



Unified Fabric Manager-SDN Appliance

Hardware User Manual

PN/s:

MUA9402E-2SF-100, MUA9402E-2SF-1K, MUA9402E-2SF-250, MUA9402E-2SF-2K,
MUA9402E-2SF-4K, MUA9402E-2SF-500, MUA9402E-2SF-HA

Module: MUA940

Rev 1.0



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Document Revision History

Table 1 - Revision History Table

Revision	Date	Description
1.0	April 2017	Initial release

About this Manual

This manual describes the installation and basic use of the UFM-SDN (Unified Fabric Manager™ (UFM™) for Software Defined Networks) Appliance.

Intended Audience

This manual is intended for software and hardware engineers, users and system administrators responsible for fabrics management.

The manual assumes familiarity with the InfiniBand® Architecture Specification and with the Ethernet specification.

Related Documentation

Additional Documentation available from Mellanox:

Table 2 - Reference Documents and Web Sites

Document Name	Description
<i>InfiniBand Architecture Specification, Vol. 1, Release 1.2.1</i>	The InfiniBand Architecture Specification that is provided by IBTA.
<i>Quick Start Guide (QSG)</i>	This document contains information regarding setting up and configuring the UFM-SDN Appliance.
<i>UFM User Manual</i>	This document contains information regarding the use of UFM software.
<i>Remote Management User Manual</i>	This document contains information regarding Mellanox Technologies' remote management for the UFM®-SDN Appliance.

All of these documents can be found on the Mellanox Website. They are available either through the product pages or through the support page with a login and password.

Conventions

Throughout this manual, the name and the terms UFM-SDN Appliance and appliance are used to describe the Unified Fabric Manager -SDN appliance, unless explicitly indicated otherwise.

The following icons are used throughout this document to indicate information that is important to the user.



This icon makes recommendations to the user.



This icon indicates information that is helpful to the user.



This icon indicates a situation that can potentially cause damage to hardware or software.



BEWARE! This icon indicates a situation that can potentially cause personal injury or damage to hardware or software.

Abbreviations

Table 3 - Abbreviations

Term	Description
EDR	Enhanced Data Rate 4x25 Gb/s = 100 Gb/s

1 Overview

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

UFM eliminates the complexity of fabric management, provides deep visibility into traffic and health, and optimizes application performance.

While other tools are device-oriented and involve manual processes, UFM is an automated and an application-oriented software which bridges the gap between servers, applications and fabric elements. Thus, it enables administrators to manage and optimize clusters of various sizes.

UFM®-SDN Appliance is offered as a pre-installed network device, suitable for all OS environments. It uses a Mellanox ConnectX-4 EDR 2 port adapter card, which is installed on Mellanox fabric with a minimal effort.

1.1 Serial Number and Product Version Information

The Serial number and MAC address of the appliance are found on the pull out tab on the top left side of the front of the appliance. The MAC address of the first management interface (eth0) can be found on the pull-tab. eth0-1 have the next consecutive addresses.

Figure 1: Pull Out Tab Location on Appliance

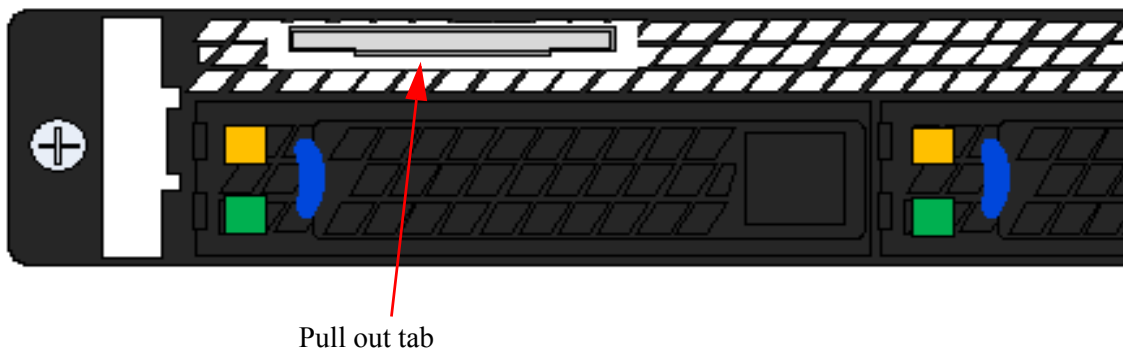


Figure 2: Pull Out Tab Example



2 Basic Operation and Installation

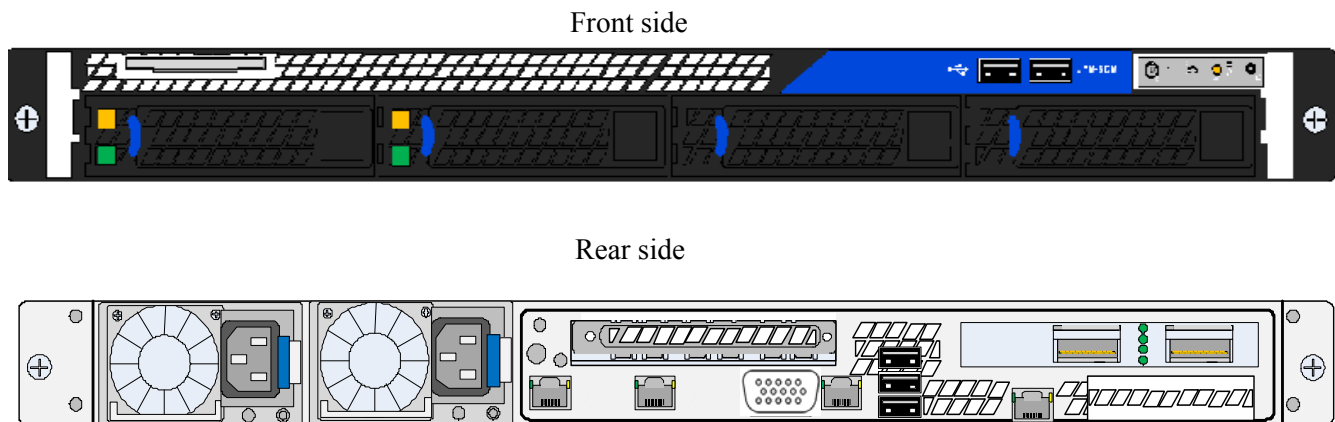
2.1 UFM-SDN® Appliance Hardware Overview

Figure 3 below shows the front and rear sides of the appliance.

The system supports the following:

- 4 RJ-45 connectors
- 5 USB connectors
- Status LEDs
- 2 Hot-swap power modules
- 2 Hot swap (hard disk drive) HDD drawers

Figure 3: UFM-SDN Appliance Front and Rear Side Panels



2.1.1 System Status LEDs

The System Status Indicators are located on the front side panel.

Figure 4: System Status Indicators

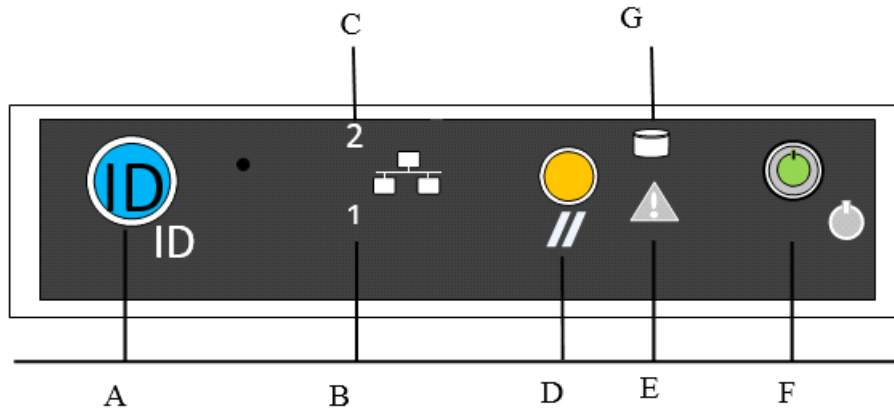


Table 4 - Figure 4 Legend

Label	Description
A	System ID Button w/Integrated LED
B	NIC-1 Activity LED
C	NIC-2 Activity LED
D	System Cold Reset Button
E	System Status LED
F	Power Button w/Integrated LED
G	Hard Drive Activity LED

2.1.1.1 Appliance Status LED


This is a green and amber  bicolor LED. Two matching activity LEDs are located on each side of the appliance.

Table 5 - PS Unit Status LED Configurations

LED Color	Status
Off	No power to the appliance.
Solid Green	OK – the appliance is up and running normally.
Flashing Green (at a rate of 1Hz)	Noncritical error – the appliance is running yet in a reduced state. Attention required.
Flashing Amber (at a rate of 1Hz)	Warning – impending critical state. Need to attend to this problem before it becomes fatal.

Table 5 - PS Unit Status LED Configurations

LED Color	Status
Amber	Fatal Error occurred – non-recoverable condition system stopped!

2.1.1.2 Power LEDs

Figure 5: UFM-SDN Appliance Front and Rear Side Panels

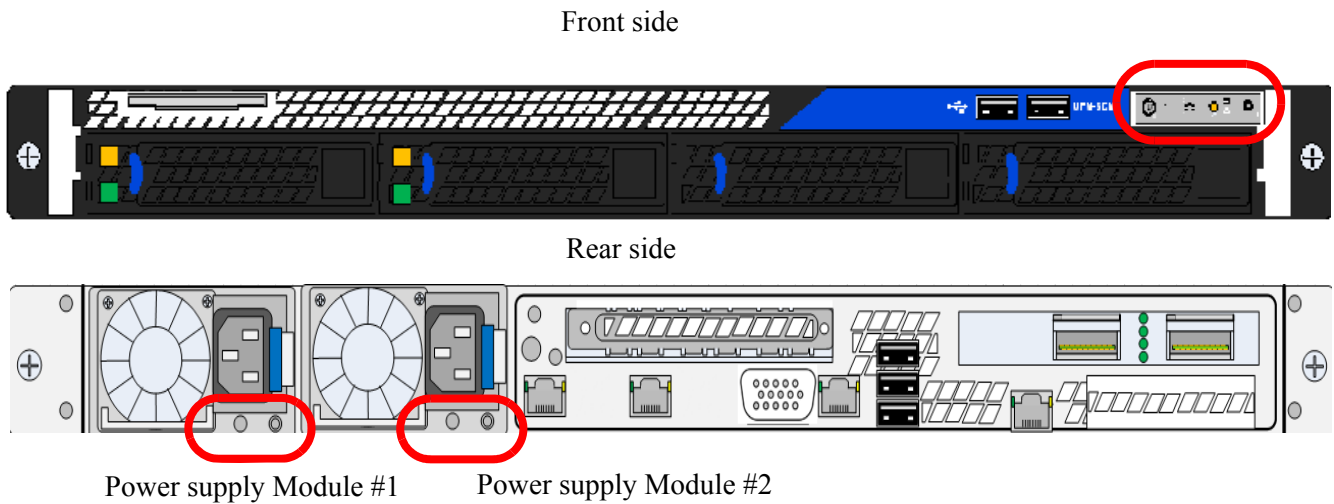
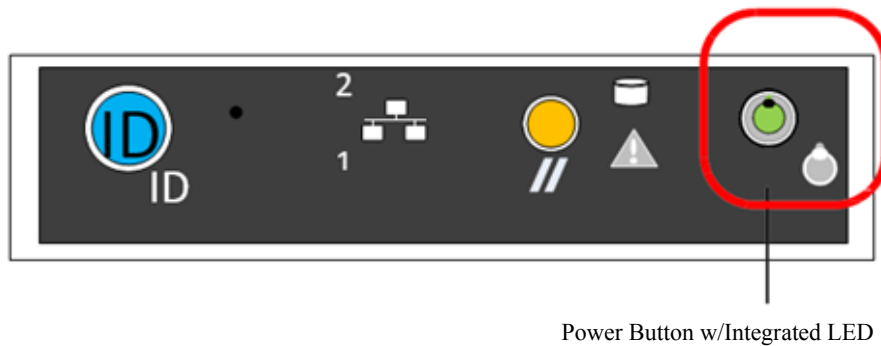
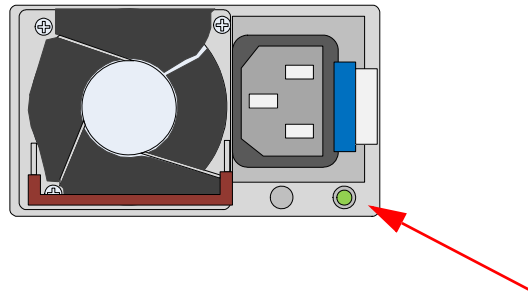


Figure 6: System Power and On/Off Button and Indicators



The primary power supply unit (PS1) is located on the left side of the rear side panel, with PS2 on the right of the PS1.

Figure 7: Power Supply Unit Status LEDs



Each power supply (PS) unit has a one built-in fan and a single two-color LED on the right side of the PS unit that indicates the internal status of the unit.

Figure 6 shows the On/Off switch which contains an integral LED to show the power status of the appliance.

Table 6 - PS Unit Status LED Configurations

LED Color	Status
Solid Green	OK – the Power supply is delivering the correct voltage.
Off	Off – no power to any of the PS units.
Flashing Green (at a rate of 1Hz)	PSU off or in cold-redundant state.
Flashing Green (at a rate of 2Hz)	Firmware is being updated on the PSU.
Flashing Amber (at a rate of 1Hz)	Power supply warning events where the power supply continues to operate yet with high temp, high power, high current, and slow fan. Your immediate attention is required to avoid fatal errors.
Amber	PS failure (including voltage out of range and power cord disconnected). Your immediate attention is required to avoid fatal errors.

2.1.1.3 Appliance Identifier ID LED and Button


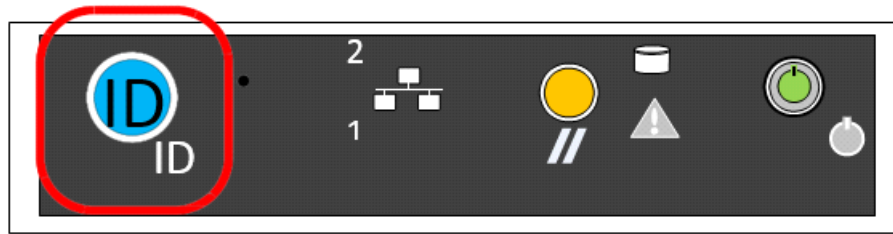
This appliance has a combination of button and ID LED identification . The LED can be lit by pushing the button or by using the remote management.

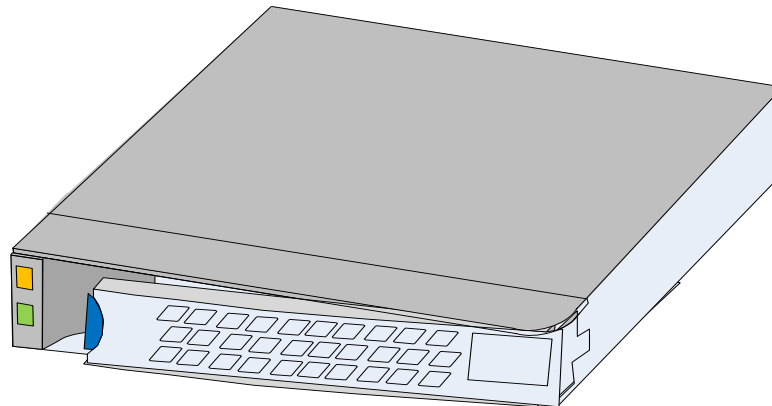
Figure 8: Identification LED and Identifier Button



2.1.1.4 3.5 Inch Hard Drive LEDs

Figure 9: Hard Drive LEDs


Amber Status LED
Green Activity LED



Status LED	Off	No access, thus no activity
	Solid Amber	A hard drive failure has occurred
	Flashing Amber	Redundant Array of Independent Disks (RAID) is being rebuilt. This happens after replacing a faulty drive

Activity LED	Off	The system is powered on and the drive has spun down
	Solid Green	Power on with no drive activity
	Flashing Green	The system is powered on with drive activity or the drive is spinning up

2.1.1.5 Hard Drive Activity LED

This LED indicates activity of the on-board hard disk controllers . When lit, it indicates activity of the on-board hard disk controllers.

2.1.2 Reset Button

Figure 10: Cold Reset Button



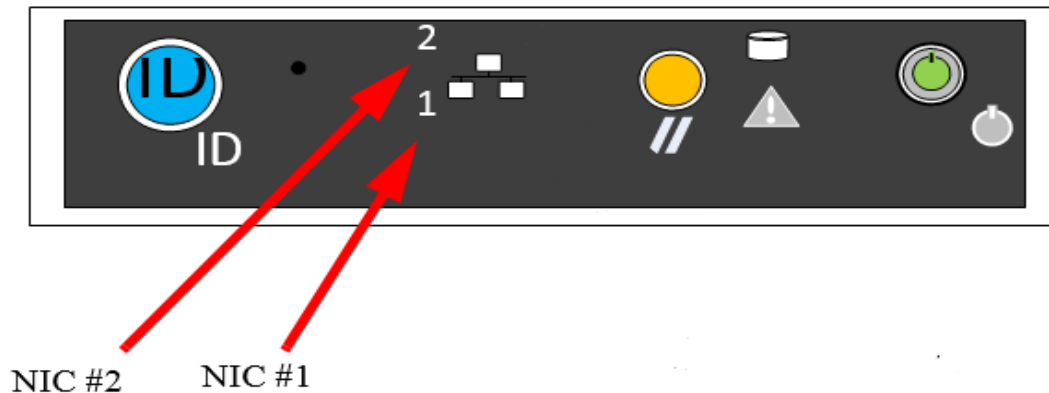
System cold reset button

The appliance has a system cold reset button. Pressing this button performs a forced reset of the appliance hardware. For a graceful shutdown of the system (stopping all services, closing all files, flushing all caches etc.) use the relevant CLI command.

2.1.3 NIC Activity LED Indicators

The numbered LEDs display the NICs' activity.

Figure 11: NIC Activity LEDs



NIC #2

NIC #1

Table 7 - NIC Activity Indications

LED Configuration	LED Description
Off	Physical link down / default
Solid Green	Physical link up with no traffic
Flashing Green	Physical link up with traffic
Flashing Orange	Physical errors

2.2 Air Flow

The appliance comes with a single air flow pattern; a front (hard-drives) side to back (power-supplies) side.

3 Interfaces

The system supports the following interfaces:


- 1 on/off button with an integral LED
- 1 RJ-45 serial port
- 2 X 100M/1Gb Ethernet connectors
- 2 EDR ports
- 1 remote management port
- 5 USB ports “”
- System Cold reset button

Figure 12: Front Side Interfaces

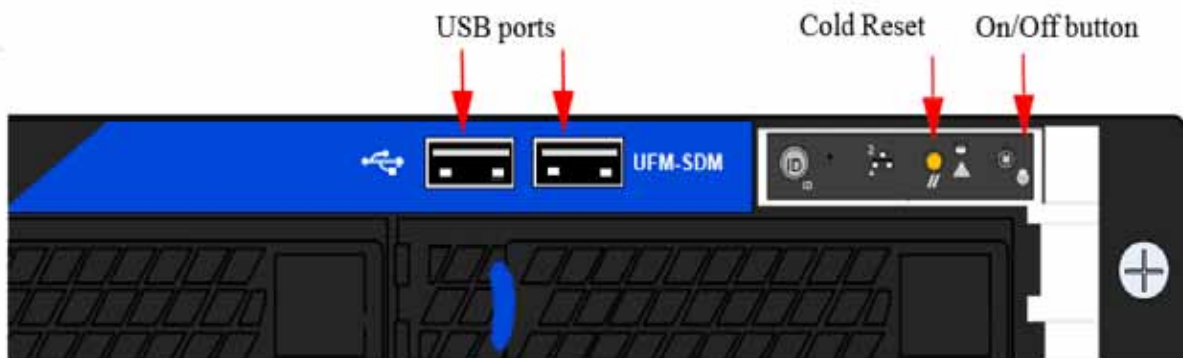
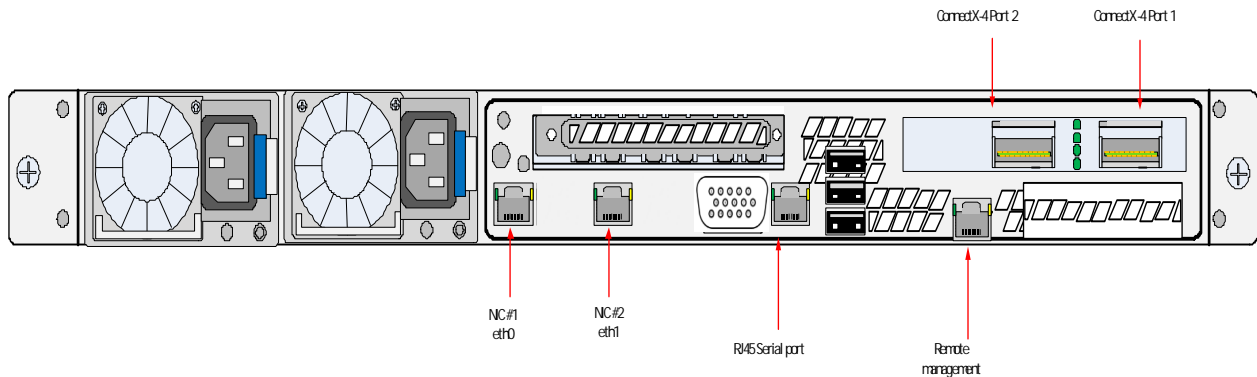


Figure 13: Rear Side Interfaces



3.1 On/Off Button

The on/off button is located on the front side of the appliance (see Figure 6), and is used to turn the appliance on and off. For a graceful shutdown of the system, use the relevant CLI command. To force shutdown of the appliance, hold the button down until the appliance turns off. The LED of the button displays the system's power status.

3.2 RJ-45 Serial Port

This RJ-45 port is found on the rear side of the appliance (see Figure 13). This is a serial console RS-232 connector. This interface can be connected directly to a laptop via USB-to-serial cable for first-time configuration or to a Serial-to-Ethernet device. It should be configured to 115200 Bps similar to switches.

3.3 RJ-45 Management Ports eth0-eth1

These 2 RJ-45 ports are found on the rear side of the appliance (see Figure 13). The eth0-eth1 and remote management interfaces are pre-configured as DHCP and the initial host name is ufm-appliance-[MAC ADDRESS] (MAC appears on a sticker on the pull-tab), so their IP addresses can be obtained from the DHCP server. In case no DHCP server is available, you have to use a serial cable to connect and configure eth0 and remote-management IP addresses with a static IP address.



Configuring the appliance via the serial port is required only in the case where out-of-the-box DHCP configuration for eth0 cannot be used. (There is no DHCP server in the management network). The user is then required to use the serial port to configure a static IP on eth0.



NIC#1 Ethernet connector gets connected to Ethernet switches. This switch must be configured to 100M/1G auto-negotiation.

3.4 ConnectX®-4 QSFP Ports

These 2 QSFP ports are found on the rear side of the appliance. See Figure 13. They should be connected to an IB switch in the fabric, it is recommended to connect to two different switches for redundancy. The appliance can be connected only to a single IB fabric.

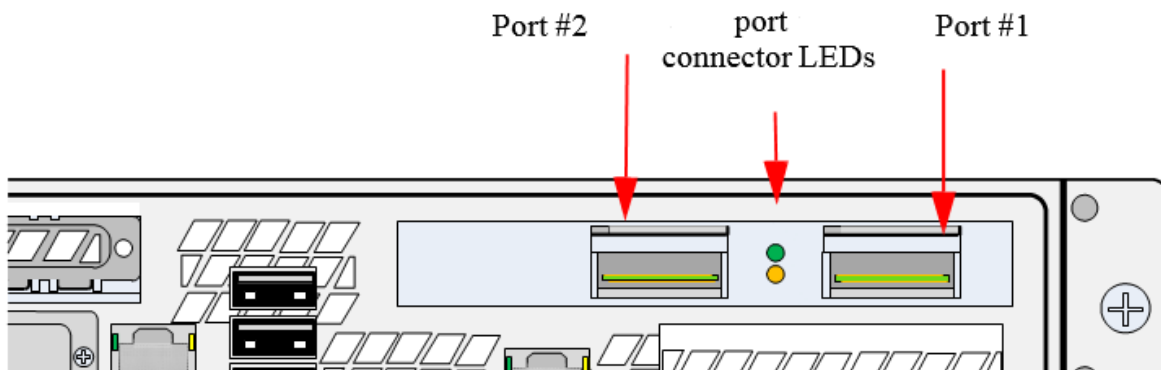
3.4.1 QSFP Port Interfaces

There is one I/O LED per port. See Table 8 below for LED functionality in InfiniBand mode.

Table 8 - Physical and Logical Link Indication

LED	Function
Off	Physical link has not been established.
Solid Yellow	Indicates an active physical link.
Blinking Yellow	Indicates a problem with the physical link.
Solid Green	Indicates a valid logical (data activity) link with no active traffic.
Blinking Green	Indicates a valid logical link with active traffic.

Figure 14: Illustration of InfiniBand Port Connector Interfaces



3.5 RJ-45 Ethernet Connector for Remote Management

The appliance has multiple Ethernet management interfaces. The primary management interface is eth0. An additional interface exists, for connecting to a remote management controller (It usually connects to the same management network as eth0). For using out-of-the-box DHCP settings: Default hostname for the appliance (over eth0) is “ufm-appliance-[MAC ADDRESS]”. The MAC address for eth0 is available on the pull-tab and can be configured in the DHCP server. To use the remote management controller with DHCP, the free-range IP allocation must be enabled on the DHCP server. A static IP address for remote management interface can be configured via the CLI (“chassis remote-management ip” command).



Configuration via a serial port is only required if you want to use a static IP address and not the out-of-the-box DHCP setting for eth0. Otherwise, an IP is assigned by the DHCP server and you can login to the CLI over LAN.



NIC#1 Ethernet connector gets connected to Ethernet switches. This switch must be configured to 100M/1G auto-negotiation.

3.6 USB Interface



The USB interface can be used to update the UFM.

There are five USB connectors. These connectors can be used to install software and / or firmware upgrades using a memory device that has a USB connector. This connector is USB 2.0 compliant. Various upload/download operations are also supported through the USB using the CLI such as:

- UFM configuration fetching/uploading
- UFM license fetching
- UFM upgrade

All USB connectors can be used for performing SW update or various upload/download operations using the CLI.

3.7 System Cold Reset

When pressed this button will do a forced reboot and re-initialize the appliance. In general, for a graceful shutdown of the system (stopping all services, closing all files, flushing all caches etc.) use the CLI.

3.8 UFM-SDN Appliance Installation and Operation

Installation and initialization of the UFM-SDN Appliance are straightforward processes, requiring attention to the normal mechanical, power, and thermal precautions for rack-mounted equipment.

3.8.1 Installation Safety Warnings

For Safety Warnings in French see Section C, “Avertissements de sécurité d’installation (French),” on page 42, for German see Section D, “Installation - Sicherheitshinweise (German),”

on page 46, and for Spanish see Section E, “Advertencias de seguridad para la instalación (Spanish),” on page 49.

1. Installation Instructions



Read all installation instructions before connecting the equipment to the power source.

2. Over-temperature



This equipment should not be operated in an area with an ambient temperature exceeding the maximum recommended: 40°C (103°F). Moreover, to guarantee proper air flow, allow at least 8cm (3 inches) of clearance around the ventilation openings.

3. Stacking the Chassis



The chassis should not be stacked on any other equipment. If the chassis falls, it can cause bodily injury and equipment damage.

4. Redundant Power Supply Connection - Electrical Hazard



This product includes a blank cover over the space for the redundant power supply. Do not operate the product if the blank cover is not securely fastened or if it is removed.

5. During Lightning - Electrical Hazard



During periods of lightning activity, do not work on the equipment or connect or disconnect cables.

6. Copper Cable Connecting/Disconnecting



Copper cables are heavy and not flexible, as such they should be carefully attached to or detached from the connectors. Refer to the cable manufacturer for special warnings and instructions.

7. Rack Mounting and Servicing



When this product is mounted or serviced in a rack, special precautions must be taken to ensure that the system remains stable. In general you should fill the rack with equipment starting from the bottom to the top.

8. Equipment Installation



This equipment should be installed, replaced, or serviced only by trained and qualified personnel.

9. Equipment Disposal



Disposal of this equipment should be in accordance to all national laws and regulations.

10. Local and National Electrical Codes



This equipment should be installed in compliance with local and national electrical codes.

11. Battery Replacement



There is a risk of explosion should the battery be replaced with a battery of an incorrect type.

Dispose of used batteries according to the instructions.

12. UL Approved AC Power Cords



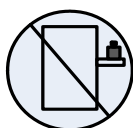
For North American power connection, select a power supply cord that is UL Listed and CSA Certified

3 - conductor, [18 AWG], terminated in a molded on plug cap rated at 125 V, [15 A], with a minimum length of 1.5m [six feet] but no longer than 4.5m

For European connection, select a power supply cord that is internationally harmonized and marked “<HAR>”,

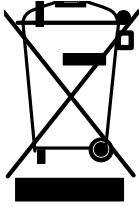
3 - conductor, minimum 0,75 mm² wire, rated at 300 V, with a PVC insulated jacket. The cord must have a molded on plug cap rated 250 V, 10 A.

13. Do Not Use the Appliance as a Shelf or Work Space



Caution: Slide/rail mounted equipment is not to be used as a shelf or a work space.

14. WEEE Directive



According to the WEEE Directive 2002/96/EC, all waste electrical and electronic equipment (EEE) should be collected separately and not disposed of with regular household waste.

Dispose of this product and all of its parts in a responsible and environmentally friendly way.

4 Mechanical Installation

The UFM-SDN Appliance can be rack mounted and is designed for installation in a standard 19” rack. The power (rear) side of the appliance includes two hot-swap power supply modules.

The UFM-SDN Appliance accepts input voltages of 100-127 VAC and 200-240 VAC for all possible PS units.

The installer should use a rack capable of supporting the mechanical and environmental characteristics of a fully populated rack.



The rack mounting holes conform to the EIA-310 standard for 19-inch racks. Take precautions to guarantee proper ventilation in order to maintain good airflow at ambient temperature. Cable routing in particular should not impede the air exhaust from the chassis.

4.1 Package Contents and Installation

Before you install your new appliance, unpack the system and check to make sure that all the parts have been sent. Check this against the parts list below. Check the parts for visible damage that may have occurred during shipping.

The appliance comes packed with the following items:

- 1 X – appliance
- 2 X – installation rails, one right hand and one left hand
- 2 X – power cables one for each PS unit – Type C13-C14

4.1.1 Installing the Appliance in the Rack

Premium Rail Kit

1. Place the ESD mat on the floor where you will be working and put on the ESD strap. Make sure the ESD strap is touching your skin and that the other end is connected to a verified ground.
2. Install the two rails into the rack. Make sure they are at the same level. Make sure they have the correct side to the top. The blue pins go into the rack holes.

Figure 15: Left-hand Rail Outside View Collapsed

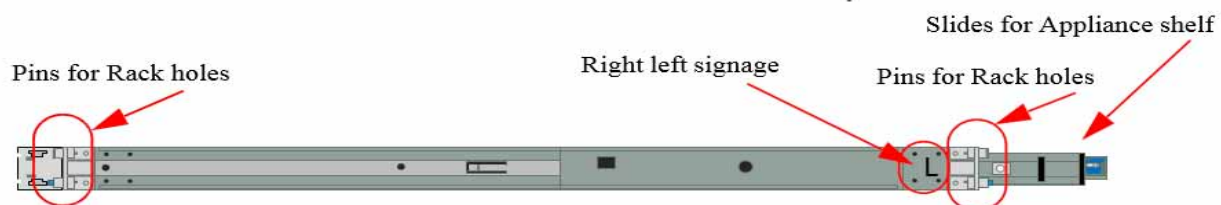


Figure 16: Left-hand Rail Outside View Extended

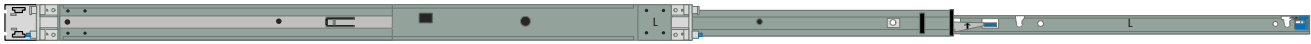
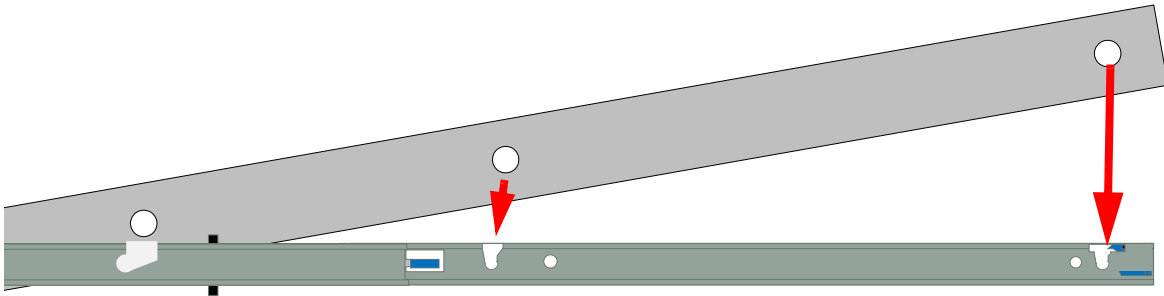


Figure 17: Left-hand Rail Inside View



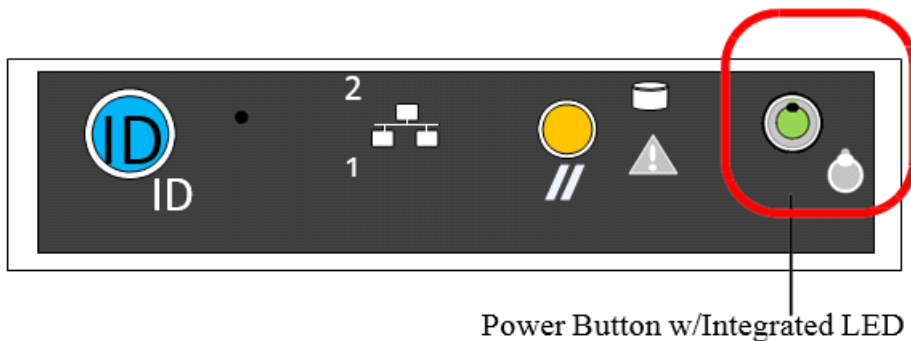
3. Slide the appliance into the rails as shown in the diagrams in the installation guide packed in the box.

Figure 18: Inserting Appliance Into Rails



4. Ground the appliance (see [“Grounding the Appliance”](#)).
5. Plug in the power cables (see [“Power Connections and Initial Power On”](#)).
6. Push the ON/OFF button to start.

Figure 19: Turn On



7. Check the Status LEDs and confirm that all of the LEDs show status lights consistent with normal operation.

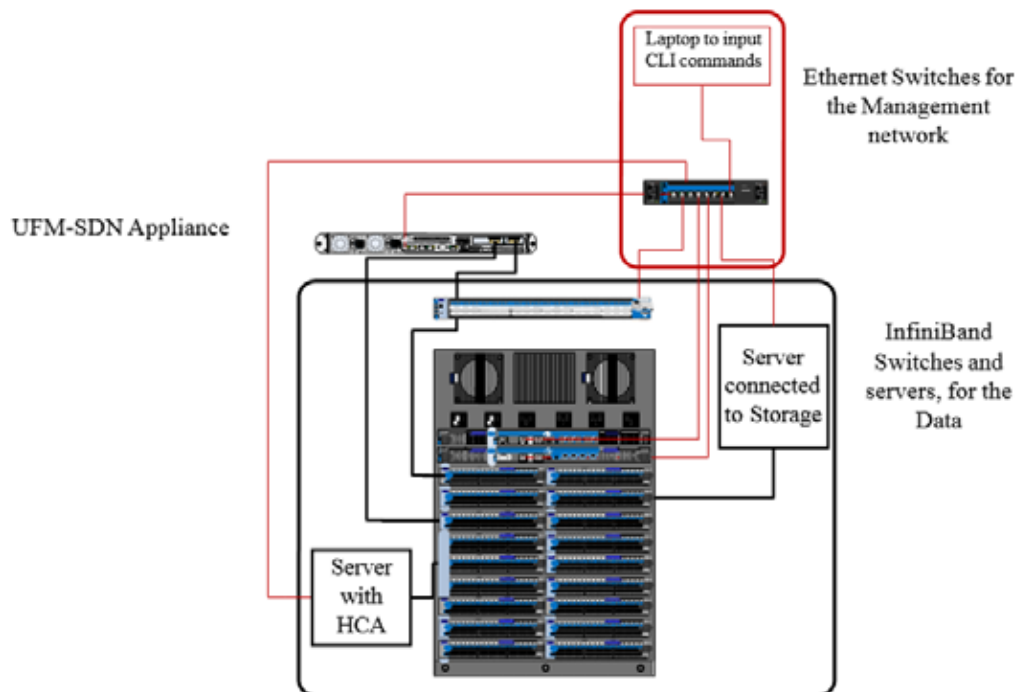


Any amber status LEDs are a cause for concern and must be dealt with immediately. It can take up to 5 minutes to boot up, during which time the status LED may indicate red.

4.2 Connecting UFM-SDN Appliance to the Network/Fabric

UFM requires both InfiniBand and Ethernet (out-of-band management) connectivity where eth0 should be connected to a management network switch and both InfiniBand ports should be connected to InfiniBand switches. They can be connected to the same switch, but Mellanox recommends connecting to two separate switches, to ensure SM connectivity to the fabric.

Figure 20: Connecting Up the UFM-SDN Appliance



4.3 Grounding the Appliance

Check to determine if your local or national electrical codes require an external ground to all IT components. If so, connect a ground wire to one of the casing screws and connect the other end to a valid ground. If you choose not to use the ground screw, make sure that the rack is properly

grounded and that there is a valid ground connection between the chassis of the appliance and the rack. Test the ground using an Ohm meter.



Some national and/or local codes may require IT components to be bonded and externally grounded (not including the power cord ground). You must follow all national and local codes when installing this equipment.

4.4 Power Connections and Initial Power On

The UFM-SDN Appliance ships two power supply units. Each supply has a separate AC receptacle. The UFM-SDN Appliance accepts input voltages of 100 - 127 VAC and 200 - 240 VAC for all possible PS units. The power cords should be standard 3-wire AC power cords including a safety ground and rated for 15A or higher. The power supplies deliver 750W AC.



After inserting a power cable and turning the appliance on, confirm the green system status LED light is on.



Do not hot swap the power supply if your appliance has only one power supply. You must power down the system to replace the power supply unit there is only one PS unit in the appliance.

Figure 21: Two Power Inlets - Electric Caution Notifications

CAUTION

Risk of electric shock and energy hazard. The two PS units are independent.

Disconnect all power supplies to ensure a powered down state inside of the UFM-

ACHTUNG

Gefahr des elektrischen Schocks. Entfernen des Netzsteckers eines Netzteils spannungsfrei. Um alle Einheiten spannungsfrei zu machen sind die Netzstecker aller Netzteile zu

ATTENTION

Risque de choc et de danger électriques. Le débranchement d'une seule alimentation stabilisée ne débranchera uniquement qu'un module "Alimentation Stabilisée". Pour isoler complètement le module en cause, il faut débrancher toutes les ali-

4.5 Extracting and Inserting the Power Supply Unit

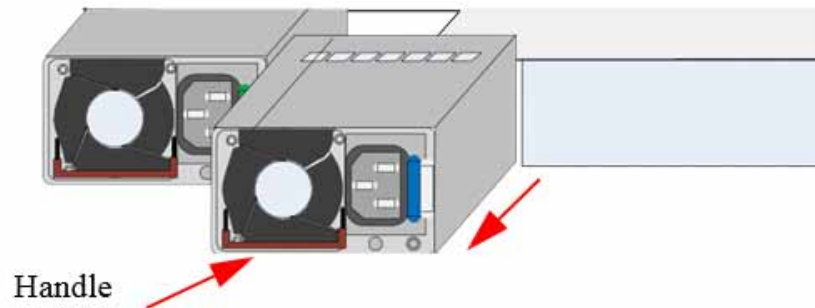


The power supply is only hot-swappable if you have a redundant system with two power supplies installed. If you only have one power supply installed, before removing or replacing the power supply, you must first take the appliance out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the AC power cord from the system or wall outlet.

The power supply can be replaced in case it fails. To replace the power supply, follow these steps:

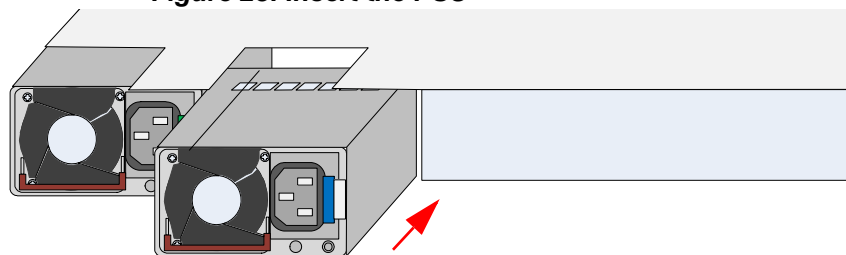
1. If a filler panel is installed, remove the filler panel.

Figure 22: Remove the PSU



2. If a power supply is installed, grab the handle with your thumb pointing toward the latch. Push the latch with your thumb towards the handle while you pull the power supply out of the appliance.

Figure 23: Insert the PSU



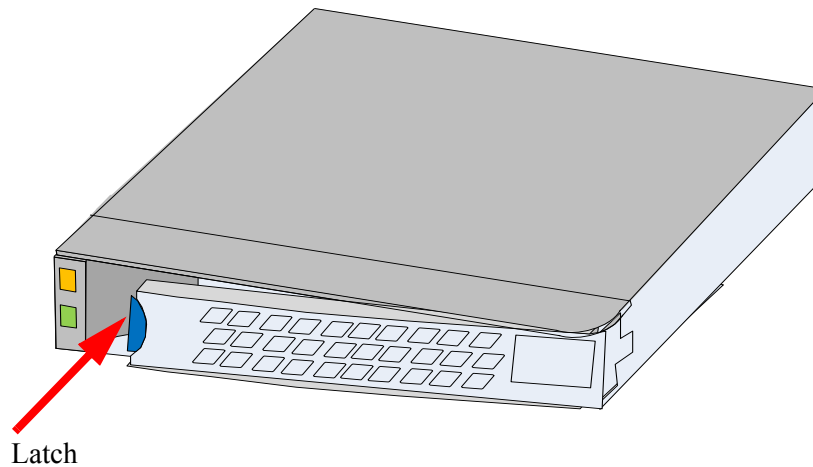
3. Insert the power supply module into the power supply cage and push all the way until it clicks into place.



Do not run the appliance with openings due to missing parts. This may cause overheating due to improper air flow.

4.6 Removing a Hard Disk Drive from a 3.5" Hard Drive Carrier

Figure 24: Remove HD



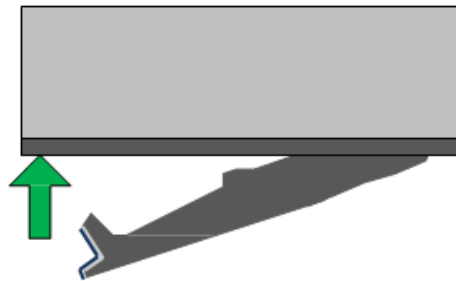
Never pull out a working hard drive while the appliance is turned on. You can safely pull out a faulty hard drive indicated by a solid amber light.

If one HDD physically fails, the appliance keeps working thanks to RAID mirroring. You can pull out and replace a faulty drive with a new blank HDD, the blank HDD will get synchronized with the other HDD, this takes up to 48 hours but does not interrupt with appliance operation.

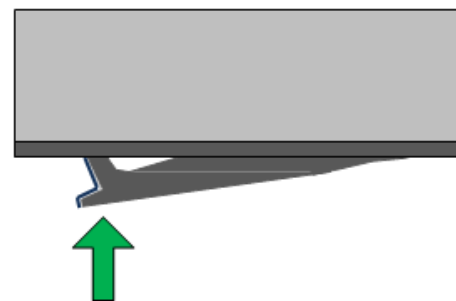
1. Power down the appliance before removing the HDD.
2. Remove the HDD by pressing the latch button and opening the lever.
3. Slide the HDD out.
4. Slide the replacement HDD in the slot. Continue to push in the HDD in until the latch starts to close. This replacement drive is a blank HDD.
5. Close the latch.
6. Power on the appliance.

Figure 25: Proper Insertion

Push the HDD into the appliance from here until the handle moves toward the appliance.



Inserted properly



Now, push to latch

7. Close the latch.



The SW RAID mechanism will identify that a new HDD was inserted and synchronize the data with the second HDD, this process might take up to 48 hours to complete.

4.7 Battery Replacement

Mellanox Technologies does not support battery replacement. Customer removal of the UFM cover will void the warranty. Only remove the cover to comply with WEEE directives or to disassemble for environmentally approved disposal.

4.8 Supported Approved Cables

For a list of approved cables for this appliance, see:

http://www.mellanox.com/related-docs/user_manuals/Mellanox_approved_cables.pdf

4.9 Appliance Shut Down Procedure

To shut down the appliance, run the following command:

```
Reload halt [noconfirm]
```



The appliance cannot be restarted remotely!

To restart the appliance, you must physically go to the appliance and unplug and plug in the power cord.

You can also shut down or cold reset the appliance remotely by using the remote management.

4.10 Disassembly of the Appliance from the Rack

To disassemble the appliance from the rack:

1. Shut down the appliance.
2. Unplug and remove all connectors.
3. Unplug all power cords.
4. Remove the ground wire.
5. Unscrew the 2 center bolts from inside the handles.
6. Slide the appliance from the rack.
7. Remove the rail slides from the rack.

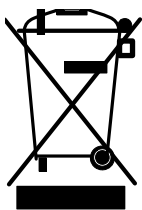
4.11 Remove the Battery

This procedure is only to be used when you will be disassembling this appliance before discarding, to comply with regulations regarding disposal of batteries.

Remove the cover.

Remove the battery and dispose of according to local and state and federal regulations.

4.12 Disposal



According to the WEEE Directive 2002/96/EC, all waste electrical and electronic equipment (EEE) should be collected separately and not disposed of with regular household waste.

Dispose of this product and all of its parts in a responsible and environmentally friendly way.

5 Configuring the Appliance

The appliance has multiple Ethernet management interfaces. The primary management interface is eth0. An additional interface exists for connecting to a remote management controller (it usually connects to the same management network as eth0). For using out-of-the-box DHCP settings: Default hostname for the appliance (over eth0) is “ufm-appliance-[MAC ADDRESS]”. The MAC address for eth0 is available on the pull tab and can be configured in the DHCP server. To use the remote management controller with DHCP, the free-range IP allocation must be enabled on the DHCP server.

5.1 Connecting via a Serial Port

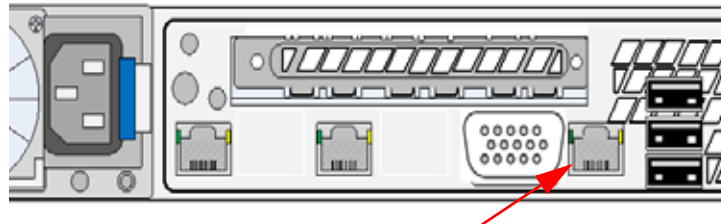
The appliance supports a direct connection via a serial port. Please follow the steps below to connect to the appliance.



Configuration via a serial port is only required in case you wish to use a static IP address and not the out-of-the-box DHCP setting for eth0. Otherwise, an IP will be assigned by the DHCP server and you will be able to log in to the CLI over LAN.

1. Connect the host PC to the (RJ-45) port of the appliance system using the supplied cable. The Console ports for the appliance are shown below.

Figure 26: Serial Connection



Connect the host PC to here



Make sure to connect to the Serial RJ-45 port of the appliance and not to the (Ethernet) eth0 port.

2. Configure a serial terminal program (for example, HyperTerminal, minicom, or Tera Term) on your host PC with the settings described in [Table 9](#) below.

Table 9 - Serial Terminal Program Configuration

Parameter	Setting
Baud Rate	115200
Data bits	8
Stop bits	1

Table 9 - Serial Terminal Program Configuration

Parameter (Continued)	Setting
Parity	None
Flow Control	None

- Log in (from a serial terminal program) as admin, and use “admin” as the password. This starts the Mellanox configuration wizard.
- Go through the configuration wizard. [Table 10](#) shows an example of a wizard session.

Table 10 - Mellanox UFM-SDN Appliance Configuration

Wizard Session Display (Example)	Comments
Mellanox UFM-SDN Appliance configuration wizard Do you want to use the wizard for initial configuration? yes	You must perform this configuration the first time you operate the appliance or after resetting the appliance to the factory defaults. Type ‘y’ and then press <Enter>.
Step1: ? [ufm-appliance-898b4e]	If you wish to accept the default hostname, then press <Enter>. Otherwise, type a different hostname and press <Enter>.
Step 2: Use DHCP on eth0 interface? [yes] Hostname	Perform this step to obtain an IP address for the appliance. (eth0 is the management port of the appliance.) If you wish the DHCP server to assign the IP address, type ‘yes’ and press <Enter>. If you type ‘no’ (no DHCP), then you will be asked whether you wish to use the ‘zeroconf’ configuration or not. If you enter ‘yes’ (yes Zeroconf), the session will continue as shown in Table 11 . If you enter ‘no’ (no Zeroconf), then you need to enter the following information: <ul style="list-style-type: none"> Set primary IP address and network mask for eth0 Set default gateway Set primary DNS server Set domain name
Step 3: Admin password (Enter to leave unchanged)? <new_password>	To avoid illegal access to the machine, please type a password and then press <Enter>. Then confirm the password by re-entering it. Note that password characters are <i>not</i> printed.
Step 4: bond0 IP address and masklen? [0.0.0.0/0]	Allows defying IP address for IPoIB bond (bond is pre-configured with ib0 & ib1 ports).

Table 10 - Mellanox UFM-SDN Appliance Configuration

Wizard Session Display (Example)	Comments
<p>You have entered the following information:</p> <ol style="list-style-type: none"> 1. Hostname: <server name> 2. Use DHCP on eth0 interface: yes 3. Admin password (Enter to leave unchanged): (unchanged) 4. bond0 IP address and masklen: 192.168.22.1/24 <p>To change an answer, enter the step number to return to. Otherwise hit <enter> to save changes and exit. Choice: <Enter> Configuration changes saved.</p>	<p>The wizard displays a summary of your choices and then asks you to confirm the choices or to re-edit them.</p> <p>Either press <Enter> to save changes and exit, or enter the configuration step number that you wish to return to.</p>

Table 11 - Configuration Wizard Session - IP Zeroconf Configuration

Wizard Session Display - IP Zeroconf Configuration (Example)
<p>Mellanox configuration wizard Do you want to use the wizard for initial configuration? y Step 1: Hostname? [server name] Step 2: Use DHCP on eth0 interface? [no] Step 3: Use zeroconf on eth0 interface? [no] yes Step 4: Default gateway? [192.168.10.1] Step 5: Primary DNS server? Step 6: Domain name? Step 7: Admin password (Enter to leave unchanged)? Step 8: bond0 IP address and masklen? [192.168.22.1/24]</p> <p>You have entered the following information:</p> <ol style="list-style-type: none"> 1. Hostname: ufm-appliance-898b4e 2. Use DHCP on eth0 interface: no 3. Use zeroconf on eth0 interface: yes 4. Default gateway: 192.168.10.1 5. Primary DNS server: 6. Domain name: 7. Admin password (Enter to leave unchanged): (unchanged) 8. bond0 IP address and masklen? [192.168.22.1/24] <p>To change an answer, enter the step number to return to. Otherwise hit <enter> to save changes and exit. Choice: Configuration changes saved.</p>

6 Troubleshooting

As soon as the appliance is plugged in, make sure that the green power LEDs on the PS units are on. See [Section 2, “Basic Operation and Installation,”](#) on page 12 for the names and locations of the various LEDs.

Table 12 - Troubleshooting Issues and Resolutions

#	Issue	Resolution
1.	System Status LED is RED	Unplug the appliance and call your Mellanox representative.
2.	Power Supply Unit Status LED is not lit or is RED	<ol style="list-style-type: none"> 1. Check that the power cable is plugged into a working outlet. 2. Check that the power cable has a voltage within the range of 100 - 240 volts AC. 3. Remove and reinstall the power cable. 4. Remove and reinstall the power supply unit.
3.	The Power Button w/ Integrated LED for the appliance shuts off	<ol style="list-style-type: none"> 1. Check that there is adequate ventilation. 2. Make sure that there is nothing blocking the front or rear of the chassis and that the fan modules and ventilation holes are not blocked (especially dust over the holes). 3. If you find dust blocking the holes it is recommended to clean the fan unit and remove the dust from the front and rear panels of the appliance using a vacuum cleaner.
4.	The link LED for the Ethernet connector does not come on	<ol style="list-style-type: none"> 1. Check that both ends of the cable are connected. 2. Check that the locks on the ends are secured. 3. Make sure that the latest firmware version is installed on all of the HCA cards and the appliance. 4. If media adapters are used, check that all connections are good, tight, and secure.
5.	The activity LEDs do not come on	Check that UFM has been started.
6.	The appliance is off	<ol style="list-style-type: none"> 1. Press the Power Button w/Integrated LED, <p>If that does not work:</p> <ol style="list-style-type: none"> 2. Unplug the appliance. 3. Wait 5 minutes. 4. Plug in the appliance, and press the Power Button w/Integrated LED. 5. If the appliance does not come on, check the power supplies. 6. If the appliance comes on, Use the UFM management software to determine the cause of the Shutdown. 7. Check the temperature. 8. Check the Fan status.
7.	Hard drive LED is constant amber	HDD is faulty, replace according to instructions in Section 4.6 .
8.	Hard drive LED is blinking amber	RAID is rebuilding, wait for this operation to complete (might take up to 48 hours). Please refer to Section 2.1.1.4 and Section 4.6 for additional information.

Table 12 - Troubleshooting Issues and Resolutions

#	Issue	Resolution
9.	The appliance is not working and is unresponsive	<ol style="list-style-type: none">1. Reset the appliance. If resetting the appliance does not work: <ol style="list-style-type: none">2. Unplug the appliance.3. Wait 5 minutes.4. Plug in the appliance, and press the Power Button w/Integrated LED.5. If the appliance does not come on, check the power supplies.6. If the appliance comes on, use the UFM management software to determine the cause of the shutdown.7. If the appliance continues to be unresponsive contact Mellanox Support.

Appendix A: UFM-SDN Appliance Specifications

Table 13 - UFM-SDN Appliance Specification Data

Physical		
Size	(1U)1.7”H x 17.2”W x 27.9”D 43.2mm 438 mm 709.37 mm	
Weight	14.1 kg 2 PS units	
Mounting	19” Rack mount	
Air Flow/ Heat Dissipation	Air Flow: 62 CFM	Maximum Heat dissipation: 750 Watt Max – 2560 BTU/hour
Power and Environmental		
Input Voltage / CPU	Input Voltage: 750W power supply module • 100 - 127 V at 50/60 Hz 8.2 A • 200 - 240 V at 50/60 Hz 4.4 A	CPU: 2 – Intel Xeon E5-2620 v4 CPUs
Temperature	Temperature: • Operating: +10°C to +40°C with the maximum rate of change not to exceed 10°C per hour • Non-operating:-40° to 70° C	
Shock and Vibration/ Humidity	Shock and Vibration: ETSI EN 300 019-2-2: 1999-09	Operating Humidity: 90%, non-condensing at 35°C
Storage		
Hard Drivers	HDDs 2 x 1TB HDDs	

Table 13 - UFM-SDN Appliance Specification Data

Protocol Support			
InfiniBand/ Ethernet	<p>Auto-Negotiation: 1X/2X/4X SDR (2.5Gb/s per lane) DDR (5Gb/s per lane) QDR (10Gb/s per lane) FDR10 (10.3125Gb/s per lane) FDR (14.0625Gb/s per lane) EDR (25Gb/s per lane) port</p> <p>Ethernet: 100GBASE-CR4, 100GBASE-KR4, 100GBASE-SR4, 56GBASE-R4, 50GBASE-R2, 50GBASE-R4, 40GBASE-CR4, 40GBASE-KR4, 40GBASESR4, 40GBASE-LR4, 40GBASE-ER4, 40GBASE-R2, 25GBASE-R, 20GBASEKR2, 1000BASE-CX, 1000BASE-KX, 10GBASE-SR, 10GBASE-LR, 10GBASE-ER, 10GBASE-CX4, 10GBASE-KX4, 10GBASE-CR, 10GBASEKR, SGMII Data Rate: SDR</p>		
Data Rate	<p>InfiniBand - SDR/DDR/QDR/FDR/EDR Ethernet - 1/10/25/40/50/100 Gb/s</p>		
Regulatory Compliance			
Safety/ EMC (Emissions)	<table border="0"> <tr> <td style="vertical-align: top;"> <p>Safety:</p> <p>US/Canada: cTUVus EU: CE International: CB Russia: GOST-R Argentina: S-mark DoC</p> </td> <td style="vertical-align: top;"> <p>EMC (Emissions):</p> <p>USA: FCC, Class A Canada: ICES-003, Class A EU: EN55022, Class A EU: EN55024, EU: EN61000-3-2, EU: EN61000-3-3, Japan: VCCI, Class A Australia / New-Zealand: C-Tick, AS/NZS CISPR 22 class A Korea: KCC Class A Taiwan: BCCI Class A</p> </td> </tr> </table>	<p>Safety:</p> <p>US/Canada: cTUVus EU: CE International: CB Russia: GOST-R Argentina: S-mark DoC</p>	<p>EMC (Emissions):</p> <p>USA: FCC, Class A Canada: ICES-003, Class A EU: EN55022, Class A EU: EN55024, EU: EN61000-3-2, EU: EN61000-3-3, Japan: VCCI, Class A Australia / New-Zealand: C-Tick, AS/NZS CISPR 22 class A Korea: KCC Class A Taiwan: BCCI Class A</p>
<p>Safety:</p> <p>US/Canada: cTUVus EU: CE International: CB Russia: GOST-R Argentina: S-mark DoC</p>	<p>EMC (Emissions):</p> <p>USA: FCC, Class A Canada: ICES-003, Class A EU: EN55022, Class A EU: EN55024, EU: EN61000-3-2, EU: EN61000-3-3, Japan: VCCI, Class A Australia / New-Zealand: C-Tick, AS/NZS CISPR 22 class A Korea: KCC Class A Taiwan: BCCI Class A</p>		
Environmental / Acoustic	<table border="0"> <tr> <td style="vertical-align: top;"> <p>Environmental:</p> <p>EU: IEC 60068-2-64: Random Vibration EU: IEC 60068-2-29: Shocks, Type I / II EU: IEC 60068-2-32: Fall Test</p> </td> <td style="vertical-align: top;"> <p>Acoustic:</p> <p>Sound power: 7.0 BA in operating conditions at typical office ambient temperature. (23 +/- 2 degrees C)</p> </td> </tr> </table>	<p>Environmental:</p> <p>EU: IEC 60068-2-64: Random Vibration EU: IEC 60068-2-29: Shocks, Type I / II EU: IEC 60068-2-32: Fall Test</p>	<p>Acoustic:</p> <p>Sound power: 7.0 BA in operating conditions at typical office ambient temperature. (23 +/- 2 degrees C)</p>
<p>Environmental:</p> <p>EU: IEC 60068-2-64: Random Vibration EU: IEC 60068-2-29: Shocks, Type I / II EU: IEC 60068-2-32: Fall Test</p>	<p>Acoustic:</p> <p>Sound power: 7.0 BA in operating conditions at typical office ambient temperature. (23 +/- 2 degrees C)</p>		
Reliability, Availability and Serviceability Features			
Hot Swapability / Redundancy	<p>Hot-Swappable:1+1 Power Supplies N+N Redundant:</p>		

A.1 Approved Cables

For a list of all approved cables, see:

http://www.mellanox.com/related-docs/user_manuals/Mellanox_approved_cables.pdf

A.2 EMC Certifications

The list of approved certifications per switch in different regions of the world is located on the Mellanox Website at:

http://www.mellanox.com/related-docs/user_manuals/Regulatory_and_Compliance_Guide.pdf

EMC statements are also in the Regulatory and Compliance Guide.

A.3 China CCC Warning Statement

Appendix B: Field Replaceable Units

Table 14 - Replacement Parts

Ordering Number	Description
Power Supply 00WT199	Power Supply w/ PSU Side to Connector side airflow for Mellanox® UFM Appliance 1U VPI Server
HDD 00WT141	Hard Drive for Mellanox® UFM®-SDN Appliance 1U VPI Server
Rail Kit 00WT140	Rack installation kit for Mellanox® UFM-SDN Appliance 1U VPI server standard depth racks

Appendix C: Avertissements de sécurité d'installation (French)

1. Instructions d'installation



Lisez toutes les instructions d'installation avant de brancher le matériel à la source d'alimentation électrique.

2. Température excessive



Ce matériel ne doit pas fonctionner dans une zone avec une température ambiante dépassant le maximum recommandé de 340°C (103°F). Un flux d'air de 200LFM à cette température ambiante maximale est nécessaire. En outre, pour garantir un bon écoulement de l'air, laissez au moins 8 cm (3 pouces) d'espace libre autour des ouvertures de ventilation.

3. Empilage du châssis



Le châssis ne doit pas être empilé sur un autre matériel. Si le châssis tombe, il peut provoquer des blessures corporelles et des dégradations de biens.

4. Connection d'Alimentation électrique excédentaire -dangers électriques



Ce produit comporte un couvercle transparent sur l'espace pour l'alimentation électrique redondante.
Ne pas faire fonctionner le produit si le couvercle transparent n'est pas solidement fixé ou s'il est enlevé.

5. Système de fusible neutre/à double pôle



Avertissement: Système de fusible neutre/à double pôle. Veuillez débrancher tous les cordons d'alimentation avant d'ouvrir le boîtier de ce produit ou de toucher un de ses composants internes.

6. Orages – dangers électriques



Pendant un orage, il ne faut pas utiliser le matériel et il ne faut pas brancher ou débrancher les câbles.

7. Branchement/débranchement des câbles en cuivre



Les câbles InfiniBand en cuivre sont lourds et ne sont pas flexibles, il faut donc faire très attention en les branchant et en les débranchant des connecteurs. Consultez le fabricant des câbles pour connaître les mises en garde et les instructions spéciales.

8. Risque de choc et de danger



Risque de choc et de danger électriques. Le débranchement d'une seule alimentation stabilisée ne débranchera uniquement qu'un module "Alimentation Stabilisée". Pour isoler complètement le module en cause, il faut débrancher toutes les alimentations stabilisées.

9. Montage et entretien sur baie



Lorsque ce produit est monté ou entretenu sur baie, il faut prendre des précautions spéciales pour s'assurer que le système reste stable. En général, il faut remplir la baie avec du matériel de bas en haut.

10. Fuite >3.5mA Leakage >3.5mA



« ATTENTION – La connexion à la terre des forts courants de fuite est essentielle avant le branchement de l'alimentation. »
Avant de brancher l'appareil à la conduite d'alimentation, les vis de protection à la terre du terminal de l'appareil doivent être appliquées à l'installation de protection à la Terre du bâtiment.

11. Danger d'explosion de la Batterie



Il y a danger d'explosion s'il y a un remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur.
Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

12. Forts Courants de Fuite High Leakage Current



Attention: Forts courants de fuite. Il est essentiel de relier à la terre avant de brancher l'alimentation.

13. Ajouter une information de connexion à la masse Connect a Valid Ground to this Device



Avant de brancher l'appareil à la conduite d'alimentation, les vis de protection à la terre du terminal de l'appareil doivent être appliquées à l'installation de protection à la Terre du bâtiment.

14. Installation du matériel



Ce matériel ne doit être installé, remplacé ou entretenu que par du personnel formé et qualifié.

15. Elimination du matériel



L'élimination de ce matériel doit s'effectuer dans le respect de toutes les législations et réglementations nationales en vigueur.

16. Codes électriques locaux et nationaux



Ce matériel doit être installé dans le respect des codes électriques locaux et nationaux.

17. Codes d'installation INSTALLATION CODES



L'appareil doit être installé selon l'ancienne version des codes électriques nationaux du pays. Pour l'Amérique du Nord, l'équipement doit être installé conformément aux spécifications du Code Electrique National Américain et du Code Electrique Canadien.

18. Interconnexion des unités INTERCONNECTION OF UNITS



Les câbles de branchement à l'unité RS232 et les interfaces Ethernet doivent être certifiés UL de type DP-1 ou DP-2. (Note - lorsqu'il existe dans un circuit non LPS)
Protection contre la surintensité : Un appareil de protection répertorié facilement accessible contre la surintensité du circuit de branchement et calibré à 20A doit être incorporé dans le câblage électrique du bâtiment.

19. S'assurer que les enceintes sont appropriées



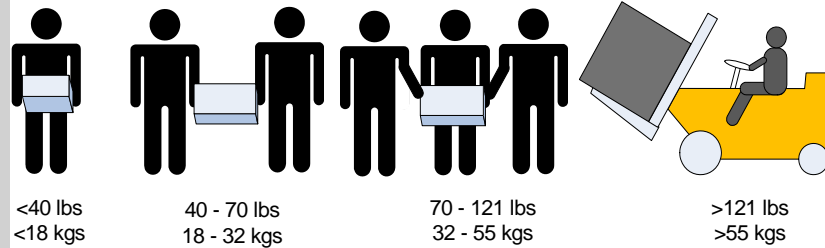
Des enceintes électriques, mécaniques et incendie adaptées doivent être fournies par le fabricant du produit final ou par l'utilisateur final.

20. Cordons électriques CA homologués UL

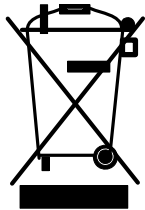


Pour les prises électriques en Amérique du Nord, choisissez un cordon électrique homologué UL et certifié CSA
à 3 conducteurs, [18 AWG], terminé par une fiche moulée, d'une tension nominale de 125 V, [15 A], avec une longueur minimale de 1,5 m [6 pieds] et d'une longueur maximale de 4,5 m [18 pieds]
Pour les prises électriques en Europe, choisissez un cordon électrique harmonisé internationalement et marqué "<HAR>",
à 3 conducteurs, d'un diamètre de fil minimum de 0,75 mm², d'une tension nominale de 300 V, avec une gaine isolée en PVC. Le cordon doit avoir une fiche moulée d'une tension nominale de 250 V et d'une intensité nominale de 10 A.

21. Bodily Injury Due to Weight



22. Conformément à la Directive WEEE



Conformément à la Directive WEEE 2002/96/EC, les déchets d'équipements électriques et électroniques (EEE) doivent être triés et ne peuvent être éliminés avec les déchets ménagers.

Veillez disposer de ce produit et de tous ses composants de manière responsable et respectueuse de l'environnement.

23. Do Not Use the Switch as a Shelf or Work Space.



Caution: Slide/rail mounted equipment is not to be used as a shelf or a work space. The rails are not intended for sliding the unit away from the rack. It is for permanent installation at final resting place only, not used for service and maintenance.

Appendix D: Installation - Sicherheitshinweise (German)

1. Installationsanleitungen



Lesen Sie alle Installationsanleitungen, bevor Sie das Gerät an die Stromversorgung anschließen.

2. Übertemperatur



Dieses Gerät sollte nicht in einem Bereich mit einer Umgebungstemperatur über der maximal empfohlenen Temperatur von 40°C (103°F) betrieben werden. Es ist ein Luftstrom von 200 LFM bei maximaler Umgebungstemperatur erforderlich. Außerdem sollten mindestens 8 cm (3 in.) Freiraum um die Belüftungsöffnungen sein, um einen einwandfreien Luftstrom zu gewährleisten.

3. Stapeln des Chassis



Das Chassis sollte nicht auf andere Geräte gestapelt werden. Wenn das Chassis herunterfällt, kann es zu Verletzungen und Beschädigungen an Geräten führen.

4. Redundanter Stromversorgungsanschluss - Elektrische Gefahr



Dieses Produkt verfügt über eine Abdeckung über dem Bereich für die redundante Stromversorgung. Betreiben Sie das Produkt nicht, wenn diese Abdeckung nicht sicher festsitzt oder entfernt wurde.

5. Bei Gewitter - Elektrische Gefahr



Arbeiten Sie während eines Gewitters und Blitzschlag nicht am Gerät, schließen Sie keine Kabel an oder ab.

6. Anschließen/Trennen von Kupferkabel



Kupferkabel sind schwer und nicht flexible. Deshalb müssen sie vorsichtig an die Anschlüsse angebracht bzw. davon getrennt werden. Lesen Sie die speziellen Warnungen und Anleitungen des Kabelherstellers.

7. Gefahr des elektrischen Schocks.



Gefahr des elektrischen Schocks. Entfernen des Netzsteckers eines Netzteils spannungsfrei. Um alle Einheiten spannungsfrei zu machen sind die Netzstecker aller Netzteile zu entfernen



Risk of electric shock and energy hazard.
The PSUs are all independent.
Disconnect all power supplies to ensure a powered down state inside of the UFM platform.

8. Rack-Montage und Wartung



Wenn dieses Produkt in einem Rack montiert oder gewartet wird, sind besondere Vorsichtsmaßnahmen zu ergreifen, um die Stabilität des Systems zu gewährleisten. Im Allgemeinen sollten Sie das Gestell von unten nach oben mit Geräten füllen.

9. Geräteinstallation



Diese Gerät sollte nur von geschultem und qualifiziertem Personal installiert, ausgetauscht oder gewartet werden.

10. Geräteentsorgung



Die Entsorgung dieses Geräts sollte unter Beachtung aller nationalen Gesetze Bestimmungen erfolgen.

11. Regionale und nationale elektrische Bestimmungen



Dieses Gerät sollte unter Beachtung der regionalen und nationalen elektrischen Bestimmungen installiert werden.

12. Richtigen Schutz sicherstellen



Geeigneter elektrischer, mechanischer und Feuerschutz sind vom Hersteller des Endprodukts oder dem Endbenutzer bereitzustellen.

13. UL-und CSA Certified Netzkabel UL Listed and CSA Certified Power Supply Cord



Für Nordamerika Stromanschluss, wählen Sie ein Netzkabel, das UL-und CSA Certified

3 - Leiter, [18 AWG], mit einem angespritztem Stecker bewertet bei 125 V, [15], mit einer Mindestlänge von 1,5 m [Six Feet] aber nicht mehr als 4,5 m.

Für die europäischen Zusammenhang, wählen Sie ein Netzkabel, das international harmonisiert und der Aufschrift "<HAR>",

3 - Leiter, mindestens 0,75 mm² Draht, bewertet mit 300 V, mit einem PVC-Mantel isoliert. Das Kabel muss eine angespritztem Stecker bewertet bei 250 V, 10 A. "

14. Ableitstrom > 3.5mA LEAKAGE >3.5mA



WARNUNG: Hohe Ableitstrom; Earth Verbindung, bevor Sie die Verbindung von wesentlicher Bedeutung werden.

15. Add GND Verbindung Informationen Add GND connection information



Bevor Sie dieses Gerät an das Stromnetz, die Schutzerde Terminal Schrauben dieses Gerät muss an den Schutzleiter in der Gebäudeinstallation.

16. Installation Codes Installation Codes



Dieses Gerät muss installiert sein, entsprechend auf die neueste Version des Landes National Electrical Code. Für Nordamerika, müssen in Übereinstimmung mit den geltenden Vorschriften in der US-amerikanischen National Electrical Code und dem Canadian Electrical Code.

17. Zusammenschaltung von EINHEITEN Interconnection Of Units



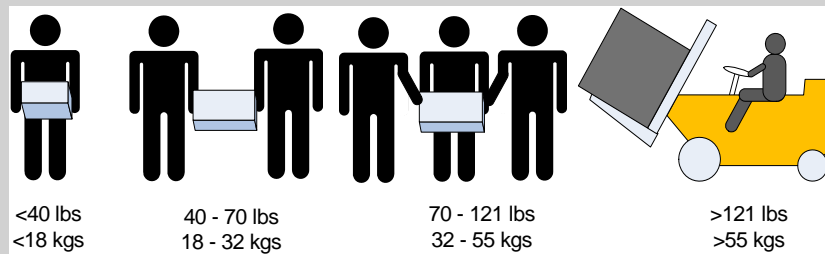
Kabel für den Anschluss an das Gerät RS232-und Ethernet-Schnittstellen müssen UL zertifiziert Typ DP-1 oder DP-2. (Hinweis-, wenn nicht mit Wohnsitz in LPS-Schaltung)

Überstromschutz: Eine leicht zugängliche Auflistung Abzwegleitung Überstrom-Schutzeinrichtung 20 A bewertet werden müssen in dem Gebäude Verkabelung.

18. Bodily Injury Due to Weight



Use enough people to safely lift this product.



19. Do Not Use the Switch as a Shelf or Work Space.



Caution: Slide/rail mounted equipment is not to be used as a shelf or a work space. The rails are not intended for sliding the unit away from the rack. It is for permanent installation at final resting place only, not used for service and maintenance.

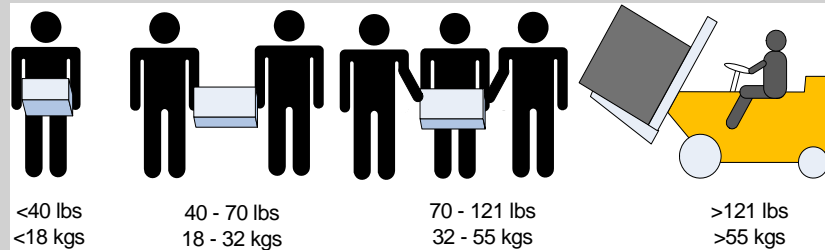
Appendix E: Advertencias de seguridad para la instalación (Spanish)

1. Instrucciones de instalación



Antes de conectar el equipo a la fuente de alimentación, leer todas las instrucciones de instalación.

2. Poids lourd Heavy Weight Lesión corporal por pesoSchweres Gewicht



3. Lesión corporal por peso



Dado que el equipo es muy pesado, se debe mover únicamente mediante un elevador mecánico, para evitar lesiones.

4. Instalación en un lugar con acceso restringido.



Esta unidad ha sido ideada para instalar en lugares de acceso restringido.

5. Sobrecalentamiento



No se debe utilizar el equipo en un área con una temperatura ambiente superior a la máxima recomendada: 40°C (103°F). Además, para garantizar una circulación de aire adecuada, se debe dejar como mínimo un espacio de 8 cm (3 pulgadas) alrededor de las aberturas de ventilación.

6. Apilamiento del chasis



Los chasis no se deben apilar sobre otros equipos. La caída del chasis podría causar lesiones corporales, así como daños al equipo.

7. Conexión de fuente de alimentación redundante: peligro de descarga eléctrica



Este producto incluye una fuente de alimentación redundante o, en su lugar, una vacía. Si se dispone de una fuente de alimentación vacía, no utilizar el producto si su tapa está quitada o no está bien cerrada.

8. Cuando hay rayos: peligro de descarga eléctrica



No utilizar el equipo ni conectar o desconectar cables durante períodos de actividad de rayos.

9. Conexión y desconexión del cable Copper



Dado que los cables de cobre son pesados y no son flexibles, su conexión a los conectores y su desconexión se deben efectuar con mucho cuidado. Para ver advertencias o instrucciones especiales, consultar al fabricante del cable.

10. Montaje y mantenimiento de bastidores



Al instalar o realizar el mantenimiento de este aparato en un bastidor, es preciso adoptar precauciones especiales para garantizar que el sistema se mantenga estable. En general, en un bastidor, los equipos se deben instalar comenzando desde abajo hacia arriba.

11. Instalación de equipos



La instalación, el reemplazo y el mantenimiento de este equipo estarán a cargo únicamente de personal capacitado y competente.

12. Asegurar confinamientos adecuados



El fabricante del producto final o el usuario final deberán suministrar un confinamiento adecuado para componentes eléctricos y mecánicos y contra incendio.

13. Eliminación de equipos



La eliminación definitiva de este equipo se debe efectuar conforme a todas las leyes y reglamentaciones nacionales.

14. Códigos eléctricos locales y nacionales



Este equipo se debe instalar conforme a los códigos eléctricos locales y nacionales.

15. Cable de alimentación homologado por UL y con certificación CSA



En conexiones de América del Norte, seleccionar un cable de alimentación homologado por UL y con certificación CSA de tres conductores, [16 AWG], terminado en un enchufe moldeado con capuchón de 125 voltios nominal, [13 A], con una longitud mínima de 1,5 metros, pero no más de 4,5 metros.

En conexiones europeas, seleccionar un cable de alimentación armonizado internacionalmente y marcado "<HAR>", de tres conductores, hilo de 1,0 mm² como mínimo, 300 voltios nominal, con cobertura protectora aislante de PVC. El cable debe tener un enchufe moldeado con capuchón de 250 voltios nominal, 10 A.

16. Fuga > 3,5 mA



ADVERTENCIA: Alta corriente de fuga. Es esencial efectuar la conexión a tierra antes de conectar la alimentación.

17. Añadir conexión a tierra



Antes de conectar el dispositivo a la línea de alimentación, los tornillos del terminal de la puesta a tierra de protección del dispositivo se deben conectar a la puesta a tierra de protección de la instalación del edificio.

(Información de conexión a tierra):

La instalación del edificio deberá proveer un medio para la conexión con la puesta a tierra de protección y un técnico de servicio deberá conectar permanentemente el equipo a dicho medio de conexión.

Un TÉCNICO DE SERVICIO comprobará si la toma eléctrica de la que se suministrará corriente al equipo provee una conexión con la puesta a tierra de protección del edificio. De no ser así, el TÉCNICO DE SERVICIO se encargará de instalar un CONDUCTOR DE CONEXIÓN A TIERRA DE PROTECCIÓN, del terminal de puesta a tierra de protección separado al conductor de tierra de protección del edificio. El equipo se instalará en un área donde haya conexión equipotencial, como por ejemplo, un centro de telecomunicaciones o una sala de computadoras dedicada.

18. Códigos de instalación



Este dispositivo se debe instalar conforme a la versión más reciente de los códigos eléctricos nacionales del país en cuestión. En América del Norte, el equipo se debe instalar de acuerdo con las disposiciones vigentes del Código Eléctrico Nacional de los EE.UU. y del Código Eléctrico de Canadá.

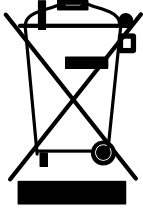
19. Interconexión de unidades



Los cables para la conexión con las interfaces RS232 y Ethernet de la unidad deben estar homologados por UL tipo DP-1 o DP-2. (Nota: cuando residen en circuito no de tipo LPS)

Protección contra sobrecargas: Al cableado del edificio se debe incorporar un dispositivo de protección contra sobrecargas de circuito derivado, de fácil acceso, con una corriente nominal de 20 A.

20. Directiva sobre RAEE



Conforme a la Directiva 2002/96/CE sobre RAEE, todos los residuos de equipos eléctricos y electrónicos (EEE) se deben recolectar por separado y no se deben eliminar junto con residuos domésticos.

Al deshacerse de este producto y de todas sus partes, hágalo de una manera responsable y respetuosa con el medio ambiente.

21. Do Not Use the Switch as a Shelf or Work Space.



Caution: Slide/rail mounted equipment is not to be used as a shelf or a work space. The rails are not intended for sliding the unit away from the rack. It is for permanent installation at final resting place only, not used for service and maintenance.

Appendix F: Special Regulations Regarding Finland, Sweden, Denmark, and Norway

- **Denmark--** “Unit is class I, unit shall be used with an AC cord set suitable with Denmark deviations. Cord shall including an earthing conductor. Unit shall be plugged into a wall socket outlet which is connected to protective earth. Socket outlets which are not connected to earth shall not be used!”



Do not connect this unit to any outlet that is not fully grounded!

- **Finland -**



“Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan”

- **Norway -**



“Apparatet må tilkoples jordet stikkontakt”

Unit is intended for connection to IT power systems for Norway only.

- **Sweden -**



“Apparaten skall anslutas till jordat uttag.”