Composer), Custom Types (Documentum Composer), Workflows Templates (Process Builder), Workflows, Lifecycles (Documentum Composer), Virtual Documents, Object and Content Relationships, Alias Resolution, Advanced DQL, Products and Solutions, Supplemental Material: DocApps and Alias Sets (DAB), Custom Types (DAB), Workflows Templates (Workflow Manager), Lifecycles (DAB)

- Describe the primary components of the Documentum ECM system
- Create and manipulate content in the repository, including renditions and virtual documents
- Describe how Documentum manages content and metadata
- Describe the Documentum object model
- Describe the Documentum security model
- Configure users, groups, and roles
- Create custom object types
- Configure business processes, lifecycles, and alias sets
- Configure and install a DocApp
- Manipulate the Content Server repository through DQL

Technical Fundamentals of Documentum Supplemental Materials
(3 Hrs)

Virtual documents, object and content relationships, advanced DQL, advanced alias sets, Workflow Manager

- Create and manage virtual documents
- Describe the different types of object-content relationships
- Use DQL statements
- Describe alias resolutions
- Use Workflow Manager to create workflows

Specialist Courses

Course Objectives

System Administration for Documentum - Fundamentals
(5 Days)

Installing Content Server, Documentum System Pre-Installation Tasks, Users and Groups, Documentum End-User Clients, Repository Configurations, Jobs and Methods, Storage Areas, Logging and the Consistency Checker, Full-Text Indexing, Upgrading the Content Server and Components, WDK Application Configuration, Configuring UCF (Unified Client Facilities), DQL and Administration, Authentication, Login Tickets and Application Access Control Tokens, Audit Trail Security, Audit Trail Overview, Method Servers, Federations. The full course description can be found online

- Upgrade Content Server
- Deploy Documentum Administrator
- Practice administration tasks using the Documentum Administrator interface
- Discuss how the Tomcat Application Server integrates with Documentum
- Examine a variety of server configurations
- Set up and manage full-text indexes
- Set up and manage content storage areas
- Discuss tracing and troubleshooting features
- Discuss backup and restore techniques for a Documentum repository

Instructor-Led Training e-Learning Online ILT

For more information on delivery modes, see page 10

Purchase Options

* The purchase options described in this catalog do not apply to this offering. Visit http://education.emc.com › Other EMC Sites, for purchase options.

Content Management Server Programming (Documentum) Learning Path

This certification track is for Application Developers who develop and customize EMC Documentum Content Management applications using DFC classes and interfaces.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Expert	N/A
Specialist	E20-405 Exam
Associate	E20-120 Exam

Associate Courses

Course Objectives

Technical Fundamentals of Documentum
(5 Days)
Enterprise Content Management, Managing Content, Working with Content, Working with the Repository, Objects and Types, Users and Privileges, Groups and Roles, Object Security, Searching, Architecture, System Administration Overview, Webtop Presets, Documentum Projects and Alias Sets (Documentum Composer), Custom Types (Documentum Composer), Workflows Templates (Process Builder), Workflows, Lifecycles (Documentum Composer), Virtual Documents, Object and Content Relationships, Alias Resolution, Advanced DQL, Products and Solutions, Supplemental Material: DocApps and Alias Sets (DAB), Custom Types (DAB), Workflows Templates (Workflow Manager), Lifecycles (DAB)

- Describe the primary components of the Documentum ECM system
- Create and manipulate content in the repository, including renditions and virtual documents
- Describe how Documentum manages content and metadata
- Describe the Documentum object model
- Describe the Documentum security model
- Configure users, groups, and roles
- Create custom object types
- Configure business processes, lifecycles, and alias sets
- Configure and install a DocApp
- Manipulate the Content Server repository through DQL

Technical Fundamentals of Documentum Supplemental Materials
(3 Hrs)
Virtual documents, object and content relationships, advanced DQL, advanced alias sets, Workflow Manager

- Create and manage virtual documents
- Describe the different types of object-content relationships
- Use DQL statements
- Describe alias resolutions
- Use Workflow Manager to create workflows

Specialist Course

Course Objectives

DFC Programming
(5 Days)
DFC overview, clients and sessions, DFC type-related interfaces, retrieving objects, virtual documents, searching, security, operations, exceptions and errors, logging and tracing, working with business processes, server methods, BOF overview, creating and using TBOs, creating and using aspects, creating and using SBOs, creating and using custom modules, using modules with lifecycles, web services

- Define Documentum Foundation Classes (DFC)
- Use the DFC Javadocs
- Compare the Content Server object model to the DFC interface hierarchy
- Instantiate objects using factory methods
- Create and manage objects
- Search the repository using IDfQuery and Search Services
- Use the Operations interfaces to work with content
- Work with errors and exceptions
- Use DFC Logging and Tracing
- Create and apply ACLs
- Design secure applications using dynamic groups, application tokens
- Create server methods for use with the Java Method Server
- Create Type-based Business Objects (TBOs), Service-based Business Objects (SBOs) and Aspects
- Create custom Modules (IDfModule) for use with Lifecycles

Instructor-Led Training e-Learning Online ILT

For more information on delivery modes, see page 10

Purchase Options

* The purchase options described in this catalog do not apply to this offering. Visit http://education.emc.com › Other EMC Sites, for purchase options.

Content Management Web Programming (Documentum) Learning Path

This certification track is for application developers who develop and customize Content Management-related Web applications using the Documentum Web Development Kit (WDK). Detailed customization examples are presented in the advanced portion of the curriculum.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Expert	N/A
Specialist	E20-455 Exam
Associate	E20-120 Exam

Course Objectives

(5 Days)	**Technical Fundamentals of Documentum** Enterprise Content Management, Managing Content, Working with Content, Working with the Repository, Objects and Types, Users and Privileges, Groups and Roles, Object Security, Searching, Architecture, System Administration Overview, Webtop Presets, Documentum Projects and Alias Sets (Documentum Composer), Custom Types (Documentum Composer), Workflows Templates (Process Builder), Workflows, Lifecycles (Documentum Composer), Virtual Documents, Object and Content Relationships, Alias Resolution, Advanced DQL, Products and Solutions, Supplemental Material: DocApps and Alias Sets (DAB), Custom Types (DAB), Workflows Templates (Workflow Manager), Lifecycles (DAB)	• Describe the primary components of the Documentum ECM system • Create and manipulate content in the repository, including renditions and virtual documents • Describe how Documentum manages content and metadata • Describe the Documentum object model • Describe the Documentum security model • Configure users, groups, and roles • Create custom object types • Configure business processes, lifecycles, and alias sets • Configure and install a DocApp • Manipulate the Content Server repository through DQL
(3 Hrs)	**Technical Fundamentals of Documentum Supplemental Materials** Virtual documents, object and content relationships, advanced DQL, advanced alias sets, Workflow Manager	• Create and manage virtual documents • Describe the different types of object-content relationships • Use DQL statements • Describe alias resolutions • Use Workflow Manager to create workflows

Specialist Courses — Course Objectives

(2 Days)	**WDK–Fundamentals** WDK overview and installation, application layer configuration, component configuration I, component configuration II, introduction to component customization, behavior and events, controls overview, search components, Docbase and format controls, validation controls, themes, internationalization	• Identify the advantages of WDK-based applications • Find the application layer hierarchy of a WDK-based application • Identify configuration file best practices • Find the appropriate files to configure WDK-based applications • Differentiate WDK components, forms, controls, and the behavior class • Customize JSP pages to change the properties of controls • Create event handlers in the component's behavior class • Use Documentum Application Builder (DAB) to specify property and tab order • Use validation controls • Create a custom theme • Internationalize WDK components
(3 Days)	**WDK–Advanced** WDK overview/review, WDK components, events and framesets, container components, the configuration service, roles, actions, creating a control, databound controls, content transfer, authentication framework, special features	• Customize existing WDK components • Create new components • Create client and server-side event handlers • Use container components • Create actions • Create custom scope qualifiers • Use Docbase roles • Customize and create controls • Customize databound controls • Use content transfer services in components • Use the authentication framework

Instructor-Led Training e-Learning Online ILT

For more information on delivery modes, see page 10

Purchase Options

* The purchase options described in this catalog do not apply to this offering. Visit http://education.emc.com › Other EMC Sites, for purchase options.

Content Management Systems Architecture (Documentum) Learning Path

This certification track is for technology architects who use EMC Documentum software to design the systems architecture for an Enterprise Content Management solution to meet customer requirements for scalability, performance, high availability, and security.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Expert	N/A
Specialist	E20-475 Exam
Associate	E20-120 Exam

Associate Courses

Course Objectives

Technical Fundamentals of Documentum
(5 Days)
Enterprise Content Management, Managing Content, Working with Content, Working with the Repository, Objects and Types, Users and Privileges, Groups and Roles, Object Security, Searching, Architecture, System Administration Overview, Webtop Presets, Documentum Projects and Alias Sets (Documentum Composer), Custom Types (Documentum Composer), Workflows Templates (Process Builder), Workflows, Lifecycles (Documentum Composer), Virtual Documents, Object and Content Relationships, Alias Resolution, Advanced DQL, Products and Solutions, Supplemental Material: DocApps and Alias Sets (DAB), Custom Types (DAB), Workflows Templates (Workflow Manager), Lifecycles (DAB)

- Describe the primary components of the Documentum ECM system
- Create and manipulate content in the repository, including renditions and virtual documents
- Describe how Documentum manages content and metadata
- Describe the Documentum object model
- Describe the Documentum security model
- Configure users, groups, and roles
- Create custom object types
- Configure business processes, lifecycles, and alias sets
- Configure and install a DocApp
- Manipulate the Content Server repository through DQL

Technical Fundamentals of Documentum Supplemental Materials
(3 Hrs)
Virtual documents, object and content relationships, advanced DQL, advanced alias sets, Workflow Manager

- Create and manage virtual documents
- Describe the different types of object-content relationships
- Use DQL statements
- Describe alias resolutions
- Use Workflow Manager to create workflows

Specialist Course

Course Objectives

Architecting EMC Documentum Systems
(5 Days)
Introduction to Architecture, Platform Architecture Overview, Content Storage Architectures, Content Transfer Architectures, Products and Solutions, Storage Systems, Information Lifecycle Management, Infrastructure Choices, Business Continuity - Backup and Recovery, Business Continuity - High Availability and Disaster Recovery, Designing for Performance, Scaling Documentum Systems, Capacity Planning, Geographically Distributed Systems, Migration and Upgrade, Security, Application Design, Internationalization and Localization, Operational Readiness

- Describe topics that should be covered in a comprehensive Content Management System Architecture document
- Explain the Documentum platform architecture including detailed explanations of content storage and content transfer
- Identify the functionality and appropriate use for Documentum products
- Describe network storage components and concepts
- Describe the I/O workload characteristics of Documentum system components
- Describe techniques for implementing information lifecycle management (ILM)
- Define security mechanisms for authentication, access control, and auditing
- Describe approaches for insuring business continuity including designs for backup and recovery, disaster recovery, and high availability
- Size hardware based on workload characterization, software architecture, and hardware choices
- Design architectures for a geographically distributed user base
- Configure platform components for multiple languages and locales
- Determine application design impact on system architecture
- Plan a Documentum upgrade
- Develop operational readiness strategies

Instructor-Led Training e-Learning Online ILT

For more information on delivery modes, see page 10

Purchase Options

* The purchase options described in this catalog do not apply to this offering. Visit http://education.emc.com › Other EMC Sites, for purchase options.

Content Management Application Architecture (Documentum) Learning Path

This certification track is for technology architects who map business requirements into Enterprise Content Management application design using developer tools as well as EMC Documentum application programming interfaces (including DFC, BOF, WDK, and DFS) to design and implement custom business logic.

EMC² PROVEN PROFESSIONAL

Certification Alignment

Expert	N/A
Specialist	E20-485 Exam
Associate	E20-120 Exam

Associate Courses

Course Objectives

Technical Fundamentals of Documentum
(5 Days)
Enterprise Content Management, Managing Content, Working with Content, Working with the Repository, Objects and Types, Users and Privileges, Groups and Roles, Object Security, Searching, Architecture, System Administration Overview, Webtop Presets, Documentum Projects and Alias Sets (Documentum Composer), Custom Types (Documentum Composer), Workflows Templates (Process Builder), Workflows, Lifecycles (Documentum Composer), Virtual Documents, Object and Content Relationships, Alias Resolution, Advanced DQL, Products and Solutions, Supplemental Material: DocApps and Alias Sets (DAB), Custom Types (DAB), Workflows Templates (Workflow Manager), Lifecycles (DAB)

- Describe the primary components of the Documentum ECM system
- Create and manipulate content in the repository, including renditions and virtual documents
- Describe how Documentum manages content and metadata
- Describe the Documentum object model
- Describe the Documentum security model
- Configure users, groups, and roles
- Create custom object types
- Configure business processes, lifecycles, and alias sets
- Configure and install a DocApp
- Manipulate the Content Server repository through DQL

Technical Fundamentals of Documentum Supplemental Materials
(3 Hrs)
Virtual documents, object and content relationships, advanced DQL, advanced alias sets, Workflow Manager

- Create and manage virtual documents
- Describe the different types of object-content relationships
- Use DQL statements
- Describe alias resolutions
- Use Workflow Manager to create workflows

Specialist Course

Course Objectives

Architecting EMC Documentum Applications Introduction to Application Architecture, Composer, DFC Basics, Designing a Data Model, Testing a Data Model, Object Security - Access Control, Modeling Relationships, Workflows and Lifecycles, Workflow Activity Templates, Designing Business Logic, Server Methods, DFC Best Practices, DFS Service Design Principles, Application Design, TaskSpace Overview, Data Dictionary Awareness, Content Transfer, Performance Analysis Using DFC Trace, Content Capture, Auditing, Search Approaches, Quality Assurance Strategies, The following topics are supplemental. They are provided with the course materials but are usually not covered during the class due to time constraints., WDK Configuration (Supplemental), Search Using DFS, Webtop, and TaskSpace (Supplemental), Signatures (Supplemental)
(5 Days)

- Describe data modeling options with Documentum including the performance implications of the underlying database representation for each type of data model
- Describe and create different security models in the repository and identify benefits and limitations of each model
- Examine approaches to modeling relationships in a Documentum repository including DM_ID, repeating attributes, dm_relationship, virtual documents, and smart containers
- Explain Documentum's Business Process Management (BPM) architecture and implement a business process and document lifecycle
- Explain options for implementing the business logic tier including business objects, DFS services, and server methods
- Describe DFC best practices for session management, transactions, logging, and exception handling
- Identify DFS service design and implementation steps and build a custom service
- Describe the features and architecture of CenterStage and the Web Development Kit (WDK) framework
- Use Documentum Forms and TaskSpace to build an application user interface
- List and describe the content transfer mechanisms supported by WDK, the Authoring Integrations, DFC, and DFS
- Design approaches for high volume document ingestion using High Volume Server (HVS) and other features
- Describe Documentum auditing capabilities and implement a custom audit trail of user searches
- Explain search and query approaches including the implications of using FTDQL versus NOFTDQL query processing
- Design applications to meet performance and scalability requirements
- Describe strategies for assuring application quality

Instructor-Led Training e-Learning Online ILT

For more information on delivery modes, see page 10

Purchase Options

* The purchase options described in this catalog do not apply to this offering. Visit http://education.emc.com › Other EMC Sites, for purchase options.

List of ● Instructor-Led, ● Online ILT, and ● Video-ILT Training

Delivery Mode			Course Title	Duration	Page	Technology
●			Advanced SAN Design Workshop	4 Days	33	Consolidation
●			Advanced SAN Implementation	5 Days	33	Consolidation
●			Advanced VMware vCenter Configuration Manager Workshop	3 Days	47	Virtualization
●	●	●	Backup and Recovery Design using EMC NetWorker	3 Days	41	Backup
	●		Brocade: Introduction to L2 Fibre Channel Administration and Theory	3 Days	32	Consolidation
	●		Brocade: Advanced Fibre Channel Administration and Theory	3 Days	32	Consolidation
●	●	●	CAS Management	3 Days	31	Consolidation and Archive
●			Celerra MPFS Solution Design and Implementation Workshop	4 Days	25	NAS
●			Celerra NDMP Backup Solutions Workshop	4 Days	25	NAS
●			Celerra Replicator—CIFS Disaster Recovery	5 Days	25	NAS
●	●		Celerra Unified Storage Implementation and Management	5 Days	26	NAS
	●		Centera FastStart Fundamentals	8 Hours	31	Consolidation and Archive
●			Cisco Systems: Data Center Unified Computing Implementation	5 Days	50	Consolidation
	●		CLARiiON FLARE 30 and Unisphere Differences	8 Hours	29	Consolidation
●		●	CLARiiON Host Integration and Management with SnapView	4 Days	28, 29	Consolidation
		●	CLARiiON Host Integration and Management with Navisphere Manager	5 Days	27	Consolidation
●	●		CLARiiON Performance Workshop	3 Days	30	Consolidation
●	●		CLARiiON Remote Replication Advanced Workshop	3 Days	30	Consolidation
		●	CLARiiON Solutions for Small and Medium Enterprises	24 Hours	28	Consolidation
	●		ControlCenter Alerts, Monitoring, and Framework Integration	12 Hours	53	Resource Management
●		●	ControlCenter Management	5 Days	52	Resource Management
●	●		ControlCenter StorageScope Reporting Workshop	4 Days	54	Resource Management
●	●		Data Domain System Administration	3 Days	38	Data Deduplication
	●		Data Protection Advisor for Backups Implementation and Management	3 Days	43	Backup
	●		Data Protection Advisor Custom Reporting	2 Days	43	Backup
●		●	EMC AlphaStor Implementation, Configuration and Management	3 Days	41	Backup
●	●	●	EMC Avamar Administration	3 Days	39	Data Deduplication
●			EMC Avamar Integration and Performance Management	3 Days	39	Data Deduplication
	●		EMC Avamar 5.0 Differences	1 Day	39	Backup
	●		EMC Disk Library for Mainframe (DLm) Operations and Administration	2 Days	36	Backup
	●		EMC Disk Library Implementation and Management	3 Days	43	Backup
●		●	EMC DiskXtender for Windows Installation, Configuration, and Management	3 Days	44	Archive
	●		EMC FMA Planning and Implementation	2 Days	25	NAS
●	●	●	EMC NetWorker Administration for UNIX and Microsoft Windows	5 Days	40	Backup
	●		EMC NetWorker Module for Databases and Applications	3 Days	41	Backup
	●		EMC NetWorker Module for Microsoft Applications	2 Days	41	Backup
	●		EMC NetWorker Module for Oracle Implementation and Configuration	2 Days	41	Backup
●	●		EMC RecoverPoint Operations and Management	3 Days	42	Consolidation
●	●		EMC Ionix Application Connectivity Monitor (formerly Smarts)	2 Days	57	Resource Management
●	●		EMC Ionix Application Discovery Manager (formerly Smarts)	2 Days	57	Resource Management
●	●	●	EMC Ionix IP Manager Administrator (Smarts) Training	2 Days	56	Resource Management
●			EMC Ionix ITOps ASL (Smarts) for Service Assurance Manager Training	1 Day	57	Resource Management
●	●		EMC Ionix MPLS Manager (Smarts)	2 Days	57	Resource Management
●	●		EMC Ionix Network Configuration Manager Application and Device Management	3 Days	55	Resource Management
●	●		EMC Ionix Network Configuration Manager Installation and System Administration	2 Days	55	Resource Management
●	●		EMC Ionix Network Protocol Manager (Smarts)	2 Days	57	Resource Management
●			EMC Ionix Service Assurance Adapter Platform Training (Smarts)	2 Days	57	Resource Management
●	●	●	EMC Ionix Service Assurance Manager Training (Smarts)	3 Days	56	Resource Management
●	●		EMC Ionix Storage Insight for Availability (Smarts)	2 Days	57	Resource Management
●			EMC Ionix Unified Infrastructure Manager (UIM) Management and Reporting	4 days	50,57	Resource Management
●	●		EMC Ionix VoIP Performance Manager and Performance Reporter (Smarts)	3 days	57	Resource Management
●		●	EMC Technology Foundations (ETF)	5 Days	58	Multiple EMC Technologies

List of ● Instructor-Led, ● Online ILT, and ● Video-ILT Training

Delivery Mode			Course Title	Duration	Page	Technology
●			Greenplum Architecture, Administration, and Implementation	5 Days	51	Data Computing
●			Host to Storage SAN Implementation	5 Days	33	Consolidation
●			Implementing Cisco Storage Networking Solutions 3.0	5 Days	33	Consolidation
●			Information Availability Design	5 Days	17	Business Continuity/DR
●		●	Information Storage and Management	5 Days	15	SAN, NAS, CAS, IP-SAN
●	●		Information Storage Security Design	5 Days	19	Security
●			Intermediate Lifecycle and Capability Courses	5 Days	27	ITIL Best Practice
●	●		Intro to VMware vCenter Configuration Manager Workshop	3 Days	47	Virtualization
	●		Ionix Storage Configuration Advisor (SCA) Configuration and Management	3 Days	53	Resource Management
●		●	ITIL (V3) Foundations Certification Course	3 Days	18, 21	ITIL Best Practice
●			ITIL v3 Foundations Certification Course w/Polestar Simulation	3 Days	21	ITIL Best Practice
●			Mainframe Business Continuity—SRDF/Star Solutions	5 Days	36	Consolidation
●	●		Microsoft Exchange Integration with CLARiiON Workshop	4 Days	30,37	Consolidation
●	●		Microsoft SQL Server Integration with CLARiiON Workshop	3 Days	30,37	Consolidation
●			MirrorView and SAN Copy Configuration and Management	1 Day	29	Consolidation
●		●	NAS Operations and Management with Celerra	5 Days	24	NAS
		●	NAS Operations and Management with Celerra Manager v5.6	5 Days	27	NAS
●	●		NAS Performance Workshop	4 Days	25	NAS
●			Replication Manager Workshop	5 Days	37	Consolidation
●		●	SAN Management	4 Days	32	Consolidation
●			SRDF/Star and Cascaded SRDF - Implementation and Management	4 Days	35	Consolidation
●			Storage Networking Design	5 Days	16	SAN, NAS, CAS, IP-SAN
●			Storage Service Management Design	5 Days	18	ITIL Best Practice
●	●	●	Symmetrix Business Continuity Management	5 Days	34	Consolidation
●	●	●	Symmetrix Configuration Management	4 Days	34	Consolidation
	●		Symmetrix FAST Configuration and Management	1 Day	35	Consolidation
●	●		Symmetrix Integration with Microsoft Exchange Workshop	3 Days	35,37	Consolidation
●	●		Symmetrix Integration with Oracle Workshop	4 Days	35,37	Consolidation
●	●		Symmetrix Integration with SQL Server Workshop	3 Days	35,37	Consolidation
●	●		Symmetrix Mainframe Business Continuity Management	5 Days	36	Consolidation
●	●		Symmetrix Performance Workshop	4 Days	35,53	Consolidation
	●		Symmetrix VMAX Series Differences	1 Day	34	Consolidation
●			Troubleshooting Storage Area Networks	5 Days	33	Consolidation
		●	Upper Layer Network Operations	5 Days	25	Consolidation
●			Vblock 1/0 Initialize, Deploy and Manage	4 Days	50	Virtualization
●			Vblock 2 Initialize, Deploy and Manage	3 Days	50	Virtualization
●	●		Vblock Infrastructure Management and Monitoring Overview	2 Days	50	Virtualization
●			Virtualized Data Center and Cloud Infrastructure	5 Days	20	Virtualization
	●		VPLEX Operations and Management	3 Days	49	Virtualization
●			VMware Service Manager	5 Days	48	Virtualization
●	●		VMware Site Recovery Manager	2 Days	48	Virtualization
●	●		VMware vCenter Configuration Manager Bundle Workshop	5 Days	47	Virtualization
●	●		VMware View: Install, Configure, Manage	3 Days	48	Virtualization
●			VMware View: Design Best Practices	1 Day	48	Virtualization
●	●		VMware vSphere: Automation with vSphere PowerCLI	2 Days	46	Virtualization
●	●		VMware vSphere: Design Workshop	3 Days	46	Virtualization
●	●		VMware vSphere: Install, Configure, Manage	5 Days	46	Virtualization
●	●		VMware vSphere Integration with Celerra, CLARiiON, Symmetrix	5 Days	25,30,35,45	Virtualization
●	●		VMware vSphere: Manage and Design for Security	3 Days	46	Virtualization
●	●		VMware vSphere: Manage for Performance	3 Days	46	Virtualization
●	●		VMware vSphere: Manage Availability and VMware vSphere: Manage Scalability	1 Day	46	Virtualization
●	●		VMware vSphere: Skills for Operators	2 Days	46	Virtualization
●			VMware vSphere: Troubleshooting	4 Days	46	Virtualization

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