Mellanox Academy
Course Catalog

Empower your organization with a new world of educational possibilities
2014-2015
Mellanox offers a variety of training methods and learning solutions for instructor-led training classes and remote online learning (e-learning), including the following:

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Customized & Open Enrollment Instructor Led Training
What’s in it for me?

InfiniBand interconnects TOP500 supercomputers and enables the use of advanced interconnects protocols & technologies in advanced data centers environments. It incorporates into its architecture, advanced protocols that enable ultra-low latency, outstanding bandwidth and amazing scale-out of nodes in the same cluster. It also facilitates RDMA based applications that boost any data center performance.

Whether you are looking to maximize your Mellanox products experience, or trying to become a foremost expert in interconnect technologies, this is the place to acquire the necessary knowledge and skills.

This class provides the fundamentals of InfiniBand technology from a usability point of view, and builds from the details of the InfiniBand specification. During the course, students will learn about the management concepts, architecture layers as well as various utilities to manage and monitor InfiniBand fabric, and even troubleshoot basic issues. It is designed to meet the needs of anyone who installs, configures, manages, troubleshoots or monitors InfiniBand fabrics.

Students who will participate in this course will enjoy world class certified instructors and certified comprehensive training kit, that includes updated presentations, quizzes, simulators and videos. This course offers real practical hands-on exercises based on our unique experience from the field backed-up with remote lab access.

In addition, students receive a Gold membership to the Mellanox Online Academy, so they can continue to learn and grow in their own time and place through our advanced online learning platform after completing the face to face part.

For the ones who will pass the certification exam, we will send Mellanox’s official InfiniBand certification. This is the only InfiniBand official certification in the market!

Recent studies indicate that focused technology training (mainly hands-on oriented) is one of the most significant contributors to performance improvements, down-time reduction and products' TCO improvement.
Course Delivery Format:

- Customized on-site training
- Instructor-led open enrollment training

Target Audience:

Network administrators, network architects, IT managers, and technicians who work or intend to work in an InfiniBand environment.

Course Duration:

3 days.

Course Objectives:

Upon completion of this course, students should be able to support level 1 fabric debug functions, as well as maintain and perform primary InfiniBand fabrics using Mellanox tools and best practices.

Upon completion of this course, they should be able to perform the following:

- Describe the InfiniBand (IB) protocol foundations
- List and describe the main features of InfiniBand fabrics
- List the main InfiniBand topologies and their pros and cons
- Describe the basic management concepts and functions of InfiniBand fabrics
- Perform basic operations with the Subnet Manager that are related to the management of the fabric
- Operate basic SM operations of an InfiniBand switch using its CLI
- Describe the processes during the fabric initialization process
- Read management outputs from the fabric and underrated their implications
- Describe the layer structure of InfiniBand Architecture
- List the common OFED commands and their usage
- Perform management and diagnostic tasks with OFED commands
- Describe Mellanox Unified Fabric Manager (UFM)
Course Topics

- InfiniBand Introduction
  - InfiniBand Trade Association
  - What is InfiniBand?
  - InfiniBand key features
  - InfiniBand fabric components
- Fabric Management
  - Subnet Manager
  - Fabric addressing
  - Node’s identifiers
  - Fabric Initialization stages
  - Monitoring the Fabric
  - Routing Algorithms
- InfiniBand Architecture
  - The upper layers
  - The transport layer
  - The network layer
  - The data link layer
  - The physical layer
- Mellanox products
- InfiniBand Multicasting
- InfiniBand Drivers
  - Mellanox OFED
  - InfiniBand Utilities and Tools
- Mellanox Unified Fabric Manager (UFM)
- Mellanox Care
- Field best practices

Course Prerequisites:

General understanding of networking concepts and principles

Course Completion Requirements:

- Class attendance
- A passing grade on the final exam
The Fundamentals of InfiniBand Fabrics in HPC Environments

Duration: 3 Days

What’s in it for me?

InfiniBand interconnects TOP500 supercomputers and enables the use of advanced interconnects protocols & technologies in advanced data centers and HPC environments. It incorporates into its architecture, advanced protocols that enable ultra-low latency, outstanding bandwidth and amazing scale-out of nodes in the same cluster. It also facilitates RDMA based applications that boost any data center performance.

Whether you are looking to maximize your Mellanox products experience, wish to learn how InfiniBand enhances HPC systems to new scale of performance, or trying to become a foremost expert in interconnect technologies, this is the place to acquire the necessary knowledge and skills.

This class provides the fundamentals of InfiniBand fabrics while emphasizing mechanisms, topologies, routing engines and tools that are suitable for HPC environments. During the course, students will learn about the management concepts, architecture layers as well as various utilities to manage and monitor InfiniBand fabric, and even troubleshoot basic issues. It is designed to meet the needs of anyone who installs, configures, manages, troubleshoots or monitors InfiniBand fabrics.

Students who will participate in this course will enjoy world class certified instructors, and certified comprehensive training kit, that includes updated presentations, quizzes, simulators and videos. This course offers real practical hands-on exercises based on our unique experience from the field backed-up with remote lab access.

In addition, we added guest sessions of Mellanox’s HPC and support experts. Students will also receive a Gold membership to the Mellanox Online Academy, so they can continue to learn and grow in their own time and place through our advanced online learning platform after completing the face to face part.

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Recent studies indicate that focused technology training (mainly hands-on oriented) is one of the most significant contributors to performance improvements, down-time reduction and products' TCO improvement.
**Course Delivery Format:**

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- Instructor-led open enrollment training

**Target Audience:**

Network administrators, network architects, IT managers, and technicians who work or intend to work in an InfiniBand environment.

**Course Duration:**

3 days.

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- Perform basic operations with the Subnet Manager that are related to the management of the fabric
- Operate basic SM operations of an InfiniBand switch using its CLI
- Describe the processes during the fabric initialization process
- Read management outputs from the fabric and underrated their implications
- Describe the layer structure of InfiniBand Architecture
- List the common OFED commands and their usage
- Perform management and diagnostic tasks with OFED commands
- Describe Mellanox Unified Fabric Manager (UFM)
Course Topics

• InfiniBand Introduction
  - InfiniBand Trade Association
  - What is InfiniBand?
  - InfiniBand key features
  - InfiniBand fabric components

• Fabric Management
  - Subnet Manager
  - Fabric addressing
  - Node’s identifiers
  - Fabric Initialization stages
  - Monitoring the Fabric
  - Routing Algorithms

• InfiniBand Architecture
  - The upper layers
    Common ULPs in HPC fabrics
  - The transport layer
    Transport services configuration – HPC considerations
  - The network layer
    Network layer mechanisms – HPC implications and considerations
  - The data link layer
  - The physical layer

• Mellanox products overview with HPC orientation
• HPC-X - Scalable Software Toolkit for scientific research and engineering simulations
• Running IPoIB in HPC fabrics
• InfiniBand Multicasting
• InfiniBand Drivers
  - Mellanox OFED
  - InfiniBand Utilities and Tools
• Mellanox Unified Fabric Manager (UFM)
  - UFM API - HPC oriented
• Mellanox Care
• HPC and market best practices- from 7 days to 7 hours

Course Prerequisites:
General understanding of networking concepts and principles

Course Completion Requirements:
• Class attendance
• A passing grade on the final exam
Introduction to InfiniBand and Mellanox Technologies products

**Part Number:** MTR-IB-Sw-Ho-WebX

**Duration:** 4 Hours

### What's in it for me?

Are you new to InfiniBand (IB)?
Maybe you need to install a new switch or InfiniBand clients?
Do you need an accelerated learning method?
You got it!

This 4-hour remote session will ramp you up quickly so that you will feel more confident installing and configuring the InfiniBand host and switch. Tell us which switch and InfiniBand clients you will be using, and we will get you up to speed in no time.

This 4-hour remote session provides a high-level approach to InfiniBand technology. It is designed to meet the needs of anyone who is involved in installing, configuring, managing, and troubleshooting InfiniBand environments. We start by introducing the InfiniBand architecture, then focus on InfiniBand switch concepts, host installation, and configuration, and finish the session with basic InfiniBand troubleshooting.

### Course Objectives:

Upon completion of this course, students should be able to support level 1 installation and configuration for Mellanox InfiniBand switches and Host Stack. We will be introducing the best practices when cabling and troubleshooting InfiniBand fabrics.

Upon the completion of this course, students should be able to perform the following:

- Describe the InfiniBand (IB) architecture
- List, understand, and describe InfiniBand main topologies
- Understand InfiniBand Subnet Manager main functions
- Install/configure InfiniBand switch and InfiniBand clients
- Understand the switch software and hardware
- Understand how to upgrade the switch chassis
- Operate basic activities of InfiniBand switch using its CLI
- Set up connections between hosts and IB switches
- Perform fabric troubleshooting and best practice routines
Target Audience:

- Network & system administrators
- Network & system engineers
- InfiniBand pre-sales staff

Prerequisites:

Data communications and Linux knowledge

Course Topics

- **InfiniBand Architecture**
  - InfiniBand Fabric Elements
  - HCA, Switches, SM and Gateways
  - Device Addressing (GUIDs & LIDs)
  - InfiniBand Link Speeds (SDR, DDR, QDR, FDR)
  - Introducing the FDR 36-Port ASIC
  - Management Datagrams and VL15

- **InfiniBand Supported Protocols**
  - Describe the Primary Upper Layer Protocols (ULP) for InfiniBand

- **Network Topologies**
  - How to Scale from 36 Ports
  - What is a CLOS Topology?
  - Supported Topologies
  - Explaining Cross Bisectional Bandwidth

- **Cabling Best Practices**
  - What to Do and What Not to Do
  - Cable Management

- **InfiniBand Subnet Manager**
  - The Seven Steps for Fabric Bring-up (Initialization Process)
  - SM High Availability (HA)

- **Switch Introduction**
  - SwitchX Overview
  - Chassis Function and Features Overview
  - LED Status Registers
  - FRU Replacement

- **Mellanox Switch OS**
  - Mellanox_OS Introduction
  - Chassis Management Using CLI
- Chassis Management Using GUI Demo
- Updating Chassis Firmware
- Viewing Switch Logs
- Internal Switch SM Introduction
- Configuring your Switch for the First Time
- Basic Switch Troubleshooting

- **Mellanox ConnectX VPI Introduction**
- **Mellanox OFED (Host Stack) Introduction**
  - Adapter Packages
  - Introducing the OFED Stack
  - OFED Components
  - OFED Installation
  - Configuring OFED
  - Host Based Utilities
  - Cluster Based Utilities
  - Performance Utilities

- **Fabric Troubleshooting**
  - Using Host Utilities
InfiniBand Fabrics – Advanced Training

Part Number: MTR-IB-OST-A

Duration: 2 Days

What's in it for me?

This course is focusing on multicast, along with fabric design guidelines and what obstacles you should avoid when designing a fabric. We will also focus on how to select and configure the most suitable routing algorithm for a chosen topology. In addition this course provides the necessary skills and knowledge to effectively diagnose and troubleshoot InfiniBand fabrics. You will also receive an overview of the required tools to effectively compare InfiniBand fabrics.

This course is a continuation of the Fundamentals of InfiniBand Fabrics Course (MTR-IB-OST-B, MTR-IB-OPEC-3). It is designed to provide more advanced materials to support InfiniBand Level 1 and Level 2 technologists by focusing on fabric design, tuning and troubleshooting, multicast, and SNMP principles.

Course Objectives:

Upon completion of this course, the student will understand the following:

- RDMA and ULPs
- InfiniBand Routing Algorithms
- OpenSM Configuration
- InfiniBand Quality of Service (QoS)
- Performance Parameters & Test Process
- InfiniBand ULPs, SRP and IPoIB
- InfiniBand Multicast
- InfiniBand Fabric Congestion
- Cluster Bring-up
- InfiniBand with VMware Introduction
Target Audience:

- Network & system administrators
- Network & system engineers
- Architects
- InfiniBand pre-sales staff

Prerequisites:

Data communications, Linux knowledge, InfiniBand Fundamentals course or equivalent

Course Topics

Day 1 Agenda:

InfiniBand Protocol Layers
- InfiniBand Header Structure
- Physical Layer L1
- Link Layer L2
- Transport Layer & InfiniBand Queue Pairs
- Transport Modes
- Checking Kernel Support for IPoIB
- **InfiniBand Supported Protocols**
  - Describe the Primary Upper Layer Protocols
  - Which Protocols can Utilize the RDMA Capabilities? (Verbs)
  - Who Uses What?
- **IP over InfiniBand (IPoIB)**
  - Architecture Overview
  - IPoIB Packet Frame
  - Addressing
  - Using DHCP with IPoIB
  - Port Bonding
  - CM/UD Modes
  - Performance and Tuning
- **InfiniBand Usage of RDMA Principles**
  - RDMA
  - RDMA Benefits
  - RDMA Interconnects
  - Transport Layer Work Request
  - Transport Layer Send Operation
  - Transport Layer RDMA Write
• **SCSI RDMA Protocol (SRP)**
  - SRP Overview
  - Discovery Mechanism
  - SRP Login
  - I/O Operations Data Flow
  - Indirect and Partial Entry Table
  - SRP Initiator Installations
  - SRP Demon Overview

• **Routing Protocols (Algorithms)**
  - Supported by OpenSM
  - What is Dead Lock / Credit Loop?
  - Introducing the Minimal Hop Algorithms
  - Introducing the Up Down Algorithms

• **Up Down Ranking**

• **Up Down Connect Roots**
  - Introducing Fat Tree Algorithms
  - Fat Tree Design Rules
  - Routing Optimization
  - Multicast Routing Optimization
  - UFM® Tara Optimization Overview
  - How to Check for Fabric Credit Loops

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**Day 2 Agenda:**

• **Performance Parameters**
  - Server Tuning
  - HCA Performance Tuning
  - Linux Tuning Parameters
  - How to Preserve Tuning Settings
  - Improving IPV6 Performance
  - Power Management Tuning
  - Affinity Tuning
  - Tuning for Multiple Adapters
  - Tuning Multi-Threading IP Forwarding
  - Collecting Debug Information

• **Performance Test Process**
  - Performance Comparison
  - Introducing mlnxperftuner Utility
  - Introducing Performance Utilities

• **InfiniBand Cluster Topology Validation**
  - How to Review Action Flows
  - Comparison Workflow Main Stages
  - Cluster Topology Validation
- Building a Topology File

**Fabric Troubleshooting**
- Troubleshooting Congestion

**Cluster Bring Up**
- Cluster Planning
- Physical Installation
- Topology Matching
- Fabric Cleanup
- SM Optimization

**InfiniBand and VMware**
- Introduction
- ESX Server Architecture
- VMware & Client Infrastructure
- ESX Installation
- Configuring the VM
- IPoIB and SRP Identification on VIC
- Using Snapshots with IPoIB and SRP

**Q&A Wrap Up**
Mellanox Unified Fabric Manager UFM®
Operations and Administration

Part Number: MTR-IB-OST-A
Duration: 2 Days

What's in it for me?

Let's face it, managing fabrics can be overwhelming at times! Thousands of high-speed ports, cables, switches, gateways, and servers, all playing a significant part in your fabric. Locating the problem can be like looking for a needle in a haystack. If only there was a product that made it easier, providing efficiency and greater productivity! A product to help track and isolate fabric issues with just a point-and-click could make all the difference in the world between applications completing or failing.

Mellanox actually already has this product waiting for you to become its master!

It is called Unified Fabric Manager, and it is the muscle you need to keep the fabric behaving properly.

UFM® provides advanced monitoring capabilities, congestion analysis, device management, and much more. You can view the traffic, alarms, events, and congestion statistics all from a single dashboard. The UFM’s capabilities are endless.

So enroll today and start learning about the most advance InfiniBand management tools available on today’s market.

This course was designed as an introduction to Mellanox’s Unified Fabric Manager (UFM®). It provides an overview of InfiniBand foundations, while focusing on fabric management using the UFM® product with Mellanox InfiniBand switches and products. It is designed to meet the needs of InfiniBand fabric professionals who are involved in installing, configuring, managing, troubleshooting and monitoring InfiniBand fabrics.

This two-day course combines InfiniBand theory of operations with task-oriented hands-on lab exercises, which provides a logical approach to using UFM®.
Course Objectives:

Upon completion of this course, the student will be able to:

- Understand and utilize UFM’s dashboard and main features
- Understand how UFM® implements and discovers fabric elements
- Understand and configure InfiniBand partitions using UFM®
- Manage InfiniBand devices using UFM®
- Design fabrics using UFM’s Logical Model concept
- Trace fabric event notification down to a component
- Use UFM® as an InfiniBand cluster, troubleshooting tool
- Describe UFM’s Subnet Manager main functions
- Understand how to install and configure UFM®
- Demonstrate how to use the Fabric Health Monitoring
- Monitor fabric activity using the UFM® tools
- Describe Mellanox SDK integration with a customer system

Target Audience:

- Level 1 & 2 network & system administrators
- Level 1 & 2 network & system engineers
- Architects
- InfiniBand pre-sales staff

Prerequisites:

Data communications, Linux knowledge, InfiniBand fundamentals course or equivalent

Course Topics

Day 1 Agenda:

- **UFM® Overview**
  - UFM® Benefits
  - UFM® Software Components
  - UFM® Architecture
- **UFM® Dashboard Introduction**
  - How to Check Different Parameters Using UFM®
  - Monitoring BW Usage
  - Monitoring InfiniBand Traffic and Congestion
  - Monitoring Fabric Top Talkers
  - Monitoring the Top Congested Servers
  - Monitoring Event Notifications
- **Fabric Discovery and Views**
- Using the View Tab
- Selecting Info per Object
- Viewing Fabrics Internal Structure and Properties
- Topology View Icons
- Assigning Servers to Racks
- Modifying Polling Intervals
- Modifying Topology Display Modes
- Viewing Entire Fabric Using Table & Map Mode
- Viewing Fabric Historical Events

**Device Management**
- Using the Device Tab
- Modifying Device Attributes
- Using the Device Management Agent
- Utilizing the Table Filter Feature
- Updating Firmware & Software Using UFM®
- Port Management
- Working with Device Alarms

**Using UFM’s Logical Model**
- Fabric Partitioning Using UFM®
- Introducing the Logical Model
- Physical Components
- The Logical Network Object
- UFM’s Management Network
- Implementing QoS with UFM
- Utilizing UFM’s TARA Routing Optimization
- Load Balancing Using TARA
- TARA’s Working Principles
- QoS and TARA

**UFM® Fabric Design**
- Using the Design Window
- UFM’s Design Concept Introduction
- Creating an Environment
- Creating a Network
- Network Isolation and Security Using Partitioning
- QoS Parameters
- Creating a Logical Server Group

**Fabric Monitoring with UFM®**
- Using the Monitoring Tab
- UFM’s Monitoring Features
- How to Activate UFM® Monitoring
- Using Monitoring Objects and Attributes
- How to Configure a Monitor Window
- Starting a Monitoring Session
- Using Periodic Snapshots
- Tracking Fabric Events
  - How to Use the Event Table
  - Tracing Event Down to the Component
  - Using Common Port Tasks
- UFM’s Configuration Window
  - Configuring UFM’s Subnet Manager
  - Configuring Access Credentials
  - Using UFM’s Thresholds and Security Levels

Day 2 Agenda:

- UFM® Installation
  - How to Obtain UFM® Software License
  - Software Prerequisites
  - Installation Package Components
  - Standalone and HA Installation Differences
  - UFM’s Failover Mechanism
  - Starting the UFM® Session
  - Starting UFM® in Monitoring Mode
  - UFM’s Monitoring and Active Mode Differences
  - Using UFM’s GUI
  - Introducing UFM® Host Agent (optional)
  - UFM’s Discovery Stages
  - UFM’s Upgrade Procedures
  - UFM® Installation Troubleshooting
- Lab Exercises
- UFM® Health Monitoring
  - Display InfiniBand Fabric Health Reports
  - Display UFM® server Health Report
  - Activate Topology Comparison, Current VS Planned for Fabric Optimal Setup Verification
  - Display UFM® Server Health Report
  - Display Log Reports (SM, UFM®, Events)
  - Perform UFM® Configuration Backup
- Fabric Troubleshooting Using UFM®
  - Host Troubleshooting
  - Switch Troubleshooting
  - Troubleshooting Fabric Congestion
- UFM’s Software Development Kit
  - UFM® Open API Benefits
  - 3rd Party Integration
  - SDK Tools and Scripts
  - UFM® Tool Kit Examples
- Q&A Wrap Up
Mellanox Live Virtual Instructor Led Training
The Benefits of Mellanox Live Virtual Instructor Led Classes

The live virtual class is an additional popular delivery method that joins Mellanox’s on-site and open enrollment, instructor-led courses, as well as the e-learning courses that are delivered via the successful online Academy.

The virtual class provides a unique combination of instructor-led experience with live remote hands-on sessions and customized training kit that is adapted to remote learning.

Enjoy the advantages of traditional instructor-led training and much more

Mellanox Live virtual Class Advantages

Cost Saving

- A dramatic reduction in training costs (~50%)
  - Eliminating travel expenses & travel time
  - Reduced course price (comparing to on-site and open enrollment, instructor-led training)
- Flexible registration change policy

Geographic location independence

- Participation from the comfort of the student’s own home or office
- Platform Independence - delivered on PC and Mac
- Remote lab availability to the student during all course duration
- Ability to re-take the course or part of the course free of charge
- Reduced pre-course logistics and preparation time

Time Saving

- Little to no out-of field time for the course participants –balancing between work productivity to career growth
- Short and focused sessions - each training session will length 2.5 hours only
- After work-hours course: some of the courses start at 15:00 or 16:00 local time

Additional Benefits

- Advanced live interaction with experienced and qualified instructors
- Increased social sharing and crowdsourcing to maximize knowledge exposure
- Continue to learn after the class ends with your free GOLD membership to the Mellanox online Academy
- Ability to engage additional instructors, experts and added value sessions during the training
The Fundamentals of InfiniBand Fabrics

**Part Number:** MTR-IB-VILT-15  
**Duration:** 15 Hours

### What's in it for me?

InfiniBand interconnects TOP500 supercomputers enables the use of advanced interconnects protocols & technologies in advanced data centers and HPC environments. It incorporates into its architecture, advanced protocols which enable ultra-low latency, outstanding bandwidth, and amazing scale-out of nodes in the same cluster. It also facilitates RDMA based applications which boost any data center performance.

Whether you are looking to maximize your Mellanox products experience, learn how InfiniBand enhances HPC systems to new scale of performance, or trying to become a foremost expert in interconnect technologies, this is the place to acquire the necessary knowledge and skills. For the ones who will pass the certification exam, we will send Mellanox’s official InfiniBand certification. This is the only InfiniBand official certification in the market!

### Target Audience

- Network & system administrators  
- Network & system engineers  
- HPC Experts/Analyst  
- InfiniBand pre-sales staff

### Course Overview

This course provides the fundamentals of InfiniBand fabrics while emphasizing mechanisms, topologies, routing engines and tools suitable for HPC environments. During the course, students will learn about the management concepts, architecture layers as well as various utilities to manage and monitor InfiniBand fabric, and even troubleshoot basic issues. It is designed to meet the needs of anyone who installs, configures, manages, troubleshoots or monitors InfiniBand fabrics.

Students who will participate in this course will enjoy world class certified instructors, and certified comprehensive training kit, which includes updated presentations, quizzes, simulators and videos.
This course offers real practical, hands-on exercises based on our unique experience from the field backed-up with remote lab access. In addition, we added guest sessions of Mellanox HPC and support experts. Students will also receive a gold membership to the Mellanox Online Academy, so they may continue to learn and grow in their own time and place through our advanced online learning platform after completing the face to face part.

## Course Topics

### *InfiniBand Introduction*
- InfiniBand Trade Association
- What is InfiniBand?
- InfiniBand Key Features
- InfiniBand Fabric Components

### *Fabric Management*
- Subnet Manager
- Fabric Addressing
- Node’s Identifiers
- Fabric Initialization Stages
- Monitoring the Fabric
- Routing Algorithms

### *InfiniBand Architecture*
- The Upper Layers
- The Transport Layer
- The Network Layer
- The Data Link Layer
- The Physical Layer

### *Mellanox Products Overview with HPC Orientation*

* IPoIB overview
* InfiniBand Drivers
  - Mellanox OFED
  - InfiniBand Utilities and Tools

* Success Stories - From 7 Days to 4 Hours
* Q & A, Summary
Course Objectives:

By the end of this course you will be able to:

* Describe the InfiniBand (IB) protocol fundamentals
* List and describe the main features of InfiniBand fabrics
* List the main InfiniBand topologies and their pros and cons
* Describe the basic management concepts and functions of InfiniBand fabrics
* Describe transport configuration considerations in HPC environments
* Perform basic operations with the Subnet Manager that are related to the management of the fabric
* Operate basic SM operations of an InfiniBand switch using its CLI
* Describe the processes during the fabric initialization process
* Read management outputs from the fabric and underrated their implications
* Describe the layer structure of InfiniBand Architecture
* List the common protocols in HPC environments and describe their functionality
* List the common OFED commands and their usage
* Perform management and diagnostic tasks with OFED commands
* Describe Mellanox Unified Fabric Manager (UFM)
The Fundamentals of InfiniBand Fabrics in HPC Environments

**Part Number:** MTR-IB-VILT-15  
**Duration:** 15 Hours

**What's in it for me?**

InfiniBand interconnects TOP500 supercomputers and enables the use of advanced interconnects protocols & technologies in advanced data centers and HPC environments. It incorporates into its architecture, advanced protocols that enable ultra-low latency, outstanding bandwidth and amazing scale-out of nodes in the same cluster. It also facilitates RDMA based applications that boost any data center performance.

Whether you are looking to maximize your Mellanox products experience, wish to learn how InfiniBand enhances HPC systems to new scale of performance, or trying to become a foremost expert in interconnect technologies, this is the place to acquire the necessary knowledge and skills.

This class provides the fundamentals of Infiniband fabrics while emphasizing mechanisms, topologies, routing engines and tools that are suitable for HPC environments. During the course, students will learn about the management concepts, architecture layers as well as various utilities to manage and monitor InfiniBand fabric, and even troubleshoot basic issues. It is designed to meet the needs of anyone who installs, configures, manages, troubleshoots or monitors InfiniBand fabrics.

Students who will participate in this course will enjoy world class certified instructors, and certified comprehensive training kit, that includes updated presentations, quizzes, simulators and videos. This course offers real practical hands-on exercises based on our unique experience from the field backed-up with remote lab access.

In addition, we added guest sessions of Mellanox’s HPC and support experts. Students will also receive a Gold membership to the Mellanox Online Academy, so they can continue to learn and grow in their own time and place through our advanced online learning platform after completing the face to face part.

For the ones who will pass the certification exam, we will send Mellanox’s official InfiniBand certification. This is the only InfiniBand official certification in the market!

Recent studies indicate that focused technology training (mainly hands-on oriented) is one of the most significant contributors to performance improvements, down-time reduction and products' TCO improvement.
Course Topics

- InfiniBand Introduction
  - InfiniBand Trade Association
  - What is InfiniBand?
  - InfiniBand key features
  - InfiniBand fabric components

- Fabric Management
  - Subnet Manager
  - Fabric addressing
  - Node’s identifiers
  - Fabric Initialization stages
  - Monitoring the Fabric
  - Routing Algorithms

- InfiniBand Architecture
  - The upper layers
    - Common ULPs in HPC fabrics
  - The transport layer
    - Transport services configuration – HPC considerations
  - The network layer
    - Network layer mechanisms – HPC implications and considerations
  - The data link layer
  - The physical layer

- Mellanox products overview with HPC orientation

- HPC-X - Scalable Software Toolkit for scientific research and engineering simulations

- Running IPoIB in HPC fabrics

- InfiniBand Drivers
  - Mellanox OFED
  - InfiniBand Utilities and Tools

- Mellanox support manager session

- Mellanox HPC experts session

Course Prerequisites:

General understanding of networking concepts and principles

Course Completion Requirements:

- Class attendance
- A passing grade on the final exam
Course Delivery Format:

- Customized on-site training
- Instructor-led open enrollment training

Target Audience:

Network administrators, network architects, IT managers, and technicians who work or intend to work in an InfiniBand environment.

Course Objectives:

Upon completion of this course, students should be able to support level 1 fabric debug functions, as well as maintain and perform primary InfiniBand fabrics using Mellanox tools and best practices.

Upon completion of this course, they should be able to perform the following:

- Describe the InfiniBand (IB) protocol foundations
- List and describe the main features of Infiniband fabrics
- List the main InfiniBand topologies and their pros and cons
- Describe the basic management concepts and functions of InfiniBand fabrics
- Perform basic operations with the Subnet Manager that are related to the management of the fabric
- Operate basic SM operations of an InfiniBand switch using its CLI
- Describe the processes during the fabric initialization process
- Read management outputs from the fabric and underrated their implications
- Describe the layer structure of InfiniBand Architecture
- List the common OFED commands and their usage
- Perform management and diagnostic tasks with OFED commands
- Describe Mellanox Unified Fabric Manager (UFM)
Mellanox Online Academy: 24/7 E-Learning
InfiniBand is a high-speed server-interconnect technology. Its greater speed, lower latency, and greater scalability are among its many advantages, and it has become the primary alternative to Ethernet as the interconnect protocol of choice.

Knowledge is power! Whether you are looking to maximize your Mellanox experience, seeking new career opportunities, or trying to become a foremost expert in interconnect technologies, this is the place to acquire the necessary knowledge and skills.

What you will learn

This course provides the fundamentals for the InfiniBand technology from a usability point of view and builds on the details of the InfiniBand architecture specification. It is designed to meet the needs of anyone who installs, configures, manages, troubleshoots or monitors InfiniBand fabrics. This course combines InfiniBand theory of operations through a series of interactive units, simulators, videos and on-line learning resources that provide a comprehensive learning approach to the high performance network arena.

Course Topics

* InfiniBand Introduction
* InfiniBand Architecture
* Fabric Management
* InfiniBand Drivers
* InfiniBand Utilities and Tools

Course Objectives

* Describe the InfiniBand (IB) protocol foundations
* list and describe the main features of Infiniband fabrics
* List the main InfiniBand topologies and their pros and cons
* Describe the layer structure of InfiniBand Architecture
* Describe the basic management concepts and functions of InfiniBand fabrics
* Perform basic operations with the Subnet Manager that are related to the management of the fabric
* Operate basic SM operations of an InfiniBand switch using its CLI
* Describe the processes during the fabric initialization process
* Read management outputs from the fabric and underrated their implications
* List the common OFED commands and their usage
* Perform management and diagnostic tasks with OFED commands

**Course Duration**

7 Hours

**Target Audience**

Network administrators, network architects, IT managers, and technicians who work or intend to work in an InfiniBand environment

**Course Prerequisites**

General understanding of networking concepts and principles

**What’s inside?**

* Interactive self-paced courseware
* Videos
* Summary Exam
* Related documentation according to course topics
* Simulators
* Summary Exam and exercises for knowledge implementation

**Related Courses**

* Working with Mellanox OFED in InfiniBand Environments
* Product based courses of InfiniBand switches and Host Channel Adapters
why should I take this course?

InfiniBand is the next generation interconnect protocol that drives most of Fortune 500 data centers and the world’s most powerful supercomputers. The demand for InfiniBand fabric administrators has increased dramatically over the last few years.

Whether you are looking to maximize your InfiniBand knowledge or administrating an InfiniBand fabric, seeking new career opportunities, or trying to become a foremost expert in interconnect technologies, this course is the place to acquire the necessary skills and tools to administrate an InfiniBand fabric.

This course delivers the most extensive, comprehensive, and up-to-date knowledge regarding administrating, managing, tuning, and troubleshooting an InfiniBand fabric. Based on the extensive experience of Mellanox - the world’s leading company for InfiniBand products, we invite you to an outstanding learning experience through a set of interactive courseware, hands-on exercises, simulators, and HOW-TO videos.

Students, who will pass the certification exam, will be entitled to receive the world’s only InfiniBand Fabric Administration certificate from Mellanox Technologies.

what you will learn

This course will provide you with Mellanox’s recommended best practices to do the following:

* Establish and configure an InfiniBand fabric
* Perform the required monitoring processes
* Tune the fabric for maximum performance
* Troubleshoot the most common InfiniBand fabric issues

course topics

* InfiniBand Fabric Bring Up
  o Physical setup
  o Switch and HCA software verification and installation
  o Fabric diagnostics check
  o Topology validation
* InfiniBand Fabric Monitoring
  o SNMP, e-mail notifications and remote logging configuration
  o Scheduling InfiniBand validation checks
  o OpenSM configuration
* InfiniBand Fabric Performance Tuning
  o Server basic tuning: BIOS and Power Management configurations
  o Server advanced tuning: IRQ Affinity, Interrupt Moderation and NUMA configurations
  o InfiniBand performance tools
* InfiniBand Fabric Basic Troubleshooting for:
  o Host Channel Adapters logical and physical issues
  o Switch logical and physical issues
  o Subnet Manager errors and verification issues
  o Performance enhancement
  o Routing algorithms compatibility

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**Course Objectives**

* Perform Switch OS and firmware installation and verification
* Perform HCA OFED and firmware installation and verification
* Perform basic InfiniBand fabric status health-checks
* Create and validate an InfiniBand fabric topology file
* List the various monitoring tools available in InfiniBand
* Configure monitoring tools: SNMP, email notifications and remote logging
* Configure and schedule InfiniBand diagnostics and validations tools for proactive monitoring
* Configure and analyze Subnet Manager log files
* Perform basic HCA tuning: BIOS and Power Management configurations
* Perform advanced HCA tuning: IRQ Affinity, Interrupt Moderation and NUMA configurations
* Utilize InfiniBand and IPoIB benchmarking tools
* List the common InfiniBand troubleshooting scenarios
* Diagnose, analyze and fix common InfiniBand fabric issues related to: HCA, Switch, Subnet Manager, Performance, and Routing

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**Course Duration**

21 Hours
Target Audience

* Network technicians
* Network administrators, engineers, and architects
* System administrators, engineers, and architects
* IT managers

Course Prerequisites

* General understanding of networking concepts and principles
* Familiarity with basic Linux commands and switch CLI operations
* InfiniBand Fundamentals/Essentials course (Mellanox Online Academy)

What’s inside?

* Interactive self-paced courseware
* HOW-TO Videos
* Related documentation according to course topics
* Simulators
* Exercises
* InfiniBand Fabric Administration certification exam

Related Courses

* InfiniBand Fundamentals/Essentials
* Working with Mellanox OFED in InfiniBand Environments
* Product based courses of InfiniBand switches and Host Channel Adapters
Why should I take this course?

Mellanox OFED is a software stack for RDMA and kernel bypass applications which relies on the open-source OpenFabrics Enterprise Distribution (OFED™) software stack from OpenFabrics.org.

The software provides High Performance Computing (HPC) sites and enterprise data centers with flexibility and investment protection as computing evolves toward applications that require extreme speeds, massive scalability, and utility-class reliability.

Learn to control, manage, and diagnose an InfiniBand fabric by understanding its driver utilities, operations, and protocols.

What you will learn

By enrolling in this course, you will be able to learn about Mellanox OFED, its capabilities, advantages, components, and architecture. You will learn to install the software stack across various OS environments, manage and utilize the OFED through different commands, and develop the ability to comprehend and use tools that will enable you to maintain an InfiniBand fabric.

This course combines both OFED theory and hands-on practice through a series of interactive units, simulators, videos, and on-line learning resources that provide a comprehensive learning approach to the high performance network arena.

Course Topics

- Mellanox OFED Introduction
- Mellanox Windows OFED Installation
- Mellanox Linux OFED Installation
- Mellanox OFED Utilities
Course Objectives

* Describe OFED
* Describe Mellanox OFED and its key features
* Understand and explain the Mellanox OFED architecture
* Perform Mellanox OFED installation and uninstall for Windows and Linux
* Understand basic installation troubleshooting scenarios
* Manage, diagnose, and utilize the fabric using various OFED commands
* Use a Command Line Interface (CLI)

Course Duration

4 hours

Target Audience

Network administrators, IT managers, and technicians who work or intend to work in an InfiniBand environment.

Course Prerequisites

InfiniBand Essentials/Fundamentals Course

What’s inside?

* Interactive self-paced courseware
* Videos
* Summary Exam
* Related Documentation

Related Courses

* InfiniBand Fundamentals Course
* ConnectX®-3 Adapter Card Course
* ConnectX®-3 Pro Adapter Card Course
* Connect-IB Adapter Card Course
Why should I take this course?

Want to maximize datacenter performance? Release network congestion and bottlenecks? Need to keep your fabric at top performance and perform diagnostics and troubleshooting operations faster than ever? This course is certainly the place for you!

Mellanox's Unified Fabric Manager® (UFM®) is a powerful platform for managing scale-out computing environments. UFM enables data center operators to efficiently manage, operate, and monitor the entire fabric, boost application performance and maximize fabric resource utilization.

This course is designed to meet the needs of InfiniBand fabric professionals who are involved in designing the fabric logical models, installing, configuring, managing and troubleshooting InfiniBand fabrics. You will acquire all the necessary skills and tools to work with Mellanox’s UFM and maximize networks performance and your personal administration skills!

By enrolling in this course, you will learn about Mellanox UFM, its capabilities, advantages, and components through a set of interactive learning units, videos and simulators.

You will practice and learn how to identify and localize congestion, fabric errors, and traffic issues through the dashboard. Practice some useful technics to monitor the fabric to ensure smooth traffic flow. In addition you will also learn how to, manage; ports, devices, traffic, events and errors in the fabric with little effort, run fabric and UFM reports and logs to maintain a healthy fabric. Finally you will know how to implement the logical model according to your business needs, and configure and install the UFM software.

Course Topics

* UFM Overview
* UFM Dashboard Functionality
* How to Monitor the Fabric
* How to Analyze Congestion
* How to Manage Devices
* Fabric Discovery and Views
* How to Monitor Fabric Health
* How to Manage Events on the Fabric
* UFM’s Logical Model
* How to Design the Fabric
* How to Configure UFM
* How to Install UFM Software
* UFM Summary Exam

Course Objectives

* Describe UFM’s main features
* Detail the main day-by-day usage scenarios of UFM
* Detail the UFM monitoring features and create monitoring sessions
* Read and analyze fabric performance
* Identify and analyze congestion in the fabric
* Manage ports and devices of the fabric
* Manage traffic, events, and errors
* Arrange the fabric’s topology
* Run fabric and UFM Health reports and logs
* Activate Topology Comparison and perform configuration backup
* Understand and implement UFM’s logical model on the fabric
* Configure UFM features
* Install UFM software

Course Duration

9 hours

Target Audience

Network and system administrators and engineers, IT and network managers who work or intend to work with Mellanox UFM.

Course Prerequisites

Understanding of InfiniBand fabrics and management concepts.
What’s inside?

* Interactive self-paced courseware
* Videos
* Summary Exam
* Related Documentation

Related Courses

* InfiniBand Fundamentals Course
Why should I take this course?

The ConnectX-3 VPI single/dual-port adapter card contains the latest Virtual Protocol Interconnect (VPI) technology, which allows the adapter card to support InfiniBand and Ethernet protocols.

The ConnectX-3 VPI adapter card provides the highest performing and most flexible interconnect solution for PCI Express Gen 3.0 servers used in Enterprise Data Centers, High-Performance Computing, and embedded environments.

In order to utilize the ConnectX-3 VPI capabilities, it is important to learn the best practices for installing, configuring, and managing the adapter card and for performing basic diagnostic troubleshooting procedures.

What you will learn

This course will guide you through the process of installing and managing the ConnectX-3 VPI. You will learn and practice initial installation to the server, manage your adapter card using a shell connection to maximize its features, work with its LED indicator functionality, and identify and solve physical problems using the troubleshooting module for Linux and Windows users. In addition, you will learn about the benefits and key features of ConnectX-3 VPI, and the best practices for utilizing them.

Course Topics

- ConnectX-3 VPI Introduction
- ConnectX-3 VPI Installation
- ConnectX-3 VPI Management for Linux users
- ConnectX-3 VPI Management for Windows users
- ConnectX-3 VPI Troubleshooting for Linux users
- ConnectX-3 VPI Troubleshooting for Windows users
Course Objectives

- Describe the benefits and the main features of ConnectX-3 VPI
- Diagnose the ConnectX-3 VPI status based on the LED indicators
- Install the adapter card to the server and verify connectivity
- Manage your card using a shell connection for Linux or Windows users
- Work with multiple adapter cards
- Upgrade the adapter card firmware
- Identify and repair common faults using physical troubleshooting steps and operation debug steps
- List the common OFED commands and their usage
- Perform management and diagnostic tasks with OFED commands

Course Duration

5½ hours

Target Audience

Network Administrators and managers who work or intend to work with Mellanox equipment

Course Prerequisites

General understanding of InfiniBand and Ethernet fabrics and management concepts.

What’s inside?

- Interactive self-paced courseware
- Videos
- Simulators
- Summary Exam and exercises for knowledge implementation
- Related documentation according to course topics

Related Courses

Working with Mellanox OFED in InfiniBand Environments.
Why should I take this course?

The ConnectX-3 Pro single/dual-port adapter card, with hardware offload engines for overlay networks, provides the highest performing and most flexible interconnect solution for private clouds, enterprise data centers, and high performance computing.

The ConnecX-3 Pro contains the latest Virtual Protocol Interconnect (VPI) technology, which allows the adapter card to support InfiniBand and Ethernet protocols.

In order to utilize the ConnectX-3 Pro capabilities, it is important to learn the best practices for installing, configuring, and managing the adapter card and for performing basic diagnostic troubleshooting procedures.

What you will learn

This course will guide you through the process of installing and managing the ConnectX-3 Pro. You will learn and practice initial installation to the server, manage your adapter card using a shell connection to maximize its features, work with its LED indicator functionality, and identify and solve physical problems using the troubleshooting module for Linux and Windows users.

In addition, you will learn about the benefits and key features of ConnectX-3 Pro, and the best practices for utilizing them.

Course Topics

* ConnectX-3 Pro Introduction
* ConnectX-3 Pro Installation
* ConnectX-3 Pro Management for Linux users
* ConnectX-3 Pro Management for Windows users
* ConnectX-3 Pro Troubleshooting for Linux users
* ConnectX-3 Pro Troubleshooting for Windows users
Course Objectives

* Describe the benefits and main features of ConnectX-3 Pro
* Learn how the ConnectX-3 Pro improves performance by using advanced NVGRE and VXLAN hardware offloads
* Diagnose the ConnectX-3 Pro status based on the LED indicators
* Install the adapter card to the server and verify connectivity
* Manage the card using a shell connection for Linux or Windows users
* Work with multiple adapter cards
* Upgrade the adapter card firmware
* Identify and repair common faults using physical troubleshooting steps and operation debug steps

Course Duration

5½ hours

Target Audience

Network Administrators and managers who work or intend to work with Mellanox equipment

Course Prerequisites

General understanding of InfiniBand and Ethernet fabrics and management concepts.

What’s inside?

* Interactive self-paced courseware
* Videos
* Simulators
* Summary Exam and exercises for knowledge implementation
* Related documentation according to course topics

Related Courses

Working with Mellanox OFED in InfiniBand Environments.
Why should I take this course?

The Connect-IB is a Single/Dual-Port InfiniBand Host Channel Adapter (HCA) card. The adapter card processes up to 130 million messages per second, five times higher than any other InfiniBand solution.

Maximum bandwidth is delivered across PCI Express 3.0 x16 and two ports of FDR InfiniBand, supplying more than 100Gb/s of throughput together with consistent low latency across all CPU cores.

In order to utilize the Connect-IB capabilities in the InfiniBand fabric, it is important to learn the best practices for installing, configuring, and managing the adapter card and for performing basic diagnostic troubleshooting procedures.

What you will learn

This course will guide you through the process of installing, managing, and troubleshooting Connect-IB. You will learn and practice initial installation to the server, manage your adapter card using a shell connection to maximize its features, work with its LED indicator functionality, and identify and solve physical problems using the troubleshooting module.

In addition, you will learn about the benefits and key features of Connect-IB, and the best practices for utilizing them.

Course Topics

- Connect-IB Introduction
- Connect-IB Installation
- Connect-IB Management
- Connect-IB Troubleshooting
Course Objectives

* Describe the benefits of Connect-IB
* Describe the main features of Connect-IB
* Locate the main interfaces of Connect-IB
* Diagnose the Connect-IB status based on the LED indicator
* Install the adapter card to the server
* Verify server connectivity
* Manage your card using a shell connection
* Upgrade your card firmware
* Identify the source of a problem
* Use physical troubleshooting steps
* Use operation debug steps

Course Duration

2 hours

Target Audience

Network Administrators and managers who work or intend to work with Mellanox equipment

Course Prerequisites

General understanding of InfiniBand and Ethernet fabrics and management concepts.

What’s inside?

* Interactive self-paced courseware
* Videos
* Simulators
* Summary Exam and exercises for knowledge implementation
* Related documentation according to course topics

Related Courses

Working with Mellanox OFED in InfiniBand Environments.
Why should I take this course?

The SX1036 Edge Switch system is one of Mellanox’s primary building blocks in Ethernet networks and contains the latest VPI technology, which allows this switch to support InfiniBand and Ethernet protocols.

The SX1036 switch system provides a high-performance fabric solution with 36 ports that deliver up to 2.88Tb/s of non-blocking throughput to High-Performance Computing, High Frequency Trading, and Enterprise Data Centers, with ultra-low latency.

Learn the best practices for utilizing the switch capabilities, configuring, managing, and performing basic diagnostic troubleshooting procedures, all from the experts at Mellanox.

What you will learn

This course provides the required set of skills to configure and manage the SX1036 switch through a set of an interactive learning units, videos and simulators. You will learn about its physical and application features, its benefits, and the best practices for utilizing them. You will also learn how to diagnose and troubleshoot basic hardware problems, upgrade its firmware, and debug common faults based on our specialists' knowledge and experience.

Course Topics

* SX1036 Introduction
* SX1036 LED Indicators
* SX1036 Management
* SX1036 System File Management
* SX1036 Basic Hardware Troubleshooting
* SX1036 Troubleshooting Form
* SX1036 VPI Configurations
Course Objectives

- Perform initial switch configuration
- Manage the switch using MLNX-OS and WebUI with basic commands
- Upgrade the MLNX-OS software
- Diagnose the switch status based on the LED indicators
- Identify and repair common faults during a short debug session
- Fill out the troubleshooting form during the debug session
- Change the switch profile system from InfiniBand to Ethernet and vice versa

Course Duration

3 hours

Target Audience

Network Administrators and managers who work or intend to work with Mellanox equipment

Course Prerequisites

- Basic understanding of Ethernet networks principles
- Basic understanding of Ethernet switching and routing

What’s inside?

- Interactive self-paced courseware
- Videos
- Simulators
- Summary Exam and exercises for knowledge implementation
- Related documentation according to course topics
Why should I take this course?

The SX6036 Edge Switch system is one of Mellanox’s primary building blocks in Ethernet networks and contains the latest VPI technology, which allows this switch to support InfiniBand and Ethernet protocols.

The SX6036 switch system provides a high-performance fabric solution with 36 ports that deliver up to 4.032Tb/s of non-blocking throughput to High-Performance Computing and Enterprise Data Centers, with 170ns port-to-port latency.

Learn the best practices for utilizing the switch capabilities, configuring, managing, and performing basic diagnostic troubleshooting procedures, all from the experts at Mellanox.

What you will learn

This course provides the required set of skills to configure and manage the SX6036 switch through a set of an interactive learning units, videos, and simulators.

You will learn about its physical and application features, its benefits, and the best practices for utilizing them.

You will also learn how to diagnose and troubleshoot basic hardware problems, upgrade its firmware, and debug common faults based on our specialists’ knowledge and experience.

Course Topics

* SX6036 Introduction
* SX6036 LED Indicators
* SX6036 Management
* SX6036 System File Management
* SX6036 Basic Hardware Troubleshooting
* SX6036 Troubleshooting Form
* SX6036 VPI Configurations
Course Objectives

* Perform initial switch configuration
* Manage the switch using MLNX-OS and WebUI with basic commands
* Upgrade the MLNX-OS software
* Diagnose the switch status based on the LED indicators
* Identify and repair common faults during a short debug session
* Fill out the troubleshooting form during the debug session
* Change the switch profile system from InfiniBand to Ethernet vice versa

Course Duration

3 Hours

Target Audience

Network administrators and managers who work or intend to work with Mellanox equipment

Course Prerequisites

* Complete InfiniBand Fundamentals Introduction unit
* InfiniBand and Ethernet concepts

What’s inside?

* Interactive self-paced courseware
* Videos
* Simulators
* Summary Exam and exercises for knowledge implementation
* Related documentation according to course topics
Why should I take this course?

The SX1012 is a minimal form factor 40GbE Top of Rack switch system for high-performance computing, storage, cloud, and database deployments, providing 12 QSFP interfaces that can operate at speeds of 1GbE, 10GbE, 40GbE, or 56GbE.

The high availability solution of the SX1012 meets the customer needs by providing a smaller footprint and a more flexible configuration that improves the utilization of the hardware, lowers power consumption, and therefore reduces the capital and operational costs significantly.

Learn the best practices for utilizing the switch capabilities, configuring, managing, and performing basic diagnostic troubleshooting procedures, all from the experts at Mellanox.

What you will learn

This course provides the required set of skills to configure and manage the SX1012 switch through a set of an interactive learning units, videos and simulators. You will learn about its physical and application features, its benefits, and the best practices for utilizing them. You will also learn how to diagnose and troubleshoot basic hardware problems, upgrade its firmware, and debug common faults based on our specialists’ knowledge and experience.

Course Topics

* SX1012 Introduction
* SX1012 LED Indicators
* SX1012 Management
* SX1012 System File Management
* SX1012 Basic Hardware Troubleshooting
* SX1012 Troubleshooting Form
* SX1012 VPI Configurations
Course Objectives

* Perform initial switch configuration
* Manage the switch using MLNX-OS and WebUI with basic commands
* Upgrade the MLNX-OS software
* Diagnose the switch status based on the LED indicators
* Identify and repair common faults during a short debug session
* Fill out the troubleshooting form during the debug session
* Change the switch profile system from InfiniBand to Ethernet and vice versa

Course Duration

3 Hours

Target Audience

Network administrators and managers who work or intend to work with Mellanox Equipment

Course Prerequisites

* Basic understanding of Ethernet networks principles
* Basic understanding of Ethernet switching and routing

What’s inside?

* Interactive self-paced courseware
* Videos
* Simulators
* Summary Exam and exercises for knowledge implementation
* Related documentation according to course topics
Introducing Mellanox’s Unified Fabric Manager

Why should I take this course?

Handling fabrics can be quite a challenge. Keeping your traffic flowing smoothly, releasing congestion in the fabric, and managing thousands of switches, servers, and cables efficiently requires a lot of valuable resources to your company. There is a way to do all of this a lot easier!

With Mellanox’s Unified Fabric Manager you can manage your fabric faster and more effectively than ever! UFM is a powerful platform for managing scale-out computing environments. UFM enables data center operators to efficiently manage, operate, and monitor the entire fabric, boost application performance, and maximize fabric resource utilization.

This free course is an introduction to the UFM software.

Whether you ultimately intend to work with UFM, are considering buying it, are thinking about taking the full UFM course, or want to improve your networking skills, this training is certainly your first stop!

You will receive an overview of UFM software features and get a quick glance into the day-to-day work with UFM. For additional useful tools, everyday scenarios, practical application, and advanced features of UFM, you are encouraged to purchase the full UFM courseware, “Working with Unified Fabric Manager”.

What you will learn

By enrolling in this course, you will learn about Mellanox UFM, its capabilities, its advantages, and its components through interactive learning units, videos, and simulators.

You will receive an overview of the UFM software, including useful tools for how to identify and localize congestion and monitor the fabric to ensure smooth traffic flow. In addition, you will learn how to manage ports and devices in the fabric with little effort and to maintain a healthy fabric.
Course Topics

* What is UFM?
* UFM User Interface Overview
* Performance Monitoring and Troubleshooting Overview
* Device Management Overview
* Fabric Health Maintenance and Event Management Overview

Course Objectives

* Specify how UFM maintains a top performing and healthy fabric at all times
* Detail the primary day-by-day usage scenarios of UFM
* Describe the functions available from the main interface
* Describe UFM’s primary features

Course Duration

40 minutes

Target Audience

Network and system administrators and engineers, IT and network managers who work or intend to work with Mellanox UFM.

Course Prerequisites

General understanding of InfiniBand fabric concepts

What’s inside?

* Interactive self-paced courseware
* Videos
* Related Documentation

Related Courses

* InfiniBand Fundamentals Course
* Working with Mellanox’s Unified Fabric Manager
Why should I take this course?

InfiniBand is a high-speed server-interconnect technology. Its greater speed, lower latency, and greater scalability are among its many advantages, and it has become the primary alternative to Ethernet as the interconnect protocol of choice.

This course is the first step into the world of InfiniBand. If you are looking to become more familiar with InfiniBand’s benefits, uses, architecture layers, management concepts, and basic tools, this is the best place to start.

What you will learn

This course is designed to meet the needs of anyone who wishes to be familiar with the basic principles of InfiniBand fabrics, its components, layers and basic management concepts.

For those who wish to understand the architecture, configure, manage and maintain InfiniBand fabrics we recommend to take the “InfiniBand Fundamentals” course and the “Working with Mellanox OFED in InfiniBand Environments” course.

Course Topics

- InfiniBand Introduction
- InfiniBand Architecture Layers Overview
- Fabric Management Concepts
- InfiniBand Drivers and Utilities

Course Objectives

- Describe the main features and elements of InfiniBand fabrics
- Describe the 5 layers of the InfiniBand layers model
- Describe the basic management concepts of InfiniBand fabrics
- Describe the main features of Mellanox OFED
- Get familiar with the installation process of Mellanox OFED
- Get familiar with OFED basic management tools
Course Duration

2 hours

Target Audience

Anyone who wishes to understand the basic principles of InfiniBand fabrics

Course Prerequisites

General understanding of networking concepts and principles

What’s inside?

* Interactive self-paced courseware
* HOW-TOs Videos
* Related Documentation

Related Courses

InfiniBand Fundamentals Course

Course Completion Requirements

85% completion of each courseware module
Why should I take this course?

The demand for more computing power, efficiency and scalability is constantly accelerating in the HPC, enterprise, cloud computing and Web 2.0 markets. To address these demands Mellanox provides complete end-to-end solutions (silicon, adapter cards, switch systems, cables and software) supporting InfiniBand and Ethernet networking technologies.

In this course you will learn how Mellanox's InfiniBand and Ethernet technology can take your specific solution to the next level of performance, power and cost.

What you will learn

This course provides a complete overview about Mellanox end to end interconnect solutions such as switches, Integrated Circuits, and so on.

Through a series of interactive self-paced sessions you will learn about the core technologies that drive Mellanox products their key features, benefits and what is the most suitable product for your needs.

Course Topics

- Company overview
- Integrated circuits
- Network adapter cards
- Switch systems
- Management software
- Acceleration software
- Cables
Course Objectives

* Describe what are the key features and benefits of Mellanox products
* Select a suitable set of products per a required solution

Course Duration

90 minutes

Target Audience

Network Administrators, network architects and IT managers who work or intend to work with Mellanox equipment.

What’s inside?

* Interactive self-paced courseware
* Videos
* Summary Exam
* Related documentation according to course topics
* Simulators
* Summary Exam and exercises for knowledge implementation
Mellanox Ethernet Certification: Part 1- Products Overview

Why should I take this course?

Mellanox Ethernet products lead the industry with outstanding performance and a variety of solutions on the switch/routing side and the server side. After this training you should have the required knowledge to select the right Mellanox solution for any network requirements. This course also includes short certification exam. Students who will pass the exam will be entitled for an official Mellanox certification.

What you will learn

During the course videos you will learn about the products’ key features, benefits, and popular uses. By the end of this course you should know how to select the most suitable Mellanox Ethernet solution.

Course Topics

* Mellanox Switch Family Overview
* Mellanox SX1036/1035 Switch System Review
* Mellanox SX1024 Switch System Review
* Mellanox SX1016 Switch System Review
* Mellanox SX1012 Switch System Review
* Mellanox Virtual Modular Switch Solution
* Mellanox ConnectX-3 EN Adapter Card Review
* Mellanox ConnectX-3 Pro EN Adapter Card Review
* Mellanox Cables and Transceivers Review
* Certification Exam
Course Objectives

By the end of this course you should know how to select the most suitable Mellanox Ethernet solution for any network requirements

Course Duration

2 Hours

Target Audience

Network products distributors/re-sellers
Mellanox OEMs
IT managers and decision makers
Network engineers/administrators

What’s inside?

* Interactive Certification Exam
* Videos
* Related Documentation

Related Courses

* Ethernet Certification: Part 2 (Soon)
Mellanox Academy
Course Catalog

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2014-2015

V 11.01.2014