

Internally Managed vs Unmanaged (Externally Managed)

The following table shows which switches come with a management CPU and which do not. Managed switches can be upgraded from simple chassis management to full fabric management by purchasing an additional license. For more information on buying a license see the user's manual.

Unmanaged switches are plug and play out of the box. All switches come with the latest FW burned on the Flash and EEPROM. Update the FW on unmanaged switches in-band only. When new FW is available you will receive an email with the link to the Mellanox FW download site. The download site has the Mellanox FW tool package and full instructions for updating FW.

All managed switches have internal chassis management. With the purchase of a license this management module can manage the IB fabric. See Table 1 for details.

Table 1 - Switch Management

Family	Managed / Unmanaged	Management Connections
MTS3600-UNC	Unmanaged	Plug and play All firmware updates should be done in-band using Mellanox Firmware Management Tools. I2C port access using MTUSB-1 device is required for firmware updates if in-band burning is not possible. No Management
MTS3600-BNC	Managed	RS232 cable DB9 to DB9 included in the box to connect to host PC for initial configuration of the switch. After initial configuration the switch can be managed through the ethernet using a remote connection. Chassis Management is included with purchase, and an additional fabric management option, FabricIT-EFM, can be used with purchase of an additional license.

Should your unmanaged switch have CONSOLE, Ethernet, and USB connectors, they will not work. Only the I2C connector will work on unmanaged switches.

Installing the Switch in the Rack

Minimum and Maximum Rack Depth for these switches

This switch can be installed in any standard 19" racks with depths of 670mm to 900mm.

Mellanox Part Numbering Legend

Table 2 - Part Numbering Legend

Place	Field	Decoder
MT	Mellanox Technologies	
S	System Type	S = Switch

Table 2 - Part Numbering Legend

Place	Field	Decoder
MM	Model	36 = InfiniScale IV
FF	Form factor	00 = Rack mounted switch, 10 = Chassis
C	InfiniBand Port Config.	G = CX4 DDR, J = CX4 QDR, Q = QSFP QDR, R = QSFP DDR,
-	Separator	
P	# Power Supplies	0 = 0, 1 = 1, 2 = 2
M	Management	U = Unmanaged, B = Managed
Y	Module Config.	N = IB modules
R	RoHS	C = RoHS w/ Exemption, R = RoHS Lead-Free

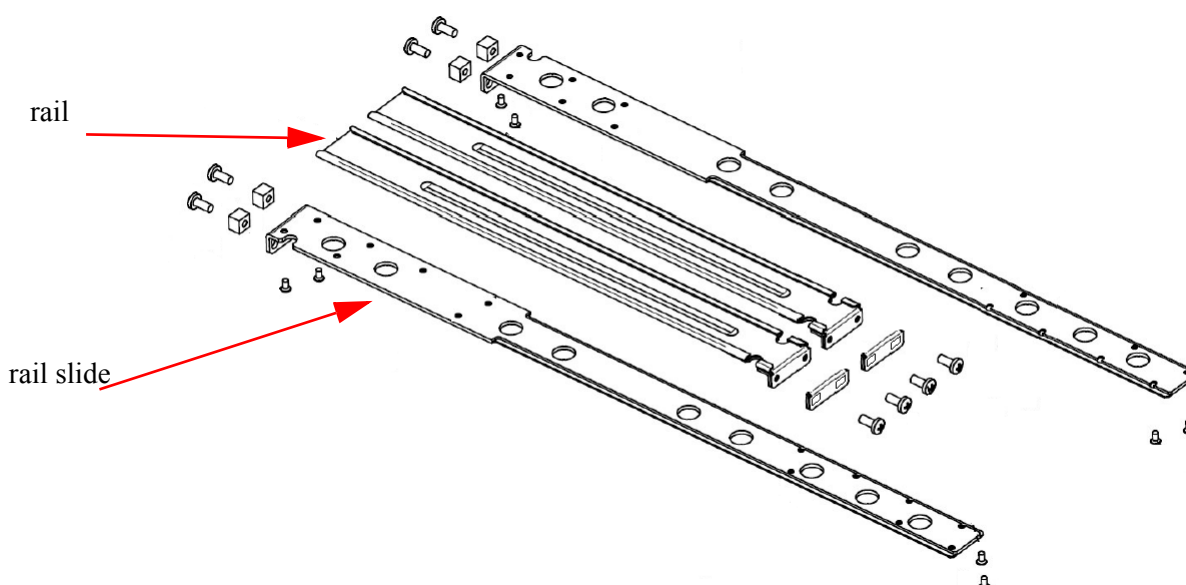
Tools and Parts

Tools required and customer supplied parts

- Phillips Screwdrivers #1 and #2
- ESD Strap
- ESD mat
- Grounding screw
- Grounding wire sufficient to reach a valid ground

Parts included in the installation kit:

- 2 rails
- 2 rail slides
- 8 pan head screws M6
- 8 recessed flat head screws
- 4 caged nuts
- 2 metal washers

Figure 1: Rack Installation Kit Parts

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

Note: If anything is damaged or missing, contact your customer representative immediately.

Procedure

- Step 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.
- Step 2.** Choose which side of the switch you want even with the vertical rack support. Either the side with the power supply units or the side with the IB connectors can be even with the vertical rack support. The other side of the switch will be further inside of the rack.

Things to consider before choosing where to mount the rails and rail slides.

Figure 2: Which Side of the Rack Do You Want the Connectors?

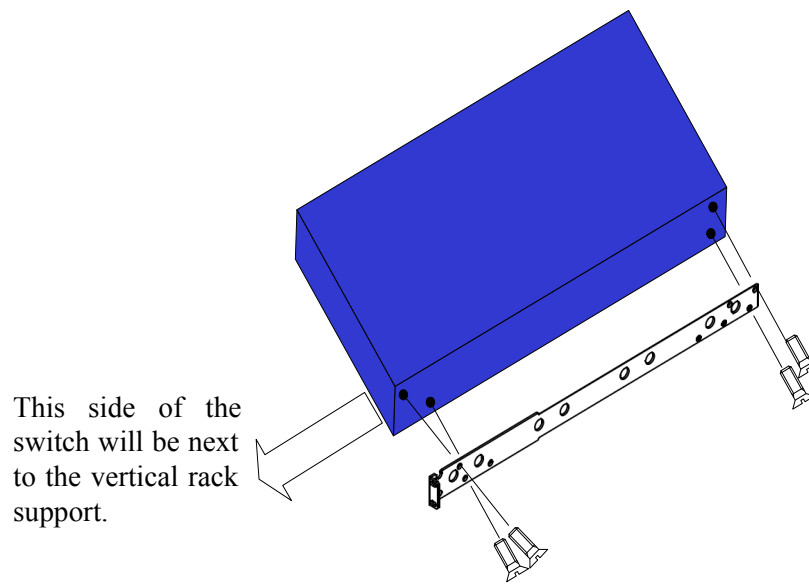


The distance between the rack and the door can be as little as 4 cm on one side of the rack and as much as 18 cm on the other side of the rack. Keep in mind that there can be as many as 36 cables connected to the switch.

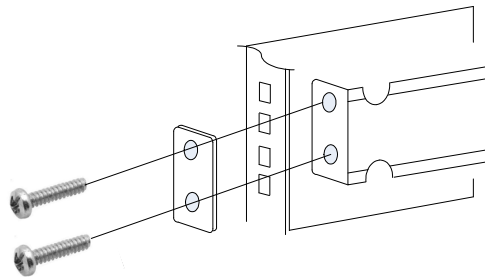
- Do you want the connector side recessed in the rack to allow for larger cable bending radius?
- Will the connector side be recessed past other equipment in the rack and will this be problematic?

Note: The rails are to be installed on the side of the rack where the switch will be recessed into the rack.

- Step 3.** Install the rail slides onto the switch. Place the end of the rail slide with the 90° angle on the side of the switch that you want to be even with the vertical support of the 19" rack. Use four of the flat head screws for each rail slide. There are two sets of holes in the rail slide. Select the set of holes to either mount the switch closer or farther away from the rack vertical support. Tighten the screws to 3Nm or 26.5 pound inches.



- Step 4.** Clip the nuts into the holes in the rack you will be using to connect the rail slides. Check that both sides of the switch are in the same position number on the rack.
- Step 5.** Using two of the pan head screws and one washer, for each rail, install the rails to the other end of the rack. Place the rail behind the holes in the rack and screw the screws through the holes in the washer then through the rails. Tighten the pan head screws that hold the rails to 9.2 Nm or 81.5 pound inches.



- Step 6.** Place the four bolts for the caged nuts within reach.
- Step 7.** Slide the switch into the rails.
- Step 8.** Put the switch into place and screw the bolts into the nuts from step 4. Tighten the bolts to 9.2 Nm or 81.5 pound inches.
- Step 9.** Tighten all of the screws.
- Step 10.** Plug in the power cables.

- Step 11.** Check the Status LEDs and confirm that all of the LEDs show status lights consistent with normal operation.



During the boot phase the status LED may show RED. It can take up to 3 minutes to boot up. Should the Status LED not change to GREEN after 3 minutes troubleshoot the switch!

Warning: Any YELLOW status LEDs is cause for concern and must be dealt with immediately.

- Step 12.** You can start connecting all of the cables to the switch.

Grounding the Switch

You must install an external ground to all IT components. Connect a ground wire to one of the casing screws connect the other end to a valid ground. Do not rely on the power connection ground. If you choose to not use the ground screw, make sure that there is a valid ground connection between the chassis of the switch and the grounded rack. Test the ground using an Ohm meter.

Note: Grounding wires, screws, and connectors for the ground are not supplied by Mellanox.

Configuring the Switch for the First Time

Unmanaged (Externally managed) Switches

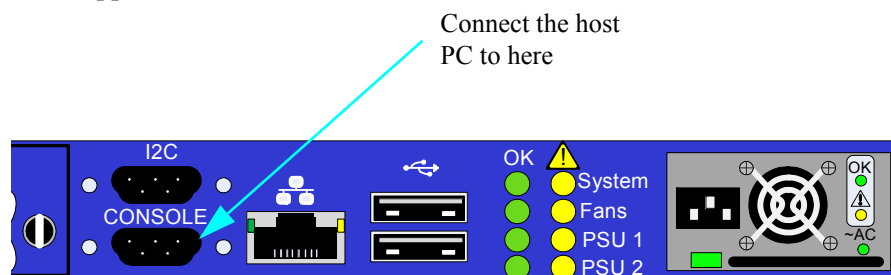
Note: Unmanaged (Externally managed) switches, that is the the MTS 3600-UNC do not get configured. On unmanaged switches, the CONSOLE, Ethernet, and USB connectors do not work.

Note: The unmanaged switches are Plug and Play and all firmware updates should be done in-band. The I2C connection should only be used if the FW image was corrupted to the point that the regular FW tools cannot successfully return the correct image.

When you install the switch, it comes with the latest firmware burned on the board. You will not need to burn FW unless you get notification from Mellanox that a newer version of FW for your switch has been released.

Managed (Internally managed) Switches

- Step 1.** Connect the host PC RS232 connector to the CONSOLE port of the MTS3600 switch using the supplied cable.



Note: No remote IP connection is available at this stage.

Step 2. Configure a serial terminal program (for example, HyperTerminal, Minicom, or Tera Term) on your host PC with the settings described in Table 3.

Table 3 - Serial Terminal Program Configuration

Parameter	Setting
Baud Rate	9600
Data bits	8
Stop bits	1
Parity	None
Flow Control	None

Step 3. Login (from serial terminal program) as *admin* and use *admin* as password. This starts the Mellanox configuration wizard.

Step 1. Go through the Mellanox configuration wizard. Table 4 shows an example of a wizard session.

Table 4 - Configuration Wizard Session - IP Configuration by DHCP (Sheet 1 of 2)

Wizard Session Display (Example)	Comments
Mellanox configuration wizard Do you want to use the wizard for initial configuration? yes	You must perform this configuration the first time you operate the gateway or after resetting the gateway password. Type 'y' and then press <Enter>.
Step 1: Hostname? [bridge-1]	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	<p>Perform this step to obtain an IP address for the gateway. (eth0 is the management port of the gateway.)</p> <p>If you wish the DHCP server to assign the IP address, type 'yes' and press <Enter>.</p> <p>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 5.</p> <p>If you enter 'no' (no Zeroconf), then you need to enter a <i>static</i> IP, and the session will continue as shown in Table 6.</p>

Table 4 - Configuration Wizard Session - IP Configuration by DHCP (Sheet 2 of 2)

Wizard Session Display (Example)	Comments
Step 3: Admin password (Enter to leave unchanged)? <new_password> Step 4: Confirm admin password? <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.
You have entered the following information: 1. Hostname: <bridge-1> 2. Use DHCP on eth0 interface? : yes 3. Admin password (Enter to leave unchanged): (CHANGED) To change an answer, enter the step number to return to. Otherwise hit <enter> to save changes and exit. Choice: <Enter> Configuration changes saved. To return to the wizard from the CLI, enter the “configuration jump-start” command from configuration mode. Launching CLI... bridge-1 >	The wizard displays a summary of your choices and then asks you to confirm the choices or to re-edit them. Either press <Enter> to save changes and exit, or enter the configuration step number (1, 2 or 3) that you wish to return to. Note: To run the command "configuration jump-start, you must be in Config mode.

Table 5 - Configuration Wizard Session - IP Zeroconf Configuration

Wizard Session Display - IP Zeroconf Configuration (Example)
<p>Mellanox configuration wizard</p> <p>Do you want to use the wizard for initial configuration? y</p> <p>Step 1: Hostname? [bridge-112428]</p> <p>Step 2: Use DHCP on eth0 interface? [no]</p> <p>Step 3: Use zeroconf on eth0 interface? [no] yes</p> <p>Step 4: Default gateway? [192.168.10.1]</p> <p>Step 5: Primary DNS server?</p> <p>Step 6: Domain name?</p> <p>Step 7: Admin password (Enter to leave unchanged)?</p> <p>You have entered the following information:</p> <ol style="list-style-type: none"> 1. Hostname: bridge-112428 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) <p>To change an answer, enter the step number to return to. Otherwise hit <enter> to save changes and exit.</p> <p>Choice:</p> <p>Configuration changes saved.</p> <p>To return to the wizard from the CLI, enter the "configuration jump-start" command from configure mode. Launching CLI...</p> <p>bridge-1 ></p>

Table 6 - Configuration Wizard Session - Static IP Configuration

Wizard Session Display - Static IP Configuration (Example)
<p>Mellanox configuration wizard</p> <p>Do you want to use the wizard for initial configuration? y</p> <p>Step 1: Hostname? [bridge-112428]</p> <p>Step 2: Use DHCP on eth0 interface? [yes] n</p> <p>Step 3: Use zeroconf on eth0 interface? [no]</p> <p>Step 4: Primary IP address? 192.168.10.4</p> <p>Mask length may not be zero if address is not zero (interface eth0)</p> <p>Step 5: Netmask? [0.0.0.0] 255.255.255.0</p> <p>Step 6: Default gateway? 192.168.10.1</p> <p>Step 7: Primary DNS server?</p> <p>Step 8: Domain name?</p> <p>Step 9: Admin password (Enter to leave unchanged)?</p> <p>You have entered the following information:</p> <ol style="list-style-type: none"> 1. Hostname: bridge-112428 2. Use DHCP on eth0 interface: no 3. Use zeroconf on eth0 interface: no 4. Primary IP address: 192.168.10.4 5. Netmask: 255.255.255.0 6. Default gateway: 192.168.10.1 7. Primary DNS server: 8. Domain name: 9. Admin password (Enter to leave unchanged): (unchanged) <p>To change an answer, enter the step number to return to. Otherwise hit <enter> to save changes and exit.</p> <p>Choice:</p> <p>Configuration changes saved.</p> <p>To return to the wizard from the CLI, enter the "configuration jump-start" command from configure mode. Launching CLI...</p> <p>bridge-1 ></p>

Step 2. Before attempting a remote (for example, SSH) connection to the gateway, check the eth0 interface configuration. Specifically, verify the existence of an IP address. To check the current eth0 configuration, enter the following commands:

```
bridge-112428> enable // Enter 'enable' mode of
CLI
bridge-112428# show interface eth0 // # indicates 'enable'
mode
```

The following is an example of the output:

Interface eth0 state

```
Admin up:          yes
Link up:           yes
IP address:        192.168.10.6
Netmask:           255.255.255.0
Speed:             100Mb/s (auto)
Duplex:            full (auto)
Interface type:    ethernet
Interface source:  physical
MTU:               1500
HW address:        00:00:50:3A:8E:80
Comment:
```

```
RX bytes:          123102
RX packets:        1271
RX mcast packets:  0
RX discards:       0
RX errors:         0
RX overruns:       0
RX frame:          0
```

```
TX bytes:          122850
TX packets:        1119
TX discards:       0
TX errors:         0
TX overruns:       0
TX carrier:        0
TX collisions:     0
```

bridge-112428#

- Step 4.** Before attempting a remote (for example, SSH) connection to the switch, check the eth0 interface configuration. Specifically, verify the existence of an IP address. To check the current eth0 configuration, enter the following commands:

```
switch-1 > enable          // Enter 'enable' mode of CLI
switch-1 # show interface eth0 // # indicates 'enable' mode
```

The following is an example of the output:

Interface eth0 state

```

Admin up:          yes
Link up:           yes
IP address:        192.168.10.6
Netmask:           255.255.255.0
Speed:             100Mb/s (auto)
Duplex:            full (auto)
Interface type:    ethernet
Interface source:  physical
MTU:               1500
HW address:        00:00:50:3A:8E:80
Comment:
RX bytes:          123102
RX packets:        1271
RX mcast packets:  0
RX discards:       0
RX errors:         0
RX overruns:       0
RX frame:          0
TX bytes:          122850
TX packets:        1119
TX discards:       0
TX errors:         0
TX overruns:       0
TX carrier:        0
TX collisions:     0
switch-1 #

```

FabricIT

FabricIT EFM is a software based management system that can be run with either a command line interface or with a *WebUI* interface. Chassis management comes with the switch system. An optional license is required for full use of FabricIT cluster management. See the FabricIT EFM User Manual for instructions and commands available to manage the chassis, switches, and fabric.

Installing Licenses

A license for extended FabricIT management and inspection features with FabricIT EFM software is available for an additional licensing fee.

Downloading FabricIT Software and Documents

To download FabricIT software and documentation, please visit the following Web page:

FabricIT http://www.mellanox.com/content/pages.php?pg=fabric_it_login.

Note that you will need to enter the License Entitlement number and the Switch S/N to obtain the software and documentation, and also to generate an EFM license that enables extended FabricIT management and inspection features on your switch system.

FabricIT Management and Inspection License

If your switch system includes an internal management, then to activate extended FabricIT management and inspection features you need to install the license that was purchased along with the switch system. Without the license, you will not be able to run a Subnet Manager on the switch nor run advanced fabric diagnostics.

For information on installation, please refer to the *FabricIT Enterprise Fabric Management Software CLI User's Manual*.

Starting an SSH Connection to the Switch

Note: SSH connection also supports TelNet.

- Step 1.** Set up an Ethernet connection between the switch and a local network machine ("the remote machine" henceforth) using a standard RJ-45 connector.
- Step 2.** Connect to the remote machine.
- Step 3.** Start a remote shell to the switch using the following command:

```
ssh -l admin <your ip address>
```

 When prompted for a password enter "admin".
 Note that the IP address used above is the same IP address that was assigned to the Mellanox configuration wizard in the "Configuring the Switch for the First Time" section.
- Step 4.** You can enter any supported command now.

Note: For a complete reference of commands, please see *Mellanox FabricIT Management Software User's Manual*.

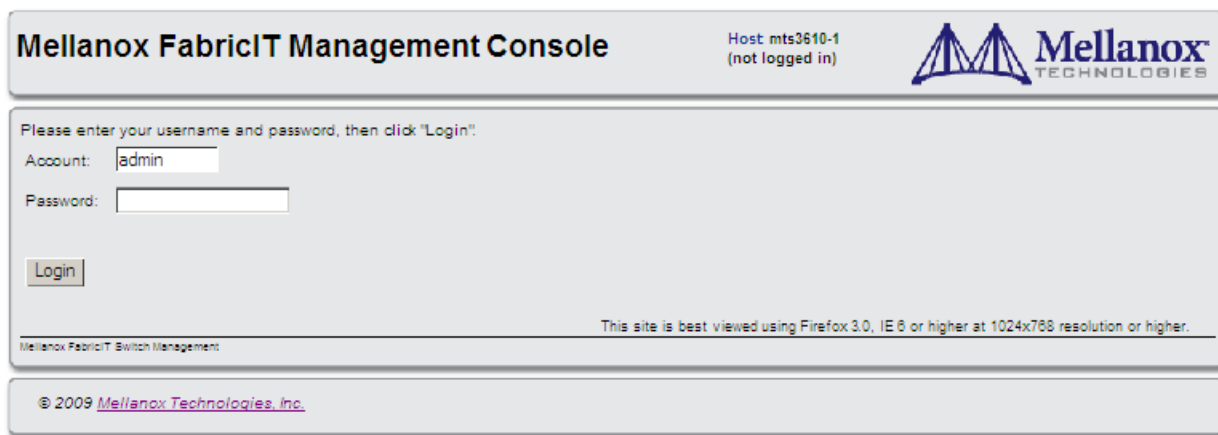
Starting a WebUI Connection to the Switch

- Step 1.** Set up an Ethernet connection between the switch and a local network machine ("the remote machine" henceforth) using a standard RJ-45 connector.
- Step 2.** Start a Web browser – Internet Explorer 7.0 or Mozilla Firefox 3.0.

Note: Make sure the screen resolution is set to 1024*768 or higher.

- Step 3.** Enter as URL the following: `http://<switch_IP_address>`
 where <switch_IP_address> is the IP address of the switch or its DNS name.

Step 4. You will receive the login window for remote management of the switch.



The screenshot shows the Mellanox FabricIT Management Console login interface. At the top, the title "Mellanox FabricIT Management Console" is displayed on the left, and "Host mts3610-1 (not logged in)" and the Mellanox Technologies logo are on the right. Below the title bar, a message reads: "Please enter your username and password, then click 'Login'". There are two input fields: "Account:" with the text "admin" entered, and "Password:" which is empty. A "Login" button is positioned below the password field. At the bottom of the login area, a note states: "This site is best viewed using Firefox 3.0, IE 6 or higher at 1024x768 resolution or higher." The footer of the page includes the copyright notice "© 2009 Mellanox Technologies, Inc."

Step 5. Use *admin* for both the login (Account) and the password.

The MTS3600 Series User Manual can be found at:
<http://www.mellanox.com>
=>Products=>Switches=>InfiniBand Switch Systems=>MTS3600