Mellanox Technical Training Center Catalog

User Guide

Rev 1.3

www.mellanox.com

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About this Manual

Welcome to our Mellanox Technical Training Center (MTTC) Guide. This guide contains the information needed to set up and use Mellanox Technical Training in order to meet the training and education requirements of your enterprise.

Getting trained is a great way to invest in your team professional development. Mellanox's technology training helps you gain the necessary skills to proficiently meet the challenges of your IT organization.

This guide contains detailed information about the following:

- Mellanox Technical Training Center Overview and reference information
- Mellanox Technical Training Center Course catalog
- Mellanox Training Administration information
- Specific prerequisites tasks you need to accomplish using prior to Mellanox Training
- Mellanox Computer Base Training Program
- How to use Mellanox Training Remote Lab
- Additional sources of information that can help you

Terminology

Table 1: Terminology

Abbreviations/Terms	Description
ILT	Instructor Led Training
VILT	Virtual Instructor Training (Remote E-Learning)
OST	On Site Training (Customer Site)
SOW	Scope Of Work
CBT	Computer Base Training
IB	InfiniBand (Technology protocols and fabric)
UFM	Unified Fabric Manager
CLI	Command Line Interface
OFED	Open Fabric Enterprise Distribution
DRBD	Distributed Replicated Block Device
ULP	User Layer Protocol
Open SM	Open Protocol Subnet Manager
SDK	Software Development Kit

1 Overview

1.1 Mellanox Training Products and Expertise

Customers can expect high quality and competency-based hands-on training. All of our field trainers are highly skilled in using our products and they have extensive networking experience to ensure a high level of customer satisfaction. Training can also be customized based on your financial institution's needs.

Generally, our on-site training best complements the network administrators services by providing training content customized for your specific needs. We provide hands-on instruction and offer both end-user and train the trainer formats.

Mellanox offers both end-user and partner trainings. Our Certified Technical Trainers use proven instructional techniques in a friendly and cooperative environment to provide our customers an in-depth theory and hands-on technical understanding of Mellanox products.

1.2 Mellanox Technical Training Program

The Mellanox Technical Training program provides training for all levels of personnel including engineers, technicians and customer service representatives. Each track allows students to learn Mellanox technology through a combination of classroom training and hands-on configuration workshops.

The training tracks allow students to pursue specialized knowledge, which focus on the basic or advanced platform type most relevant to their job functions and experience. While some customers and partners may benefit from multiple training tracks, it is common for individuals to enroll in only one training program.

Candidates wishing to attain advanced programs are welcome to do so, but are required to pass the pre-requisite basic program exam.

1.2.1 Training Tracks Offerings

Our courses are grouped into the following main categories:

- Network Foundation Programs
- System Administrator Programs
- Network Administrator Programs
- Advanced Programs
- Network Management Programs
- Product and Technology Programs
- Custom and tailored program

The course descriptions can be found in the following pages, as well as on-line by visiting our web site at http://mellanox.com/content/pages.php?pg=support_index.

1.2.2 Hands-On Training

On average 50% of class time is devoted to hands-on training. Courses are carefully designed to give students the skills needed to excel. Detailed class-work and proven "hands-on" exercises quickly bring the student to a thorough understanding of the theory and best practices concepts which lead to a higher level of competence.

Each student has access to an array of products, systems, and documented workshop exercise to use under the direct supervision of our experienced staff.

1.3 Who Should Attend Training?

The technical courses are designed for personnel who manage Mellanox InfiniBand or Mellanox Ethernet networks and who will install, administer and or maintain it.

1.3.1 Mellanox System Administrator Program

The Mellanox System Administration training course is designed for individuals who perform administrative duties or wish to learn advanced functionalities of Mellanox products. Often, these individuals are administrators, project managers, super-users or other support personnel.

Functional responsibilities include:

- Provide administration for all production systems including front-end, middle-tier, and application servers
- Monitor, prioritize, and develop standards, as well as maintenance of service levels for the production environment
- Control activities related to day-to-day maintenance, installations and upgrades
- Identify, coordinate and resolve all technical and operational dependencies
- Manage release process controls

1.3.2 Mellanox Network Administrator Program

Mellanox Network Administration training course attendants are typically anyone who is responsible for the installation, configuration, or maintenance of Mellanox products. The training is designed for the Network Engineer/Administrator who is already familiar with networking concepts such as IP addressing, routing, and L2 switching.

Functional responsibilities include:

- Analyze, implement, and support network systems, including servers, routers, switches, and cable plant
- Monitor, administer, and troubleshoot the network resources
- Evaluate and implement network communication technology including operating systems, routers, switches and network analytical tools
- Administer network servers, including services, changes, and deletions; perform network capacity planning and benchmarking

1.3.3 Mellanox Product Series Program

The Mellanox Product Series training is designed for attendants hoping to move beyond the basics of product foundations. These advanced courses offer a deep dive into a specific area or product and provide an opportunity for attendants to expand their Mellanox product knowledge and become "powerful users" within their specific research areas.

Attendees typically are among one of the following categories:

- Previous attendees of Mellanox foundation training
- Advanced Mellanox products users who want to go beyond the basics
- Established users who want more in-depth instruction in a particular product series

1.3.4 Foundation Introduction Course

An introductory course is intended for Level 1 & 2 Service and Support engineers who deploy and support Mellanox’s High Performance Cluster Solutions. Students will be introduced to primary components, terminology, features and functions of Mellanox products. This course will not cover any application specifics, fabric performance/tuning or InfiniBand internals.

1.3.5 Advanced Courses

Advanced training is designed for Mellanox product users who are ready to tap into the advanced product features, functions and configurations for increased efficiency, productivity and capability.

1.3.6 Program Guidelines

The on-site class size is limited to 8 participants to ensure everyone is trained adequately. It is recommended that the right individuals are chosen to receive training in order to successfully implement Mellanox products and fully benefit from the hardware and software product training.

We recommend the following guidelines:

- Trainees should complete all of the recommended training prerequisites
- Trainees should have a prior understanding of the technology and are currently involved in an active project related to Mellanox product(s)
- Ideally, trainees should be the individuals responsible for training other product users in their organization

1.4 Program Coordinator

Mellanox's professional service administrator is the main staff personnel responsible for the administration of the training program. This person is also your primary contact person for all technical and non-technical training related questions.

Please contact us for non-technical help, schedule, documentation, SOW, and other questions at pro-serv-admin@mellanox.com mailto:pro-serv-admin@mellanox.com

2 Training Delivery

2.1 Ways to Train

The Mellanox Technical Training Center offers the following training solutions for professionals to become experts in Mellanox technology, solutions and products across the nation and around the globe. Customers can select the learning method that best fits their needs.

Training methods:

- **On-site Training (OST)** – Led by our certified trainer at the customer site to maximize customer convenience
- **In House Training (IHT) -** Led by our certified trainer at a Mellanox training facility to maximize customer convenience
- **Virtual Instructor Led Training (RMT)** – Led by our certified trainer online and on demand. Travel is not needed
- **Open Enrollment Instructor Led Training (OPEC) -** Led by our certified trainer at designated public locations worldwide and during a preset training schedule

2.2 Mellanox Instructor Led Training (ILT)

2.2.1 On-site Training at Customer Site Location

Since most customers prefer to be trained at their own premises due to tight schedules, our course curricula are carefully designed for special conditions and we are well-prepared to provide the courses including a hands-on workshop at the desired customer location.

Courses are also regularly conducted at our well-equipped training centers locations:

- Chelmsford, MA, USA
- Sunnyvale, CA, USA
- Designated Location

2.2.2 In House Training at Mellanox's Training Facilities

Our in house training is aimed at customer who prefers to have an exclusive training at Mellanox facilities, due to tight schedule of his team and or project.

Our course curricula are carefully designed for special conditions and we are well-prepared to provide the courses including a hands-on workshop at the desired customer location.

Courses are delivered at our well-equipped training centers locations:

- Chelmsford, MA, USA
- Sunnyvale, CA, USA

2.2.3 Virtual Instructor Led Training (RMT)

For Customer who prefer and need to cut Flight and Hotel expenses, we offer Remote E-learning option that will include Theory as well as Remote lab practices using Mellanox Training Labs.

Students will contact the Virtual training class using regular internet access.

Open Enrollment Class at Mellanox's training facilities

Courses are also regularly conducted at our well-equipped training centers locations:

- Chelmsford, MA, USA
- Sunnyvale, CA, USA
- Designated Location

Check our web site for upcoming training events
http://support.mellanox.com/Training_Schedule.

2.2.4 On-site Training SOW Analysis

Our training gap analysis meeting will help identify the key skills required by your staff to help ensure your organization's training goals are met. Our experienced training manager will lead you through a series of questions to identify the best curriculum based on your needs.

From this analysis, we will then present a training Scope of Work (SOW) for you and your organization, highlighting, where available, any items which may be used to offset the cost of training. The SOW may then be used as your 'training plan'. This training plan may also be a useful starting point should your organization decide to pursue an advanced custom course or other professional services in the future.

2.2.5 On-site Training Scheduling

On-site training is usually scheduled approximately 30 to 45 days from the day your order request is signed. On occasion, shorter time frames can be accommodated based on availability.

2.2.6 Training Splits and Follow-up

It is assumed that the customer prefers to have consecutive training days to help minimize billable travel expenses. In situations where a customer has purchased Mellanox's professional deployment service along with training, these events are usually conducted separately and as such will require two trips with billable travel expenses for each event. Split or "follow-up" sessions are also available by request with the knowledge that the customer will be assessed additional travel expenses plus applicable training fees for the subsequent training.

2.2.7 Standard On-site Training Services

Standard training hours are 8:30am - 4:30pm, Monday through Friday. The Training Department can accommodate customized training agendas and/or special hours, which are priced on a quote basis.

2.2.8 Training Manuals

On-site customers will be provided with a link to download the electronic, PDF-formatted training manual needed for their scheduled class. With this electronic file the customer can print as many copies of the manual as needed for their institution's training event.

2.2.9 Travel Expense Policy

All training travel and expenses are included in the quoted training price. If you have any question regarding a specific expense, please contact the Training Department Administrator.

2.2.10 Multiple Trainers

On occasion, two trainers may be on-site to present different topics. Under those circumstances, the customer will only be billed for one trainer. If a customized session is designed to require two staff members, then all related expenses will be billable to the customer per the Sales Order or Statement of Work Proposal.

2.3 Self-pace Computer Based Training (CBT)

The Mellanox Technical Training Center offers an Online knowledge resource website. The website provides valuable information in a self-paced, computer based training format. The Online tutorials are available on demand and provide key information at the user's convenience. Information on this website may be viewed as prerequisites to any Instructor Led Training (ILT) or On-site Training (OST).

This website is available to customers with contracted support via the support web portal. The CBT topics are frequently updated with latest information on products and technology. They include troubleshooting tips, interactive Online tutorials and a technical reference library.

2.4 Customized Training Courses

Mellanox offers customized training courses and workshops designed to meet your specific needs. To request customized training for your organization, please contact us at training@accessdata.com.

3 Courses Agenda

3.1 Mellanox InfiniBand Network Foundations Course

Table 2: Mellanox InfiniBand Network Foundations Course

Course Name	Mellanox Network Foundations Course
Product	Mellanox MTR-IB-OST-B
Duration	2 Days
Course Overview	This class provides the foundation for the InfiniBand technology from a usability point of view and builds on the details of the InfiniBand specification. It is designed to meet the needs of anyone needing to install, configure, manage, troubleshoot and monitoring InfiniBand Fabrics. This two day course combines InfiniBand theory of operations with task orientated hands-on lab exercises that provide a logical approach to the High Performance Network arena.
Objectives	Upon completion of this course, the student will be able to: • Describe the InfiniBand (IB) protocol foundations • Understand list and describe InfiniBand main topologies • Understand InfiniBand Subnet Manager main functions • Understand and configure InfiniBand Partitions using Subnet Manager • Describe InfiniBand cabling options • Operate basic activities of IB switch using its CLI • Set-up connections between Hosts and IB switches
Target Audience	• Network administrators • System administrators • IB presale staff
Course Level	IB entry level course
Prerequisites	Data communications knowledge
Course Content	
Day 1	• IB MLNX Network Foundations • IB Architecture • IB Protocol Layers • IB L1 • IB Cabling • IB L2 • Clos Topology • Subnet Manager and Fabric Initialization Process • IB Network Layer • IB Transport Layer • IB Management Model • Upper Layer Protocols
Day 2	• OFED Introduction & Host Tools • Introducing Mellanox IB switches

	• Introducing Switch CLI • Discover Fabric components using IB Commands • Fabric Monitoring using UFM • Lab Practices • Hands On Labs

3.2 Mellanox InfiniBand Network Foundations Advance

Table 3: Mellanox InfiniBand Network Foundations Advance

Course Name	IB MLNX Network Foundations Advance
Product	MTR-IB-OST-A
Duration	2 Days
Course Overview	This course is designed to provide an advance foundation for InfiniBand Level 1 and Level 2 system engineers. This class provides the foundation for the InfiniBand technology from a usability point of view building on the details of the InfiniBand specification. It is designed to meet the needs of anyone needing to install, configure, manage, troubleshoot and monitoring InfiniBand Fabrics plus additional multicast and SNMP principles. This two day course combines InfiniBand theory of operations with task orientated hands-on lab exercises that provide a logical approach to the High Performance Network arena
Objectives	Upon completion of this course, the student will be able to: • Describe IB protocol Layers refresh • Use IB CLI Operational commands • Use IB CLI Diagnostic Commands • Describe OFED Functions • Install OFED on Linux servers • Upgrade HCA firmware • Describe IB Multicast • Describe IB Fabric congestion
Target Audience	• Network administrators • System administrators • IB presale staff
Course Level	An advanced level course
Prerequisites	• Data communication knowledge • Linux\Unix Basic commands • Mellanox IB basic foundations or equivalent knowledge
Course Content	
Day 1	• IB Protocol Layers refresh • Using IB CLI operational commands • Using IB CLI Diagnostics commands • Mellanox OFED & HCA
Day 2	• OFED Installation Process on Linux Server

	• HCA Firmware Upgrade Process • IB Multicast • Fabric Debug & Troubleshooting • IB Fabric Congestion • Lab Practices • Host Troubleshooting • Hands On Labs

3.3 InfiniBand 4XXX Series - Network Administrator Course

Table 4: InfiniBand 4XXX Series for Network Administrator Course

Course Name	IB 4XXX Series for Network Administrator Course
Product	MTR-4XXX-OST-NA
Duration	2 Days
Course Overview	This course is designed to introduce InfiniBand Level 1 and Level 2 Network Administrators to Mellanox 4xxx series fabrics. This class provides the foundation for the InfiniBand technology from the network administrator's point of view. This course focuses primarily on the 4XXX series model switches per the fabric switch. It is designed to meet the needs of anyone needing to install, configure, manage and troubleshoot InfiniBand Fabrics using switch based tools combined with monitoring essentials. This two-day course combines InfiniBand theory of operations with task orientated hands-on lab exercises that provide a logical approach for network administrators to practice what they learned when supporting IB Switches in High Performance Network arena.
Objectives	Upon completion of this course, the student will be able to: • Describe IB Fabric Topology • Describe main features of 4xxx switches family • List & Describe 4xxx switches family Physical components • Describe switch indication led • Describe the switch Field Replicable units • Configure and test the switch Management Interface • Use the switch CLI • Check the switch configuration using the CLI commands • Configure switch parameters • Configure Remote server communication (logs events and file transfer) • Check switch components status using the CLI commands • Explain and Implement administration users access permission table • Explain and Implement Ethernet –IB gateway functionality (4036 only) • Describe SW & FW upgrade procedure • Check switch links and Fabric environment using CLI-IB Diagnostics commands
Target Audience	• Network administrators

	• System administrators • IB presale staff
Course Level	IB Basic level course
Prerequisites	• Data communication knowledge • Linux\Unix Basic commands • Mellanox IB basic Foundations or Equivalent knowledge
Course Content	
Day 1	• IB Overview • IB Fabric Topology • InfiniBand Foundations • 4xxx switches family Introduction • 4xxx switches family Physical components • switch indication LEDs locations & Functionality • Describe the switch Field Replicable units • Configuring switch Management Interface • Use the switch CLI • LAB-1 Switch initialization
Day 2	• Configure switch parameters with the CLI • Configure Remote server communication (logs events and file transfer) • Switch CLI operational commands • LAB-2 Switch configuration parameters • Configuring administration users access permission table • Ethernet –IB gateway functionality (4036 only) • Ethernet –IB gateway configuration (4036 only) • LAB-3 IB GW Configuration • SW & FW upgrade procedure • Check switch links and Fabric environment using CLI-IB Diagnostics commands • LAB-4 use CLI-IB commands

3.4 InfiniBand 4XXX Series - System Administrator Course

Table 5: InfiniBand 4XXX Series for System Administrator Course

Course Name	IB 4XXX Series for System Administrator Course
Product	MTR-4XXX-OST-SA
Duration	2 Days
Course Overview	This course is designed to introduce InfiniBand Level 1 and Level 2 System Administrators to Mellanox 4xxx series fabrics. This class provides the foundation for the InfiniBand technology from the system administrator's point-of-view. This course focuses primarily on the 4XXX series model switches per the fabric host/server. It is designed to meet the needs of anyone needing to install, configure, manage and troubleshoot InfiniBand Fabrics via Host based tools combined with monitoring essentials.

	This two-day course combines InfiniBand theory of operations with task orientated hands-on lab exercises that provide a logical approach for system administrators to implement what they learned when supporting IB Servers in a High Performance Network arena.
Objectives	Upon completion of this course, the student will be able to: • Describe IB Fabric Topology • Describe main features of 4xxx switches family • List & Describe 4xxx switches family Physical components • Describe switch indication led • Configure and test the switch Management Interface • Use the switch CLI • Check the switch configuration using the CLI commands • Configure switch parameters • Configure Remote server communication (logs events and file transfer) • Check switch components status using the CLI commands • Explain and Implement administration users access permission table • Explain and Implement Ethernet –IB gateway functionality • Describe the switch Field Replicable units • Describe SW & FW upgrade procedure • Check switch links and Fabric environment using CLI-IB Diagnostics • Describe Hosts Drivers Functionality
Target Audience	System administrators
Course Level	An advanced level course
Prerequisites	• Data communication knowledge • Linux\Unix Basic commands • Mellanox IB basic Foundations or Equivalent knowledge
Course Content	
Day 1	• IB Overview • IB Fabric Topology • InfiniBand Foundations • 4xxx switches family Introduction • 4xxx switches family Physical components • switch indication LEDs locations & Functionality • Describe the switch Field Replicable units • Configuring switch Management Interface \ • LAB-1 Switch initialization • Use the switch CLI
Day 2	• Configure switch parameters with the CLI • Configure Remote server communication (logs events and file transfer) • Switch CLI operational commands • Configuring administration users access permission table • LAB2 using the switch CLI operational commands • Ethernet –IB gateway functionality (4036 only) • Ethernet –IB gateway configuration (4036 only)

	• LAB3 Configuring switch selected parameters • SW & FW upgrade procedure • Check switch links and Fabric environment using CLI-IB Diagnostics commands • Hosts Drivers Functionality • LAB4 Checking switch IB ports/links using CLI IB commands

3.5 InfiniBand 5XXX Series - Network Administrator Course

Table 6: InfiniBand 5XXX Series - Network Administrator Course

Course Name	IB 5XXX Series for Network Administrator Course
Product	MTR-5XXX-OST-NA
Duration	2 Days
Course Overview	This course is designed to introduce InfiniBand Level 1 and Level 2 Network Administrators to Mellanox 5xxx series fabrics. This class provides the foundation for the InfiniBand technology from the network administrator's point of view. This course focuses primarily on the 5XXX series model switches per the fabric host/server. It is designed to meet the needs of anyone needing to install, configure, manage and troubleshoot InfiniBand Fabrics using Host based tools combined with monitoring essentials. This two-day course combines InfiniBand theory of operations with task orientated hands-on lab exercises that provide a logical approach for network administrators to practice what they learned when supporting IB Switches in a High Performance Network arena.
Objectives	Upon completion of this course, the student will be able to: • Describe IB Fabric Topology • Describe main features of 5xxx switches family • List & Describe 5xxx switches family Physical components • Describe switch indication led • Describe the switch Field Replicable units • Configure and test the switch Management Interface • Use the switch EFM GUI & CLI • Implement Best Practice procedure • Check the switch configuration using the EFM CLI commands • Configure switch parameters using the EFM • Configure Remote server communication (logs events and file transfer) • Check switch components status using the EFM • Explain and Implement administration users access permission table • Explain and Implement Ethernet –IB gateway functionality (5020 only) • Describe SW & FW upgrade procedure • Check switch links and Fabric environment using the EFM
Target Audience	System administrators
Course Level	IB Basic level course
Prerequisites	• Data communication knowledge

	• Linux\Unix Basic commands • Mellanox IB basic foundations or equivalent knowledge
Course Content	
Day 1	• IB Fabric Topology • InfiniBand Foundations • 5xxx switches family Introduction • 5xxx switches family Physical components • switch indication LEDs locations & Functionality • Describe the switch Field Replicable units • Configuring switch Management Interface • Use the switch CLI • LAB-1 Switch initialization using CLI • LAB2 Best Practice configuration using the EFM
Day 2	• Configure switch parameters with the CLI • Configure Remote server communication (logs events and file transfer • Check switch components status using the CLI commands • Explain and Implement administration users access permission table • Explain and Implement Ethernet –IB gateway functionality (5020 only) • Describe the switch Field Replicable units • Describe SW & FW upgrade procedure • Check switch links and Fabric environment using CLI-IB Diagnostics commands

3.6 InfiniBand 5XXX Series - System Administrator Course

Table 7: InfiniBand 5XXX Series for System Administrator Course

Course Name	IB 5XXX Series for System Administrator Course
Product	MTR-5XXX-OST-SA
Duration	2 Days
Course Overview	This course is designed to introduce InfiniBand Level 1 and Level 2 System Administrators to Mellanox 5xxx series fabrics. This class provides the foundation for the InfiniBand technology from the system administrator's point of view. This course focuses primarily on the 5XXX series model switches per the fabric host/server. It is designed to meet the needs of anyone needing to install, configure, manage and troubleshoot InfiniBand Fabrics via Host based tools combined with monitoring essentials. This two-days course combines InfiniBand theory of operations with task orientated hands-on lab exercises that provide a logical approach for system administrators to implement what they learned when supporting IB Servers in a High Performance Network arena.
Objectives	Upon completion of this course, the student will be able to: • Describe IB Fabric Topology • Describe main features of 5xxx switches family

	• List & Describe 5xxx switches family Physical components • Describe switch indication led • Configure and test the switch Management Interface • Use the switch CLI • Check the switch configuration using the CLI commands • Configure switch parameters • Configure Remote server communication (logs events and file transfer) • Check switch components status using the CLI commands • Explain and Implement administration users access permission table • Explain and Implement Ethernet –IB gateway functionality (5020 only) • Describe the switch Field Replicable units • Describe SW & FW upgrade procedure • Check switch links and Fabric environment using CLI-IB Diagnostics commands • Describe Hosts Drivers Functionality
Target Audience	System administrators
Course Level	An advanced level course
Prerequisites	• Data communication knowledge • Linux\Unix Basic commands • Mellanox IB basic foundations or equivalent knowledge
Course Content	
Day 1	• IB Overview • IB Fabric Topology • InfiniBand Foundations • Describe main features of 5xxx switches family • List & Describe 4xxx switches family Physical components • Describe switch indication led • Configure and test the switch Management Interface • Use the switch CLI • LAB-1 Switch initialization • LAB2 Best Practice configuration using the EFM • Check the switch configuration using the EFM
Day 2	• Configure switch parameters using the EFM • Configure Remote server communication (logs events and file transfer) • Switch EFM operational screens • Configuring administration users access permission table • Ethernet –IB gateway functionality (5020 only) • Ethernet –IB gateway configuration ((5020 only) • SW & FW upgrade procedure • Check switch links and Fabric environment using CLI-IB Diagnostics commands • Describe Hosts Drivers Functionality

3.7 InfiniBand 6XXX Series - Network Administrator Course

Table 8: InfiniBand 6XXX Series Network Administrator Course

Course Name	IB 6XXX Series for Network Administrator Course
Product	MTR-6XXX-OST-NA
Duration	2 Days
Course Overview	This course is designed to introduce InfiniBand Level 1 and Level 2 Network Administrators to Mellanox 6xxx series fabrics. This class provides the foundation for the InfiniBand technology from the network administrator's point of view. This course focuses primarily on the 6XXX series model switches per the fabric host/server. It is designed to meet the needs of anyone needing to install, configure, manage and troubleshoot InfiniBand Fabrics using Host based tools combined with monitoring essentials. This two-day course combines InfiniBand theory of operations with task orientated hands-on lab exercises that provide a logical approach for network administrators to practice what they learned when supporting IB Switches in a High Performance Network arena.
Objectives	Upon completion of this course, the student will be able to: • Describe IB Fabric Topology • Describe main features of 6xxx switches family • List & Describe 6xxx switches family Physical components • Describe switch indication LEDs • Describe the switch Field Replicable units • Configure and test the switch Management Interface • Use the switch MLNX-OS GUI & CLI • Implement Best Practice procedure • Check the switch configuration using the MLNX-OS CLI commands • Configure switch parameters using the MLNX-OS Web UI • Configure Remote server communication (logs events and file transfer) • Check switch components status using the MLNX-OS Web UI • Explain and Implement administration users access permission table • Explain and Implement Ethernet –IB gateway functionality (*) • Describe SW & FW upgrade procedure • Check switch links and Fabric environment using the MLNX-OS Web UI
Target Audience	System administrators
Course Level	IB Basic level course
Prerequisites	• Data communication knowledge • Linux\Unix Basic commands • Mellanox IB basic foundations or equivalent knowledge
Course Content	
Day 1	• IB Fabric Topology • InfiniBand Foundations • 6xxx switches family Introduction • 6xxx switches family Physical components

	• switch indication LEDs locations & Functionality • Describe the switch Field Replicable units • Configuring switch Management Interface • Use the switch CLI • LAB-1 Switch initialization using MLNX-OS CLI • LAB-2 Best Practice configuration using the MLNX-OS Web UI
Day 2	• Configure switch parameters with the CLI • Configure Remote server communication (logs events and file transfer • Check switch components status using the CLI commands • Explain and Implement administration users access permission table • Explain and Implement Ethernet –IB gateway functionality (*) • Describe the switch Field Replicable units • Describe SW & FW upgrade procedure • Check switch links and Fabric environment using CLI-IB Diagnostics commands

3.8 InfiniBand 6XXX Series - System Administrator Course

Table 9: InfiniBand 6XXX Series System Administrator Course

Course Name	IB 6XXX Series for System Administrator Course
Product	MTR-6XXX-OST-SA
Duration	2 Days
Course Overview	This course is designed to introduce InfiniBand Level 1 and Level 2 System Administrators to Mellanox 6xxx series fabrics. This class provides the foundation for the InfiniBand technology from the system administrator's point of view. This course focuses primarily on the 6XXX series model switches per the fabric host/server. It is designed to meet the needs of anyone needing to install, configure, manage and troubleshoot InfiniBand Fabrics via Host based tools combined with monitoring essentials. This two-days course combines InfiniBand theory of operations with task orientated hands-on lab exercises that provide a logical approach for system administrators to implement what they learned when supporting IB Servers in a High Performance Network arena.

Objectives	Upon completion of this course, the student will be able to: • Describe IB Fabric Topology • Describe main features of 6xxx switches family • List & Describe 6xxx switches family Physical components • Describe switch indication led • Configure and test the switch Management Interface • Use the switch CLI • Check the switch configuration using the CLI commands • Configure switch parameters • Configure Remote server communication (logs events and file transfer) • Check switch components status using the CLI commands • Explain and Implement administration users access permission table • Explain and Implement Ethernet –IB gateway functionality (*) • Describe the switch Field Replicable units • Describe SW & FW upgrade procedure • Check switch links and Fabric environment using CLI-IB Diagnostics commands • Describe Hosts Drivers Functionality
Target Audience	System administrators
Course Level	An advanced level course
Prerequisites	• Data communication knowledge • Linux\Unix Basic commands • Mellanox IB basic foundations or equivalent knowledge
Course Content	
Day 1	• IB Overview • IB Fabric Topology • InfiniBand Foundations • Describe main features of 6xxx switches family • List & Describe 6xxx switches family Physical components • Describe switch indication led • Configure and test the switch Management Interface • Use the switch CLI • LAB-1 Switch initialization • LAB-2 Best Practice configuration using the MLNX-OS CLI • Check the switch configuration using the MLNX-OS Web UI
Day 2	• Configure switch parameters using the MLNX-OS CLI & Web UI • Configure Remote server communication (logs events and file transfer) • Switch MLNX-OS Web UI operational screens • Configuring administration users access permission table • Ethernet –IB gateway functionality (*) • Ethernet –IB gateway configuration (*) • SW & FW upgrade procedure • Check switch links and Fabric environment using CLI-IB_Diagnostics

	commands • Describe Hosts Drivers Functionality

3.9 UFM Basic Operation & Administration Course

Table 10: UFM Basic Operation & Administration Course

Course Name	UFM Basic Operation & Administration Course
Product	MTR-UFM-OST-B
Duration	2 Days
Course Overview	This course is designed to introduce for Unified Fabric Manager (UFM). This course will focus primarily on InfiniBand Level 1 and Level 2 System Administrators managing fabrics. This class provides an overview of InfiniBand foundations while focusing on fabric management from the system administrator's point of view. This course focuses on the Mellanox InfiniBand switches family. It is designed to meet the needs of administrators needing to install, configure, manage and troubleshoot and Monitor InfiniBand Fabrics via the UFM server. This two-day course combines InfiniBand theory of operations with task orientated hands-on lab exercises that provide a logical approach for system administrators when implementing what they learned when supporting IB fabrics in a High Performance Network arena.
Objectives	Upon completion of this course, the student will be able to: • Describe UFM main functions • Describe UFM Dash Board Functions • Track Fabric Events Using the UFM • Describe and configure UFM Logical Models • Configure UFM • Monitor Fabric Activity using the UFM tools • Install and Activate UFM
Target Audience	• Network administrators • System administrators • IB presale staff
Course Level	A basic level course
Prerequisites	Data communication knowledge
Course Content	
Day 1	• UFM Overview • UFM Architecture • UFM Dashboard • Logical Models Description
Day 2	• Fabric Design & Implementation Using Logical Models • Fabric Discovery & Views • Lab Practices

	• UFM Install Theory • UFM Installation Practice

3.10 UFM Advanced Administration & Installation Course

Table 11: UFM Advanced Administration & Installation Course

Course Name	UFM Advanced Administration Course
Product	MTR-UFM-OST-A
Duration	2 Days
Course Overview	This course is designed to provide a more in-depth view for Unified Fabric Manager (UFM). This course will focus primarily on InfiniBand Level 1 and Level 2 System Administrators via the UFM product. This class provides an overview of InfiniBand foundations while focusing on fabric management from the system administrator's point-of-view. This course focuses on the Mellanox InfiniBand switches family. It is designed to meet the needs of administrators needing to install, configure, manage, troubleshoot and monitor InfiniBand Fabrics via the UFM server. This two-day course combines InfiniBand theory of operations with task orientated hands-on lab exercises that provide a logical approach for system administrators when implementing what they learned when supporting IB fabrics in a High Performance Network arena.
Objectives	Upon completion of this course, the student will be able to: • Describe UFM main functions • Configure Fabric Environments on the UFM Using Gui • Configure Fabric Environments on the UFM Using CLI • Monitor Fabric Devices & Activity using the UFM • Monitor Fabric performance using the UFM • Track /Trace Fabric Events &Faults using the UFM • UFM Server Installation • Configure UFM Server After installation • Describe Mellanox SDK integration with a customer system
Target Audience	System administrators
Course Level	An advanced level course
Prerequisites	• Data communication knowledge • Linux\Unix Basic commands • Mellanox IB basic foundations or equivalent knowledge
Course Content	
Day 1	• UFM Main Functions Refresh • Configure Fabric Environment Using GUI • Configure Fabric Environment Using CLI • Events & Faults Diagnostic tools • Congestion diagnostic using Dash Board screens • Performance Monitor activation
Day 2	• UFM Installation

	• UFM High Availability and SRBD • UFM Switch and Host Agents • UFM SDK Introduction • Lab Practices

3.11 UFM and InfiniBand Foundations Conclusive

Table 12: UFM and InfiniBand Foundations Conclusive

Course Name	UFM and IB Foundations Conclusive
Product	MTR-IB-UFM-OST-A
Duration	4 Days
Course Overview	This course is a combination of the InfiniBand foundations and UFM administrators' course. It is designed to provide an introduction to InfiniBand with fabric management via the UFM product from start to finish. This course is designed primarily for InfiniBand Level 1 and Level 2 System Administrators. This course delivers a robust training curriculum. The students will be introduced to InfiniBand elements, theory of operation, fabric installation and administration from the system administrator's point of view. This course focuses on the Mellanox InfiniBand switches family and host stack. It is designed to meet the needs of administrators needing to install, configure, manage, troubleshoot and monitor InfiniBand Fabrics via the UFM.
Objectives	Upon completion of this course, the student will be able to: • Describe the InfiniBand (IB) protocol foundations • Understand list and describe InfiniBand main topologies • Understand InfiniBand Subnet Manager main functions • Understand and configure InfiniBand Partitions using Subnet Manager • Describe InfiniBand cabling options • Operate basic activities of IB switch using its CLI • Set-up connections between Hosts and IB switches • Describe IB Fabric Topology • Describe Subnet Manager main functions • Describe main features of 5xxx switches family • List & Describe IB Fabric Physical components 5xxx switches family • Install Grid Direct • Describe UFM main functions • Install UFM • Configure UFM • Monitor Fabric Activity using the UFM tools • Describe Mellanox SDK integration with a customer system
Target Audience	• Network administrators • System administrators • IB presale staff
Course Level	An advanced level course
Prerequisites	• Data communication knowledge

	• Linux\Unix Basic commands • Mellanox IB basic foundations or equivalent knowledge
Course Content	
Day 1	• IB Overview • ULP • Topology • Open SM Introduction • MLNX Switch Introduction • Node Addressing • Cabling Best Practices • QOS Introduction • Introducing Fabric Partitioning • Ethernet & IB Differences • OFED Introduction & Host Tools
Day 2	• Introducing Switch CLI • Fabric Debug & Troubleshooting • Host Troubleshooting • Hands On Labs • UFM IB Tools • Fabric Debug using UFM • Troubleshooting Congestion • UFM Introduction
Day 3	• UFM Installation • UFM High Availability and DRBD • UFM Switch and Host Agents • Fabric Design Using UFM • Managing Devices with UFM • Configuring QOS with UFM
Day 4	• Configuring Partitioning • Fabric Monitoring with UFM • Tracking Fabric Events • UFM SDK Introduction • Lab Practices

3.12 Ethernet 10XX Series - Network Administrator Course

Table 13: Ethernet 10XX Series for Network Administrators

Course Name	Ethernet 10XX Series for Network Administrators
Product	MTR-10XX-OST-NA
Duration	2.0 Days
Course Overview	This course is designed to Familiarize its students with Mellanox 10xx Ethernet switches. It is designed to meet the needs of anyone intends to install, configure, manage and

	monitor Ethernet network based or integrated with 10xx switches. This 2.0 day course, combines theory of operations with task orientated hands-on lab exercises that designed to assimilate the learned information.
Objectives	Upon completion of this course, the student will be able to: • Describe 10xx switches Main Features • Describe 10xx Best of class Features • List & Describe 10xx switches family Physical components • Describe switch indication LEDs & Field Replicable units • Configure and test the switch Management Interface • Use the switch MLNX-OS CLI & Web UI • Configure switch Global L1 Parameters • Configure switch L2 features (VLAN, Ports, RSTP, ..) • Configure L3 BGP L3 BGP Features • Configure IGMP snooping • Explain and Implement administration users access permission table • Perform File System upgrade and Back Up procedures
Target Audience	Network administrators System administrators
Course Level	Mid-level course
Prerequisites	• Data communication knowledge • Ethernet Knowledge • TCP/IP Knowledge
Course Content	
Day 1	• Course Introduction • 10XX Overview • 10XX Physical Description • 10XX Led Indications & FRUs • 10XX Management Basic Tools • 10XX VLANS Features & Configuration • 10XX Port & Port Groups Features & Configuration • Lab 1 VLAN Configuration • 10XX Rapid Spanning Tree configuration • Lab 2 RSTP Configuration
Day 2	• Configure L3 BGP Features • 10XX Security Access lists • Lab3 Access List Configuration • 10XX IGMP Configuration • 10XX File system configuration and image files • Lab 4 File system Management

3.13 RDMA Applications Programming

Table 14: RDMA Applications Programming

Course Name	RDMA Applications Programming
Product	RDMA Applications Programming
Duration	2 Days
Course Overview	The purpose of this course is to provide students with knowledge and experience in writing application programs using RDMA. The class will cover the basic subjects required such as the network/Fabric Environment as well as RDMA advantages ,RDMA message flow , VERBS API & Advanced Features This course combines Theory classes as well as Hands on practices that will teach logical & Methodological approach for the RDMA VERBS_API Programming Practical Exercises will be using Mellanox Training Center LABS The course will equip the Trainees with verbs writing tools, skills and examples.
Objectives	Upon completion of this course, the student will be able to: • Describe Fabric & Network Environment • Describe RDMA message flow • Describe The Verbs API • Describe RDMA Connection management • Design & Implement RDMA application , using OFED API Verbs/RDMACM
Target Audience	System Programmers
Course Level	An advanced level course
Prerequisites	• Experienced C Programming • Network Applications (sockets programming)
Course Content	
Day 1	• Network & Fabric Environment Overview • RDMA Message flow • RDMA Programming Concept • The Verbs API Object Creation • Hands On Practice Verbs API Object Creation • Verbs Context Theory • Hands On Verbs QUEUE Pairs & Protect Domain • Verbs Active pair operations • Hands On Practice Verbs context • Verbs QUE Pairs & Protect Domain • Hands On Verbs QUEUE Pairs & Protect Domain • Verbs Active pair operations • Hands On Verbs Active pair operations
Day 2	• Multicast • Hands on Multicast Programming • Connection management

	• The RDMACM API • Hands on RDMACM API • RDMA programming design patterns • Advanced subjects • Practice Advanced Feature

Appendix A: Terms and Conditions

A.1 General Service Delivery

Mellanox service prices will be provided by Mellanox sales prior to purchase number delivery. Mellanox will provide appropriate delivery according to Mellanox scheduling. No training dates will be scheduled without a purchase order number or Mellanox approval. Mellanox prices may be adjusted by Mellanox at any time without notice. Customer is responsible for all duties and taxes, imposed upon the sale, license, purchase, delivery, possession or use of Mellanox services. Customers are responsible for their own telephone and internet service provider charges associated with the use of Mellanox service and these are not included as part of the price. Payment must be received in advance of delivery of any Mellanox services.

A.2 Hands-on Prerequisites

Customer will need access to a phone and ensure the computer used to access the online training will meet the minimum requirements:

- Windows 7, XP Home, XP Pro, 2003 Server
- Internet Explorer 5.0 or later, latest Citrix plugins
- Internet connection allowing connectivity to address provided by Mellanox
- PC requirements: Minimum of Pentium 400 with 1GB of RAM (Recommended) and Java Virtual Machine enabled (Recommended)

A.3 Rescheduling Policy

Training dates may be rescheduled by sending an email request to training@mellanox.com and pro-serv-admin@mellanox.com mailto:pro-serv-admin@mellanox.com no less than fourteen (14) business days prior to the class start date. Mellanox will work with the customer to establish a new training schedule based on the resource availability.

A.4 Cancellation Policy

Mellanox reserves the right to cancel or modify any Mellanox service at its discretion. Customer agrees to comply with Mellanox's registration/cancellation policy.

A.4.1 On-site Training Cancellation

Mellanox reserves the right to cancel or modify any Mellanox service at its discretion. Customer agrees to comply with Mellanox's registration/cancellation policy. Cancellations will only be accepted in writing via postal mail or e-mail. If a course is cancelled for any reason, the following cancellation charges will apply:

- More than 25 days before the agreed date of the course: no charge
- Less that 25 days but more than 15 days: 50%; less than 15 days: 100%

Refunds will not be made for no shows without notification.

A.4.2 Open Enrollment ILT Training Cancelation

All enrollees are obliged to follow Mellanox's standard enrollee cancelation and rescheduling policy. Should one need to reschedule or cancel any training class participation, the enrollee must provide written notification to Mellanox at least seven (7) business days in advance of the course date. Cancelations failing to meet that deadline, and which occur within seven (7) business days of the class will still be charged for 25% of the course tuition, and within three (3) days, 50% of the course tuition. No shows or cancelations on the day off or day prior to the course are subject to the FULL course tuition. Rescheduled enrollees are responsible for the purchase of a new courseware if a new courseware feature pack release is applicable.

A.5 Training Participants

Course bookings are made per training session. The participants' names provided at the time of booking are for our own administrative use only. The customer may substitute participants at any time. All Mellanox service sales are final and all enrollments in Mellanox training courses expire at the end of the course selected at purchase. In the event Mellanox discontinues a Mellanox service prior to completion of the enrollment period, a pro-rated refund will be provided based on actual fees paid. Mellanox reserves the right to cancel, postpone or reschedule courses due to low enrollments or unforeseen circumstances. Should this occur a full refund will be provided.

A.6 Payment Method

A.6.1 Open Enrollment Classes

Payment, in full, is required at the time of registration for all open enrollment classes. Accepted payment methods are credit card (e.g., AMEX, VISA or MASTERCARD), company purchase order, check or wire transfer.

A.6.2 On-site Training Classes

Payment in full is required 14 calendar days prior to start date of any onsite training engagement. Accepted payment methods are credit card, or company purchase.

- Credit Cards: American Express, Master Card, and Visa Card.

  Contact our professional service administrator to submit your credit card details and expiration date when you phone to register.

- Purchase Order (PO): Fax a copy of your purchase order to orders@mellanox.com or send it to training@mellanox.com

  PO's must be received 14 days prior to the class date. Payment must be received 5 days prior to the class date.

A.6.3 Custom Course Development

Custom course development projects require an agreed-upon statement of work signed by Entrust and the customer. Payment is required before any work can commence on a custom course development project. Accepted payment methods are credit card or company purchase order.