

SSD Replacement with “ONIE NOS Install”

How-To

Rev 1.0

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Document Revision History

Table 1: Document Revision History

Revision	Date	Description
1.0	April 2020	Initial revision

About this Manual

This manual instructs how to replace an SSD (a solid-state drive) in Mellanox's SN2700 and SN2410 switch systems. The procedure includes the following actions:

- Installing a new clean SSD in the switch
- Installing the ONIE OS via USB
- Installing the required NOS (Network Operating System)

The InnoDisk SSD details:

Vendor PN: DEMSR-32GD07RC2DC-92

Mellanox PN: MEM000089

SMARTCTL output: "InnoDisk Corp. - mSATA 3ME"

Audience

This manual is intended for Mellanox Field Engineers who are requested to clone SSDs and replace them on customer premises.

1 Prerequisites

1.1 Preparations

1.1.1 Environment

- Verify that the working environment is clean and in order.
- Use a non-slippery, clear, flat surface.
- Prepare a PH1 Philips screwdriver



CAUTION: Perform the replacement in an ESD protected area.



CAUTION: Always wear personal ESD protection equipment (strap, robe, gloves, etc.)

1.2 USB Flash Drive with an ONIE Recovery Image

➤ *To create a USB flash drive with an ONIE recovery image:*

Step 1: Download the ONIE recovery ISO file from the following link:

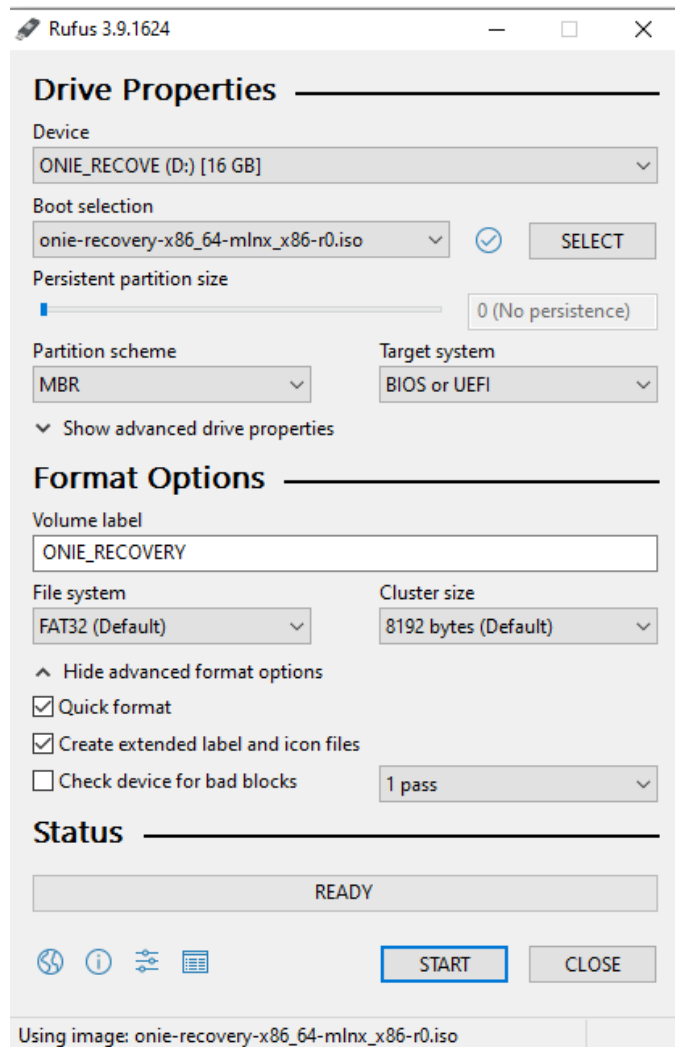
<https://mellanox.box.com/s/0wtiddvj2eh7x12ahyb19526wvf6o2a1>

The recovery image is for Onie Version 2019.11-5.2.0020 – 115200. For Version 2019.11-5.2.0020 – 9600, use the following:

<https://mellanox.box.com/s/dtydz931fa7l6t6ndtn00j43xrro3ck>

Step 2: Create a bootable USB drive from that ISO file using any relevant tool you might have. We recommend using the Rufus tool from <https://rufus.akeo.ie/>. For the Rufus tool, use the settings shown in the below figure.

Figure 1: Rufus Tool Settings



1.3 Getting the Onyx/Cumulus ONIE Installer File

In case the Onyx/Cumulus ONIE installer file is required, contact Mellanox support at support@mellanox.com to get the file to be used after ONIE is installed.

1.4 Switch Configuration Backup

1.4.1 Onyx - Configuration Backup

➤ *To save a text configuration file to a remote server:*

Step 1: Use the “**configuration text generate active running upload <upload url>**” command to download the text configuration file to the switch:

```
(config)# configuration generate active running upload
scp://user:password@<server>:/path_to_file/switch.conf
```

➤ *To save a binary configuration file to a remote server:*

Step 1: Use the “**configuration upload active <upload url>**” command to download the binary configuration file to the switch:

```
(config)# configuration upload active  
scp://user:password@<server>:/path_to_file/switch.bin
```

1.4.2 Cumulus - Configuration Backup

1.4.2.1 cumulus 4.1.x

Follow the procedure depicted at:

<https://docs.cumulusnetworks.com/cumulus-linux-41/Installation-Management/Back-up-and-Restore/#back-up-configuration-files>

1.4.2.2 Cumulus 3.x.x

Backup all Relevant configuration files to a remote server

2 SSD Removal

2.1 SN2410 Switch System

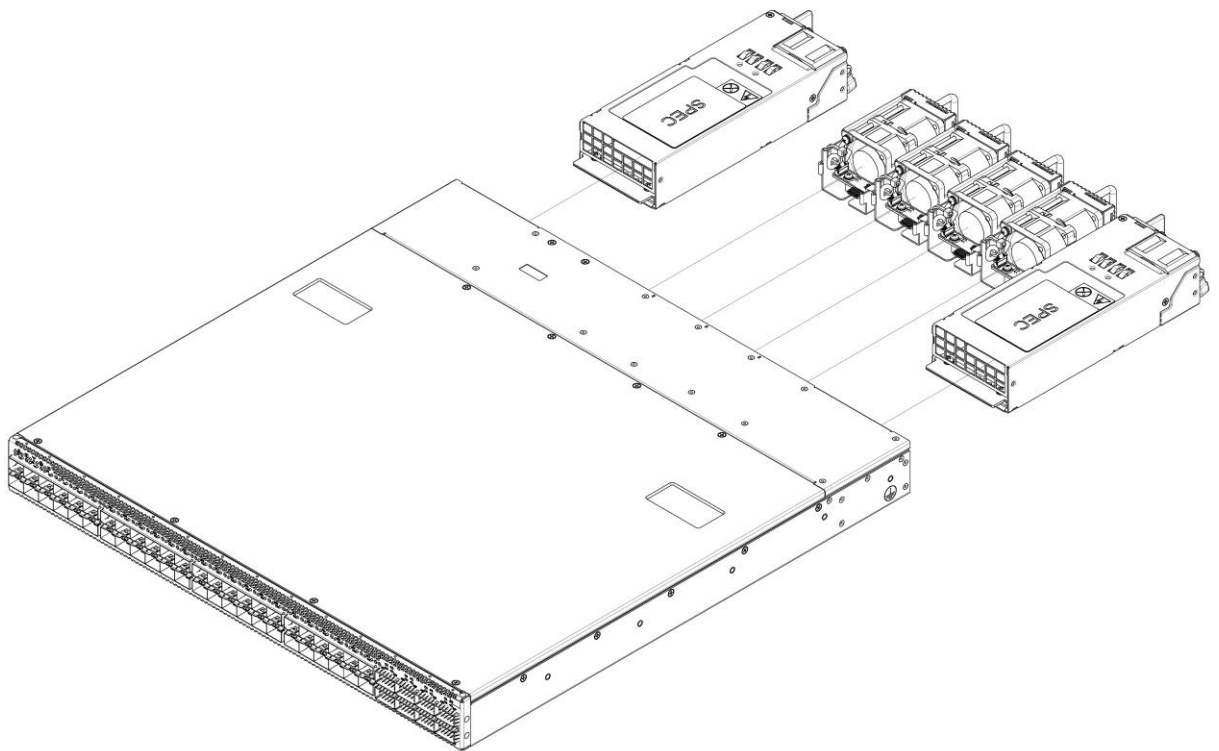
➤ *Prepare the switch for the SSD replacement:*

Step 1: Remove the switch out of the rack – Refer to the “Installation” Chapter in the [Hardware User Manual](#) for guidance.

Step 2: Place the switch on a clear, flat non-slippery surface.

Step 3: Remove the FRUs and save them (2 power supplies and 4 fans).

Figure 2: SN2410 FRUs Removal



2.1.1 Cover Disassembly

➤ *To disassemble the system's cover:*

Step 1: Carefully unscrew the flat head screws and save them (total of 18 screws).

Step 2: Carefully remove the cover and save it.

Figure 3: SN2410 Cover Removal

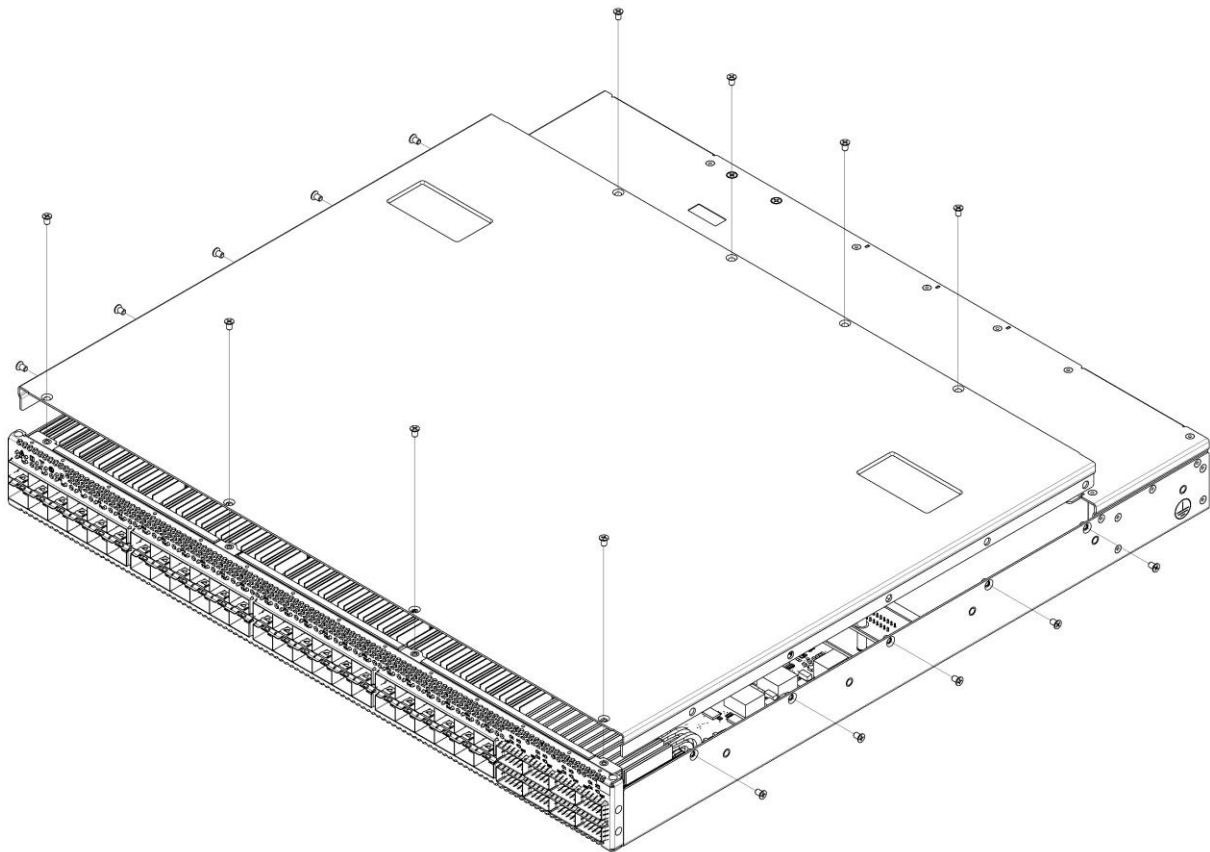


Figure 4: SN2410 Cover Screws



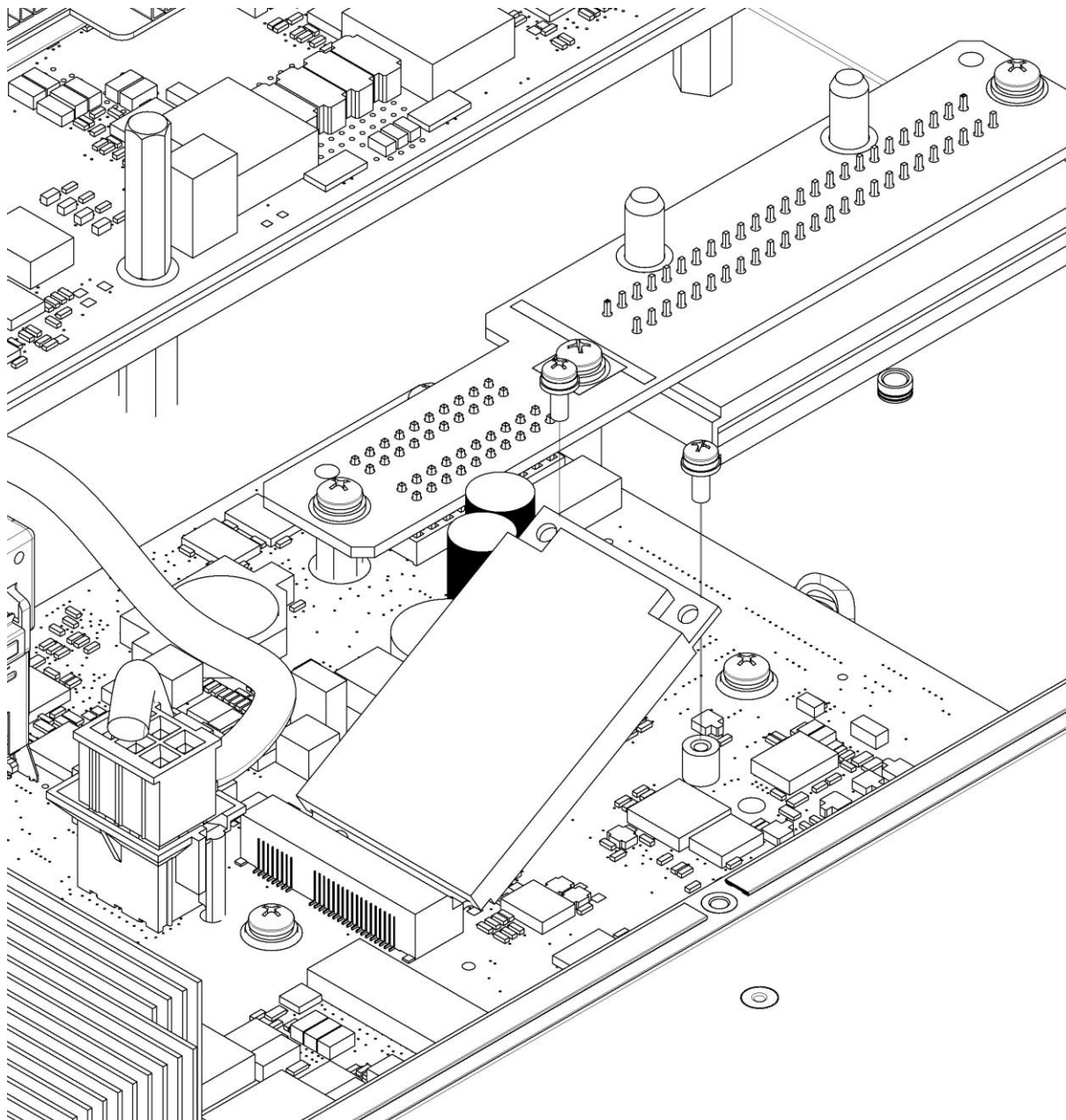
2.1.2 MSATA SSD Removal

➤ *To remove the MSATA SSD:*

Step 3: Carefully unscrew the 2 screws holding the SSD in place, and save them.

Step 4: Carefully lift and remove the SSD module, as shown.

Figure 5: SN2410 SSD Screws



2.2 SN2700 – SSD Removal

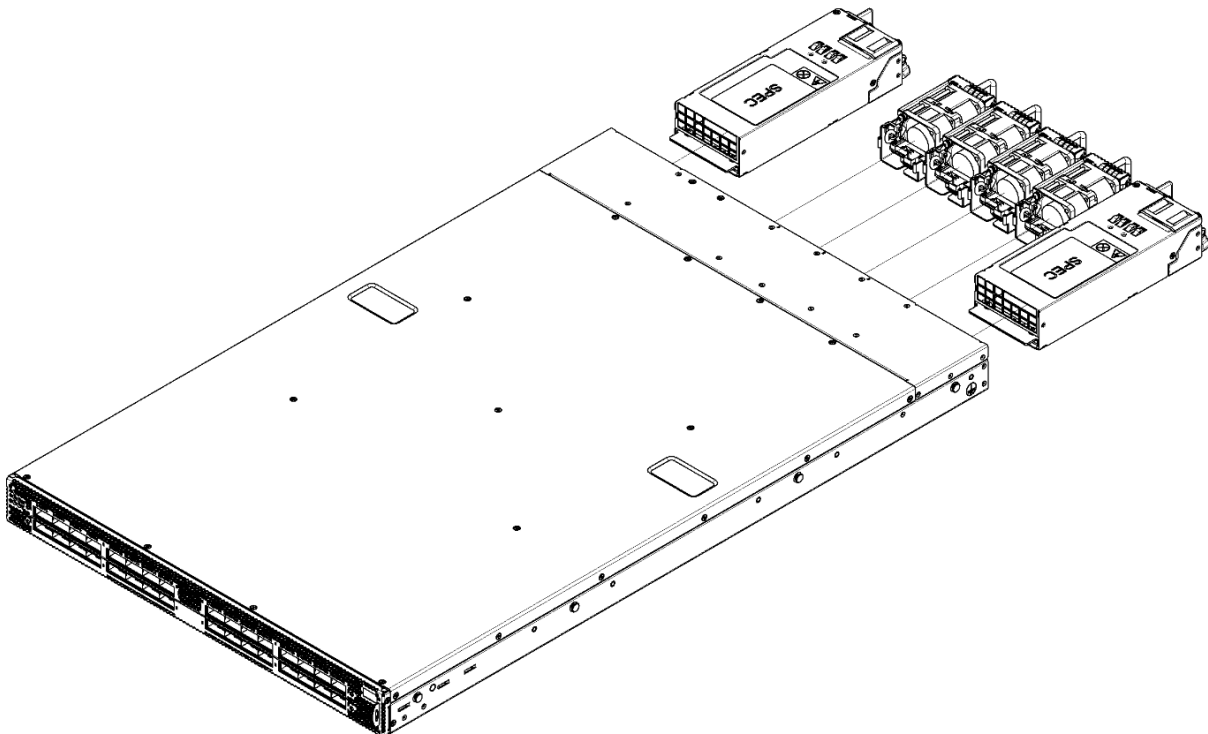
➤ *Prepare the switch for the SSD replacement:*

Step 1: Remove the switch out of the rack – Refer to the Installation Chapter in the Hardware User Manual for guidance.

Step 2: Place the switch on a clear, flat non-slippery surface.

Step 3: Remove the FRUs and save them (2 power supplies and 4 fans).

Figure 6: SN2700 FRU Removal



2.2.1 Cover Disassembly

➤ *To disassemble the system's cover:*

Step 1: Carefully unscrew the flat head screws and save them (total of 25 screws).

Step 2: Carefully remove the cover and save it.

Figure 7: SN2700 Cover Removal

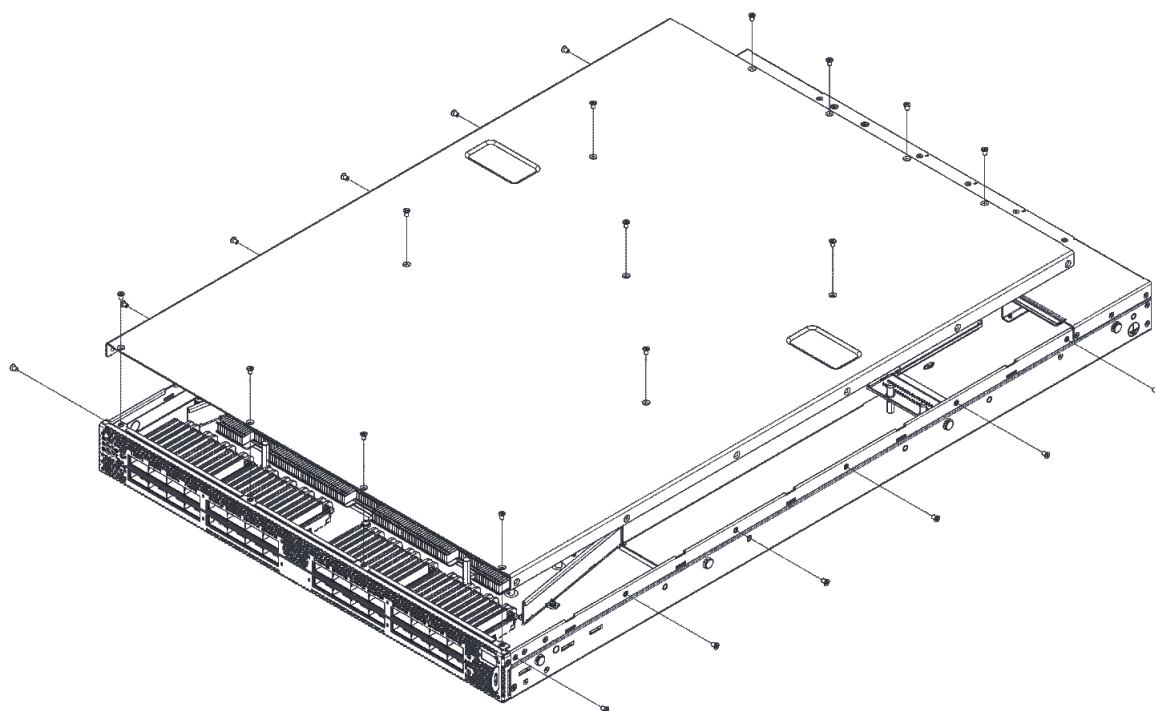


Figure 8: SN2700 Cover Screws



2.2.2 SN2700 MSATA SSD Removal

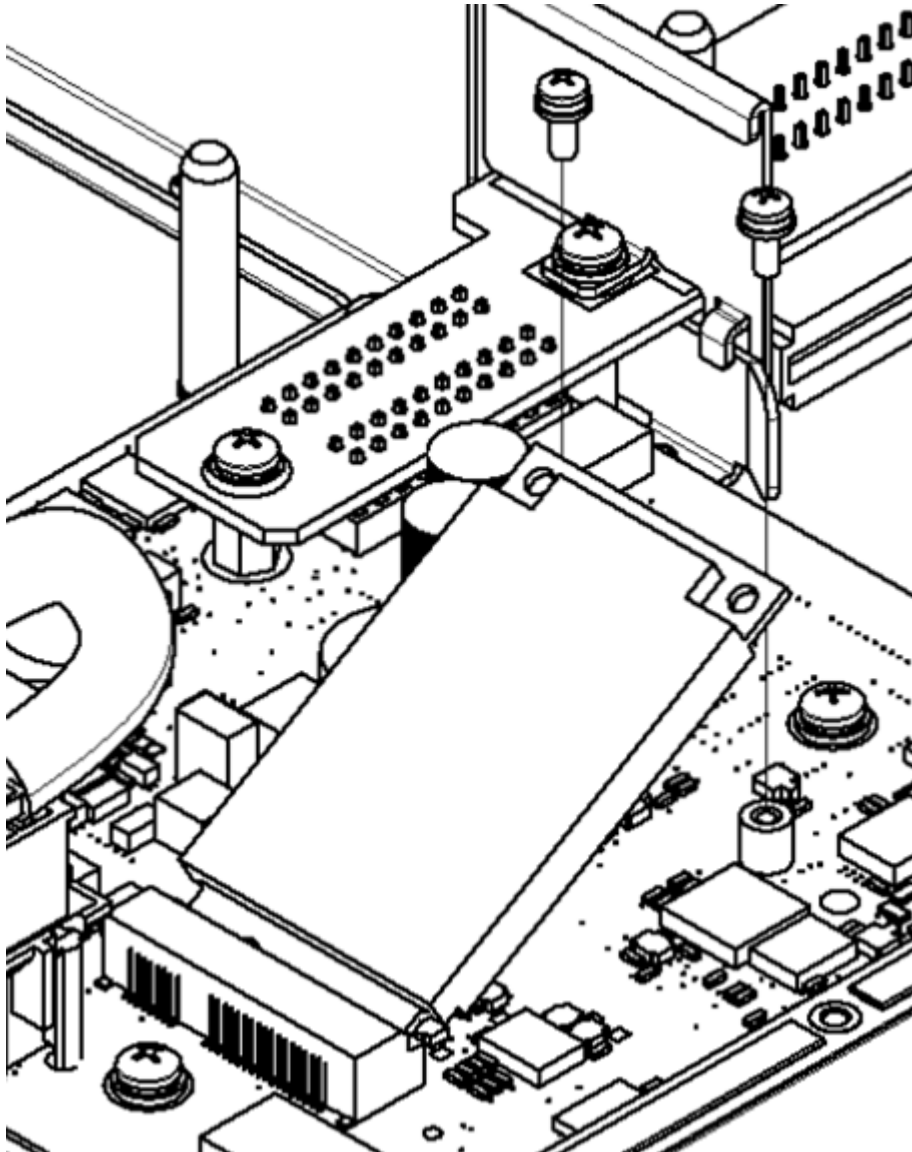
➤ *To remove the MSATA SSD:*

Step 1: Carefully unscrew the 2 screws holding the SSD in place and save them.

Step 2: Carefully lift and remove the SSD module, as shown below.

Step 3: Remove the MSATA SSD.

Figure 9: SN2700 SSD Removal

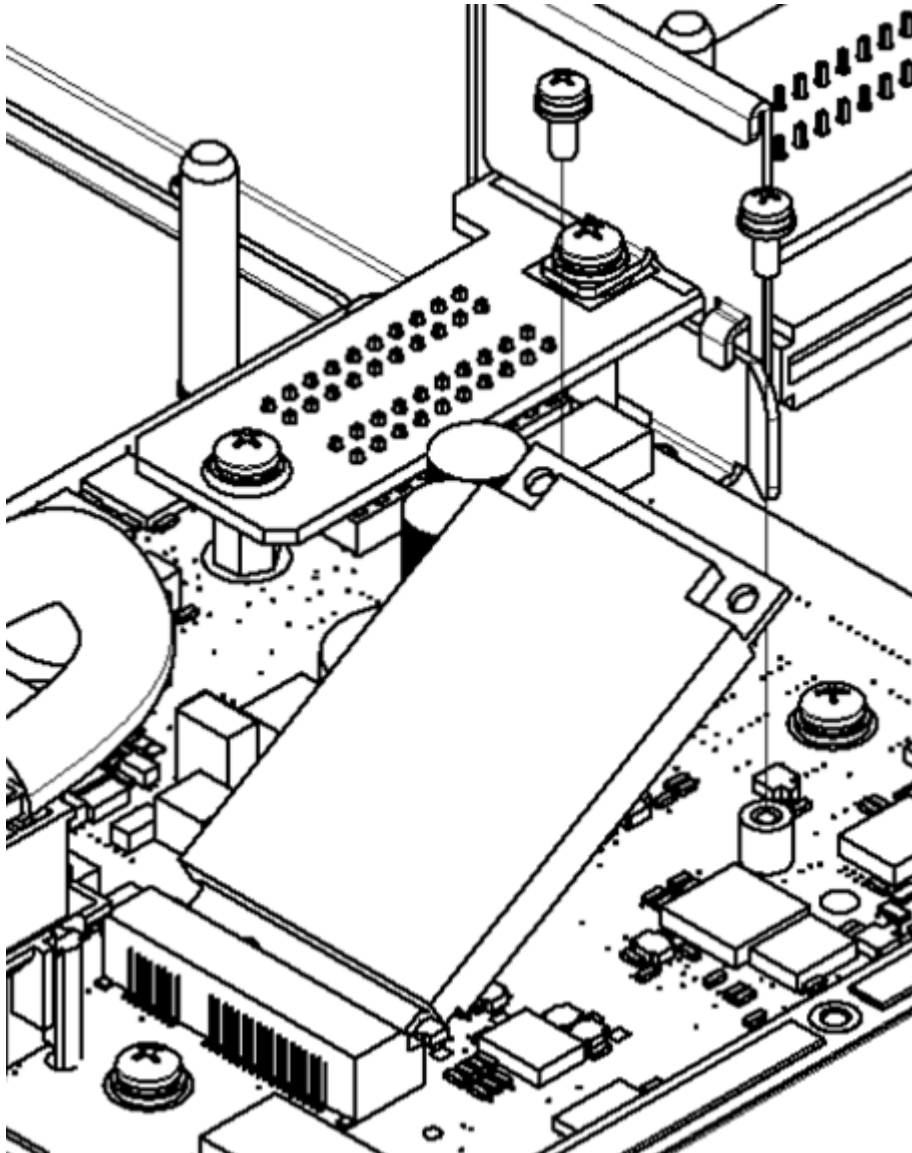


2.3 Installing a New MSATA SSD in the Switch

➤ *To install a new MSATA SSD in the switch:*

Step 1: Insert the new SSD to the switch, and secure the module by re-using the previously removed screws. Use a calibrated torque screwdriver set to 0.16 Nm (allowed variation ± 0.03 Nm).

Figure 10: Installing the SSD in the Switch



3 Switch Reassembly

3.1 SN2410 Switch System

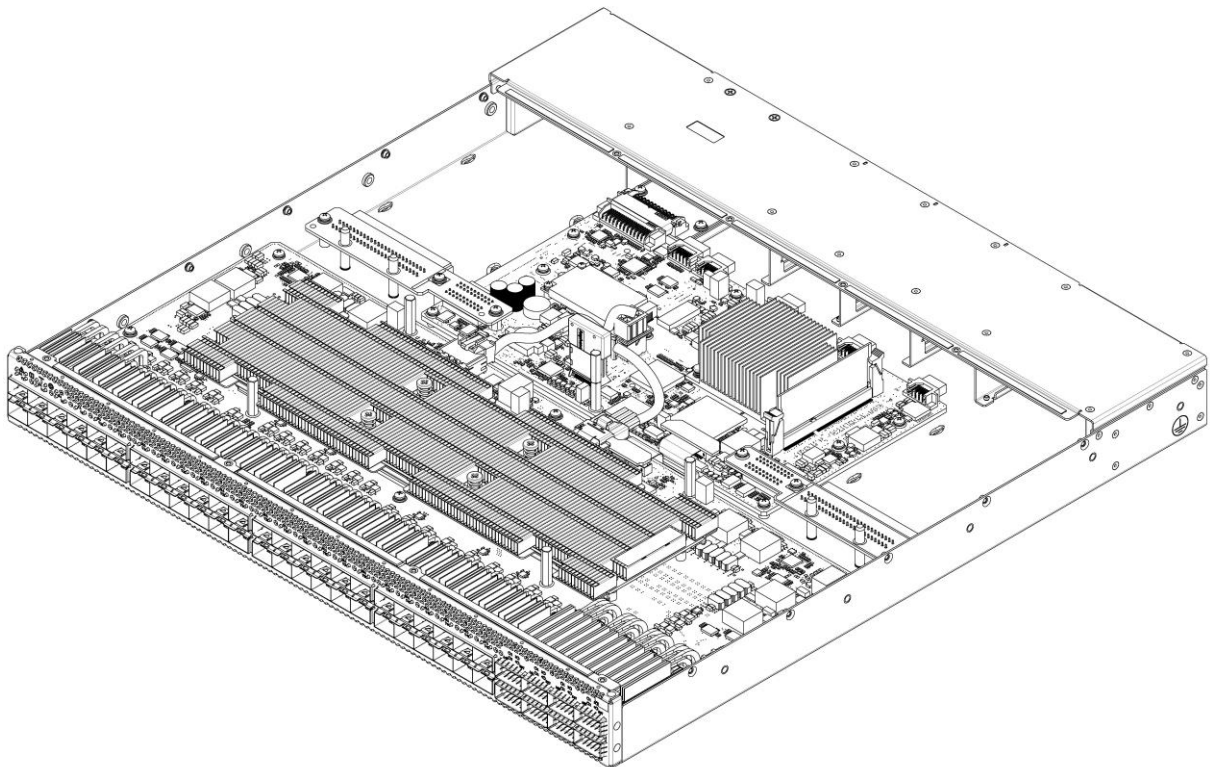
➤ *Before reassembling the switch:*

Step 1: Carefully lift the switch and turn it over.

Step 2: Gently shake the switch to make sure there are no unconnected elements inside.

Step 3: Carefully return the switch to the table.

Figure 11: SN2410 Turn Over



3.1.1 Cover Reassembly

➤ *To reassemble the switch cover:*

Step 1: Carefully return the cover onto the switch .Pay attention to the orientation.

Step 2: Secure the cover by reusing 8 of the previously removed flat head screws. Use a calibrated torque screwdriver set to 0.7 Nm (allowed variation ± 0.05 Nm).

Step 3: Pay attention to the screws tightening order shown below.

Figure 12: Installing the SN2410 Cover – First 8 Screws

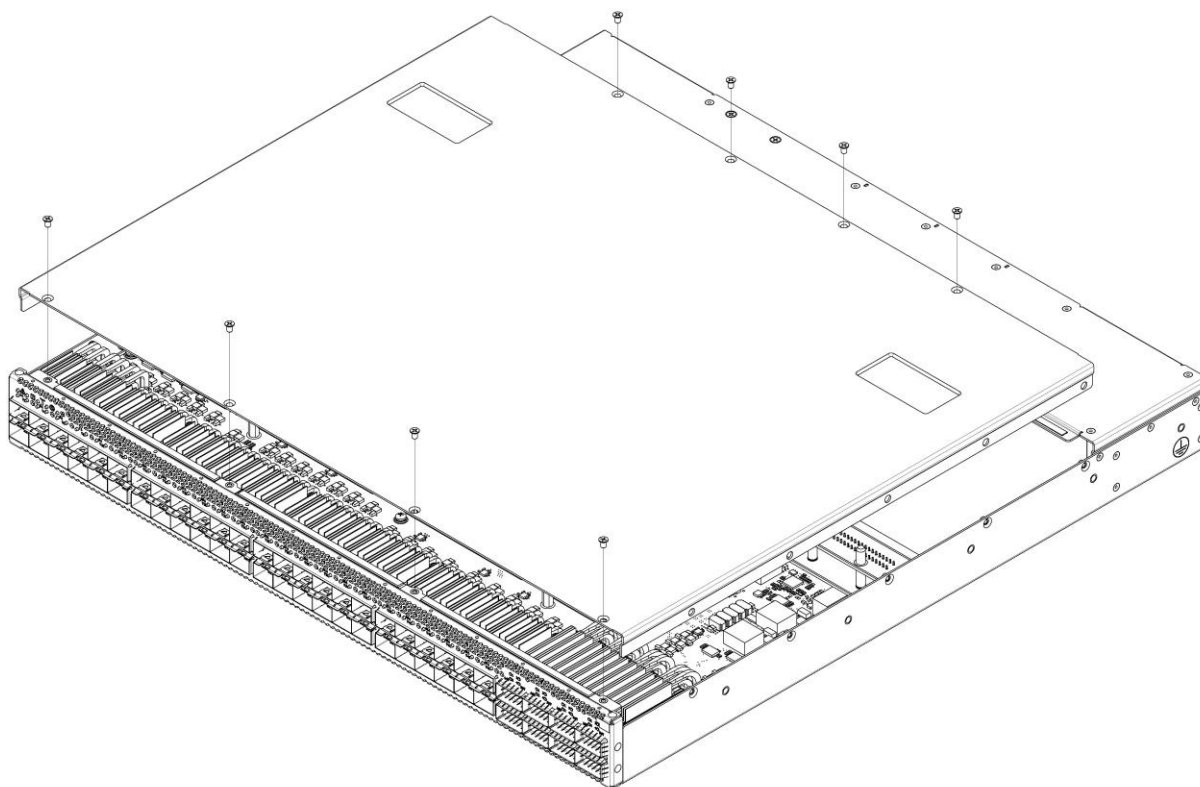
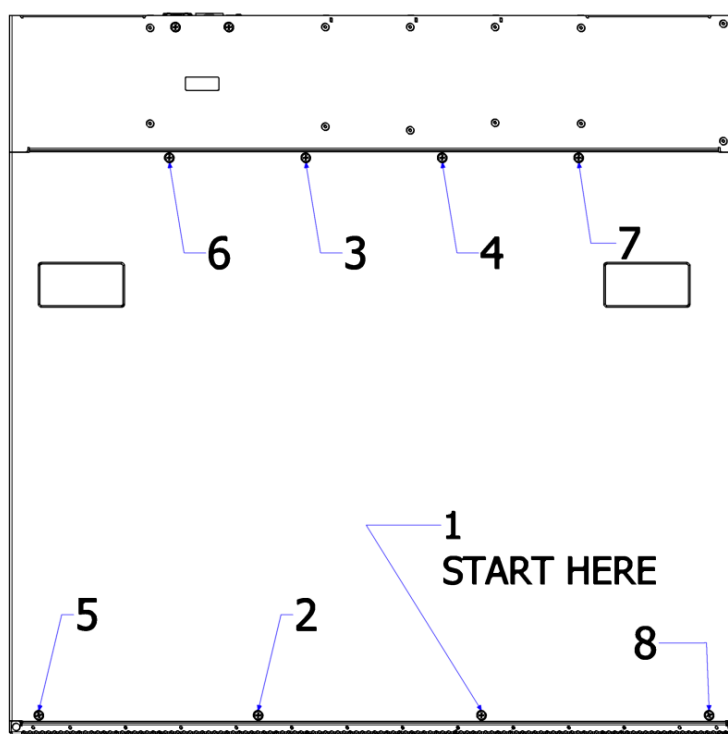
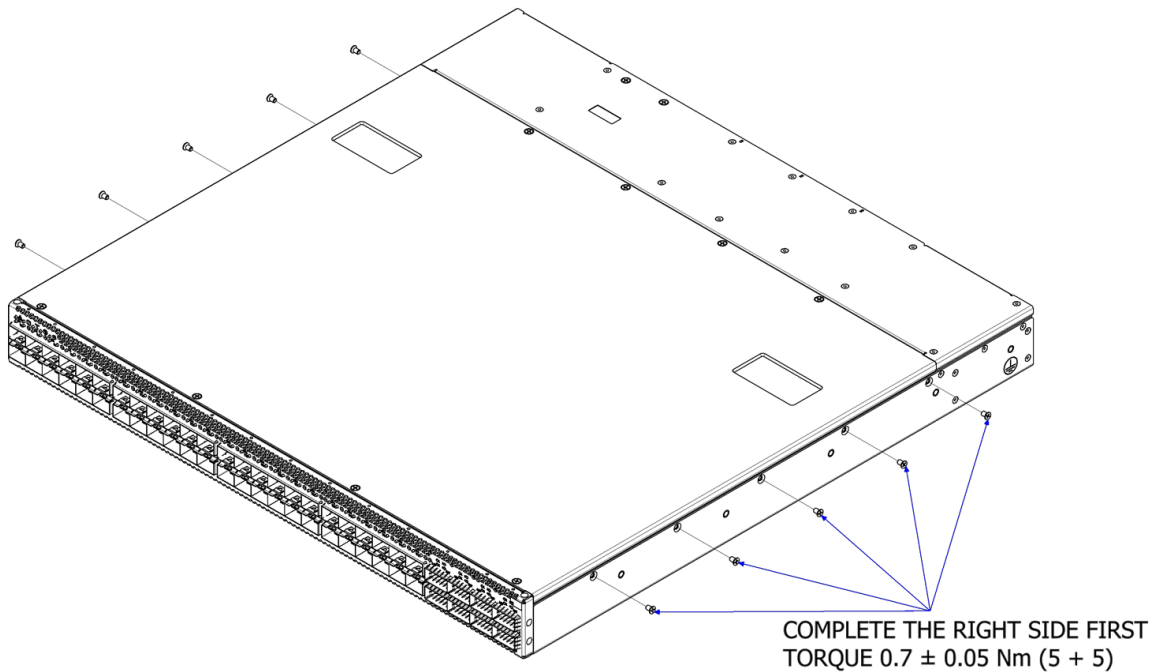


Figure 13 SN2410 Order of 8 First Cover screws



Step 4: Continue unscrewing the cover's screws. Pay attention to the screws tightening order. Use a calibrated torque screwdriver set to 0.7 Nm (allowed variation ± 0.05 Nm).

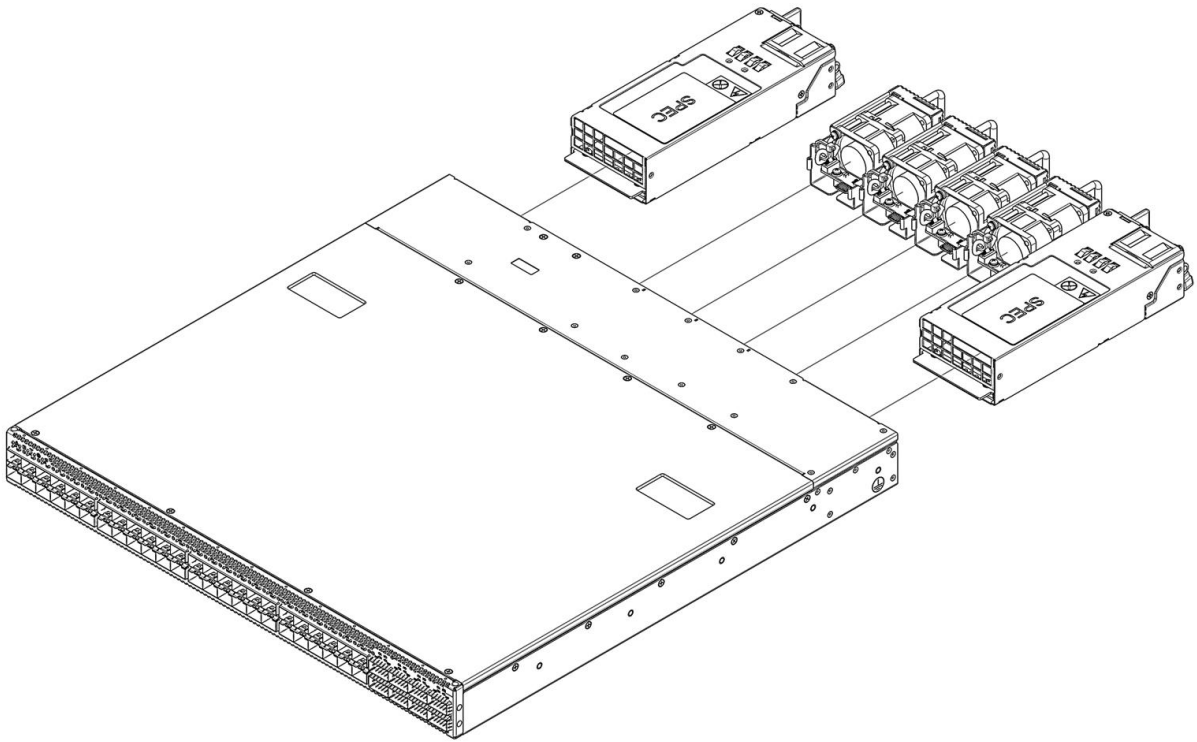
Figure 14: SN2410 Cover – Installing the Last 10 Screws



3.1.2 FRUs Reassembly

- Step 1:** Insert the FRUs to the designated slots. There is no importance to the insertion order.
- Step 2:** Return the switch to its original state - Repack the unit or reinstall it in the rack. Follow the “Installation” chapter in the [Hardware User Manual](#).

Figure 15: SN2410 Installing FRUs



3.2 SN2700 Switch System

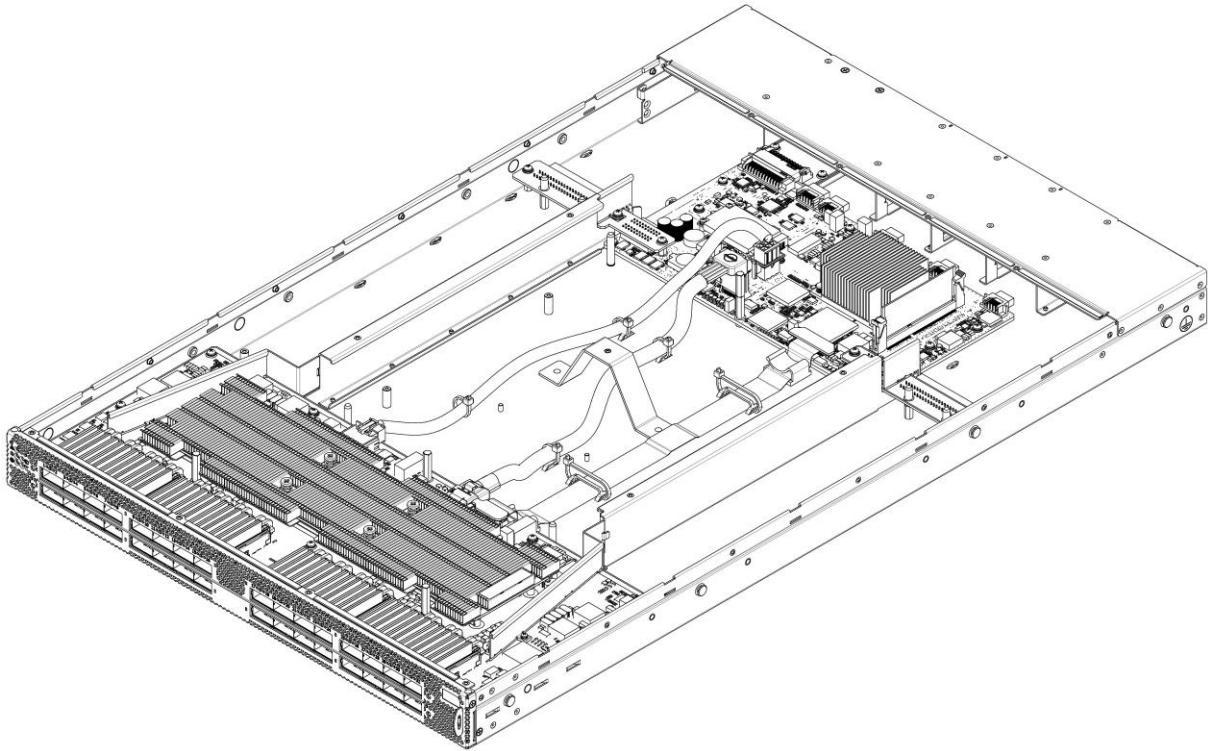
➤ *Before reassembling the switch:*

Step 1: Carefully lift the switch and turn it over.

Step 2: Gently shake the switch to make sure there are no unconnected elements inside.

Step 3: Carefully return the switch to the table.

Figure 16: SN2700 Turn over



3.2.1 Cover Reassembly

- Step 1:** Carefully return the cover onto the switch .Pay attention to the orientation.
- Step 2:** Secure the cover by reusing 13 of the previously removed flat head screws. Use a calibrated torque screwdriver set to 0.7 Nm (allowed variation ± 0.05 Nm).
- Step 3:** Pay attention to the screws tightening order shown below.

Figure 17: SN2700 Cover Assembly – Order of the first 13 Screws

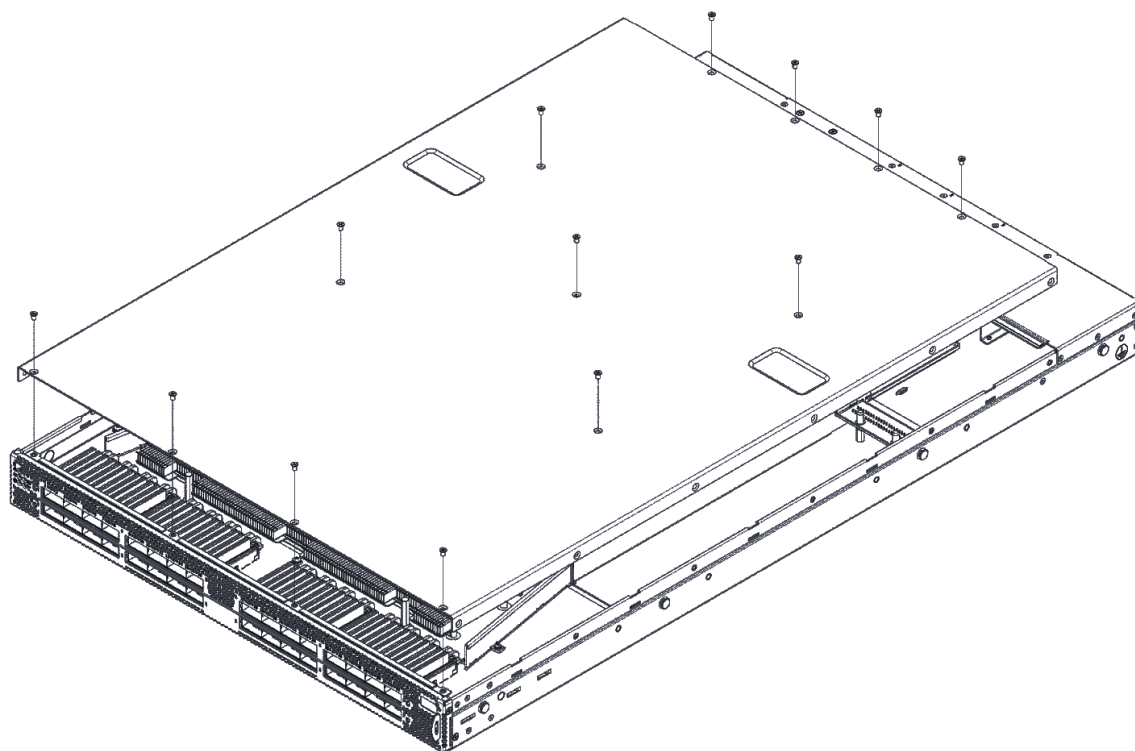
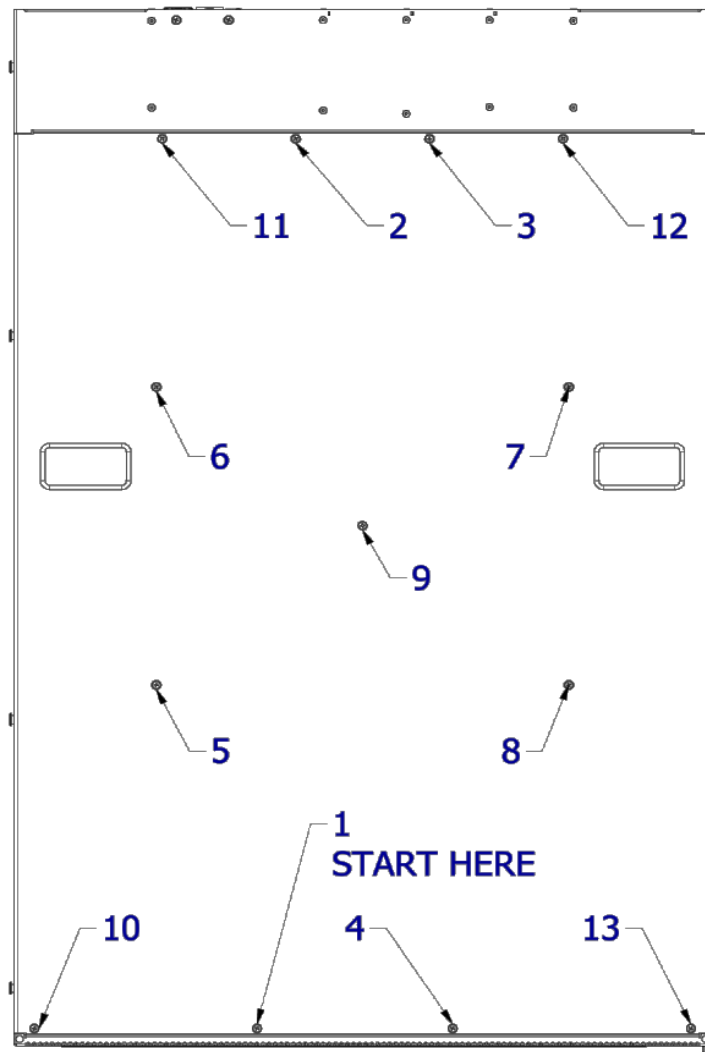
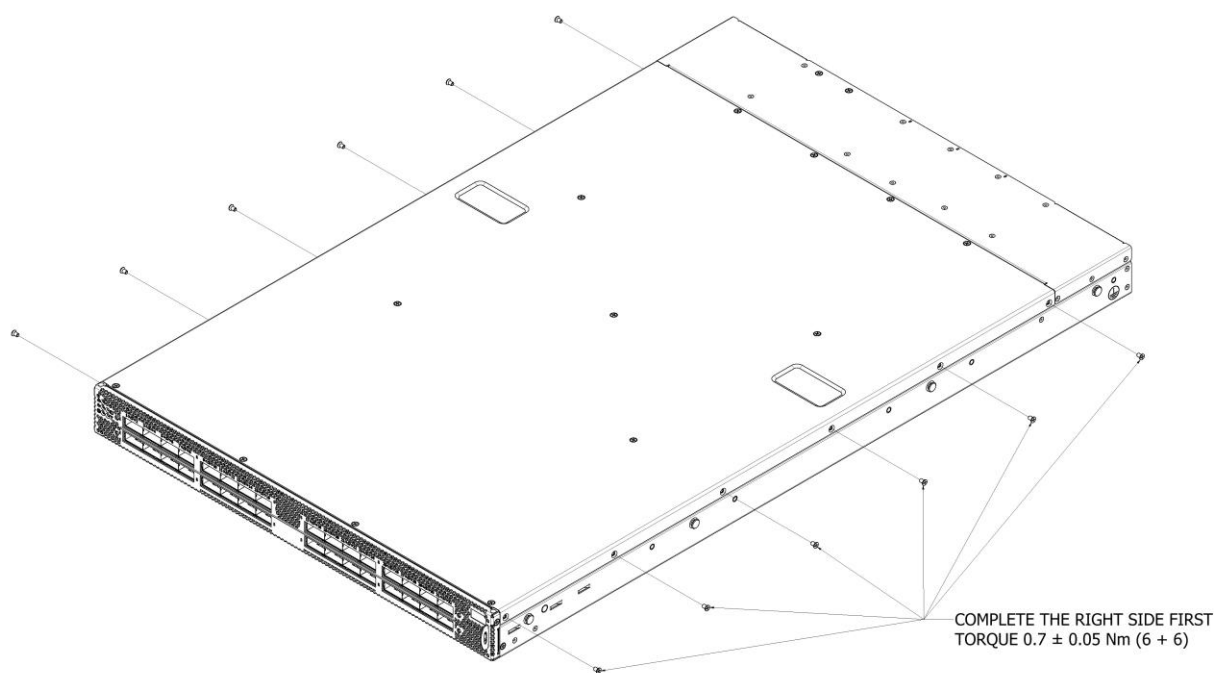


Figure 18: SN2700 Cover Assembly - First 13 Screws



Step 4: Continue tightening the cover screws. Pay attention to screws tightening order! Use calibrated torque screwdriver set to 0.7 Nm (allowed variation ± 0.05 Nm).

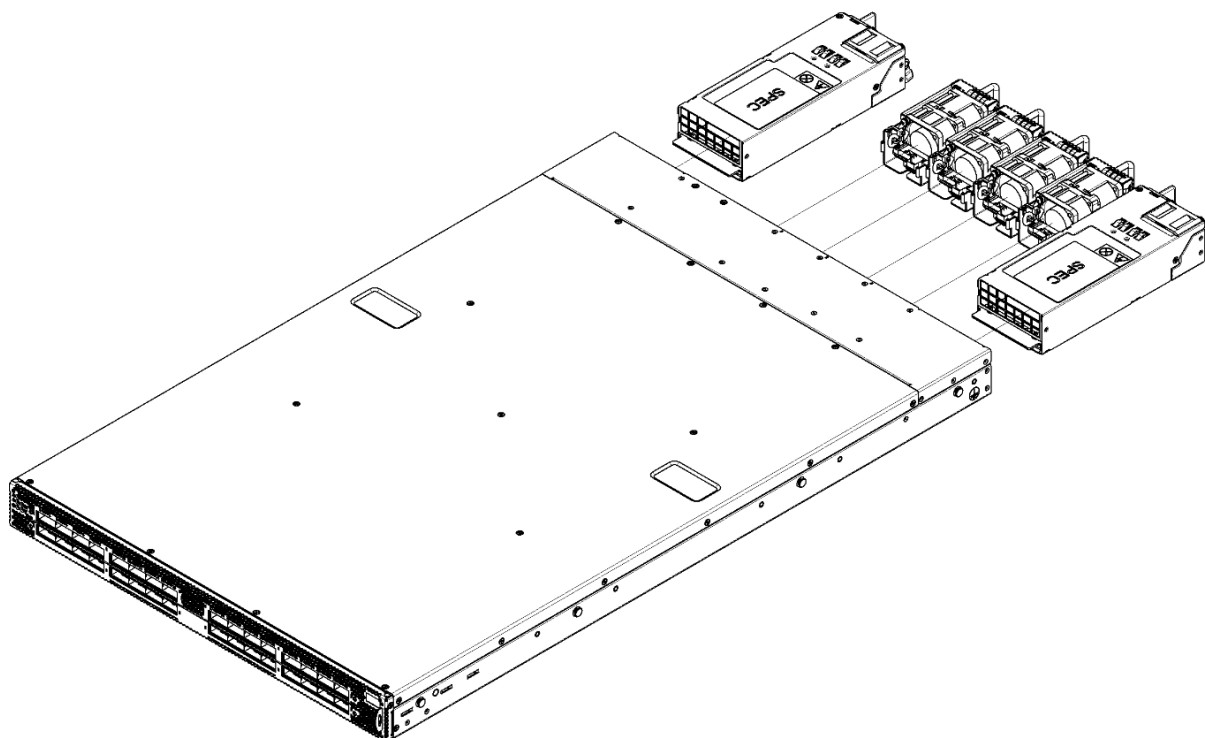
Figure 19: SN2700 – Installing the Last 12 Screws of the Cover



3.2.2 FRUs Reassembly

- Step 1:** Insert the FRUs. There is no importance to the insertion order or position.
- Step 2:** Return the switch to its original state: Install it to in the rack. Follow the “Installation” section in the [Hardware User Manual](#).

Figure 20: Installing the FRUs in SN2700

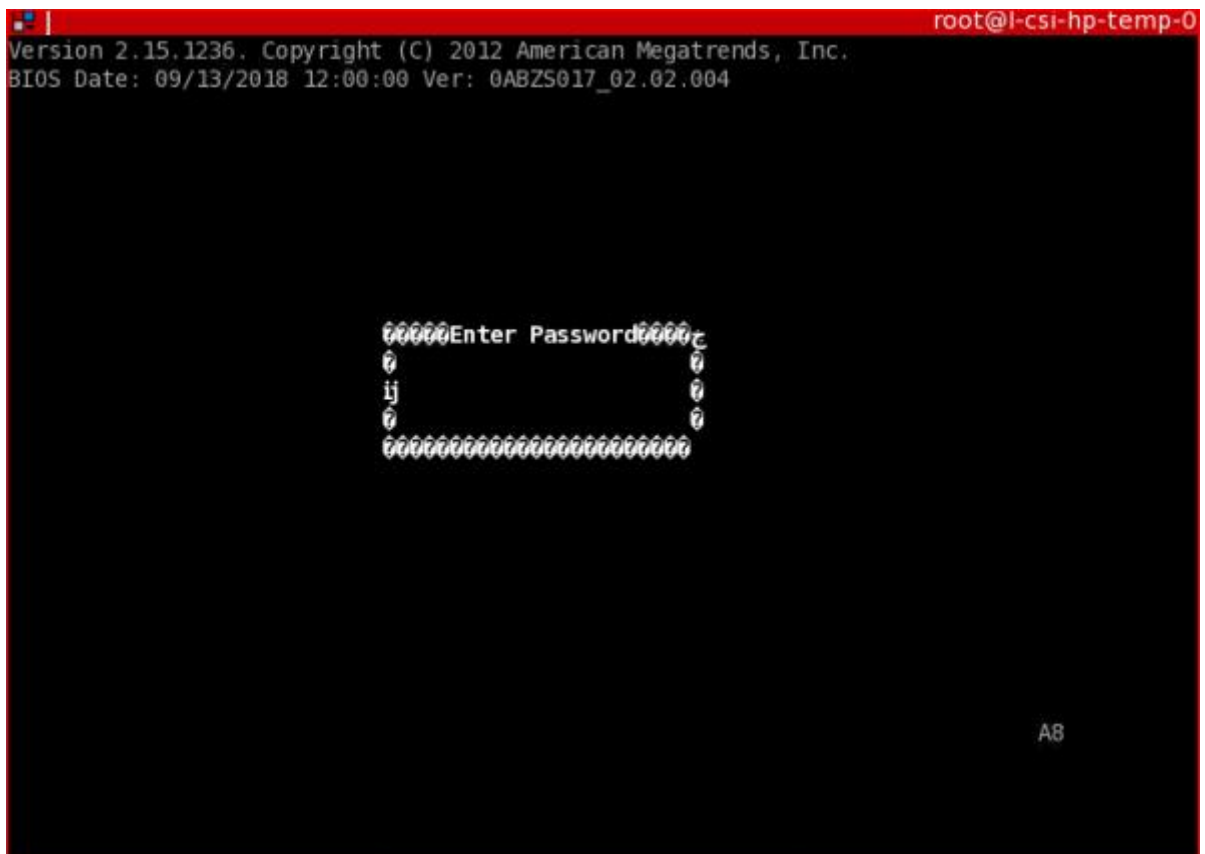


4 Booting the Switch with the New SSD Using an ONIE-Recovery USB

4.1 Switch Boot

- Step 1:** Connect the USB drive with the Bootable ONIE Recovery image to the switch.
- Step 2:** Power-on the switch with no data cables attached. Make sure that the console and MGMT ports are connected.
- Step 3:** Press Ctrl+B to enter the BIOS. If the BIOS is password protected, type “admin”. If this password fails, contact Mellanox Support.

Figure 21 BIOS Password Prompt



- Step 4:** Navigate to the “Save & Exit” menu, and choose the **Boot Override** option: <USB driver you plugged in>

Figure 22: BIOS BOOT Override to USB



Step 5: Choose the “ONIE: Embed ONIE” option.

Figure 23: GRUB MENU ONIE: EMBED ONIE



Wait while ONIE is installed to the SSD before continuing to the next step.

Step 6: After the switch has booted up, remove the USB device from the switch.

Step 7: Reboot the switch, using the ONIE command:

```
ONIE:/ # reboot
```

Step 8: Install the desired OS, using the **onie-nos-install** command.

Step 9: If there is no DHCP server that can assign an IP address to the switch MGMT port, configure the eth0 port with the needed IP address, and route settings (if needed) – in order to obtain IP connectivity to a server from which the switch can get the NOS installation bin file.

```
ONIE:/ # onie-stop
## if DHCP is not available:
ONIE:/ # ip addr add <x.x.x.x/y.y> dev eth0
ONIE:/# ip route add default via <ip-address-gateway>

Example:

ONIE:/ # onie-stop
## if DHCP is not available:
ONIE:/ # ip addr add 10.7.156.100/24 dev eth0
ONIE:/# ip route add default via 10.7.156.1
```

Step 10: Copy the required ONIE NOS installer bin file to the switch, using SCP:

```
From a server:
scp X86_64-3.9.0300-installer.bin root@<switch ip>:/tmp/

After copying the bin file to the switch use the onie-nos-install
command Switch side:

onie-nos-install /tmp/X86_64-3.9.0300-installer.bin
```

Figure 24: onie-nos-install

```
ONIE:/ # onie-nos-install /tmp/X86_64-3.9.0300-installer.bin
discover: installer mode detected.
Stopping: discover... done.
ONIE: Executing installer: /tmp/X86_64-3.9.0300-installer.bin
Verifying image checksum ... OK.
Preparing image archive ... OK.
MLNX OS Installer: platform: x86_64-mlnx_x86-r5.0
EXT4-fs (sda3): couldn't mount as ext3 due to feature incompatibilities
===== Invoking MLNX OS installer via kexec
===== Network will disconnect, further logs may be reviewed via serial console
kexec_core: Starting new kernel
```

4.2 Switch Configuration Restore - Onyx

After the switch boots up with the software, restore the switch configuration based on the NOS configuration restore best practices.

4.2.1 Onyx – Configuration Restore

➤ *To restore a text configuration file:*

Step 1: Use the “**configuration text fetch <download url>**” command to download the text configuration file to the switch:

```
(config)# configuration text fetch
scp://user:password@<server>:/path_to_file/switch.conf
```

Step 2: Use the **configuration text file <file name> apply verbose** command to apply the configuration from the file:

```
(config)# configuration text file <filename> apply verbose
```

Step 3: Save the applied configuration, using “**configuration write**”:

```
(config)# configuration write
```

➤ *To restore a binary configuration file:*

Step 4: Use the “**configuration fetch <download url>**” command to download the binary configuration file to the switch:

```
(config)# configuration fetch  
scp://user:password@<server>:/path_to_file/switch.bin
```

Step 5: Use the “**configuration switch-to <filename>**” command to apply the configuration from the file – This will automatically reload the switch to apply the new configuration from the binary file:

```
(config) # configuration switch-to <file name>
```

4.2.2 Cumulus – Configuration Restore

➤ *Cumulus 4.1.x and above*

Follow the procedure at

<https://docs.cumulusnetworks.com/cumulus-linux-41/Installation-Management/Back-up-and-Restore/#config-backup-command-examples>

➤ *Cumulus 3.x.x*

Step 1: Copy the previously backup files from the remote server to the switch

Step 2: Restart the switch

4.2.3 Connecting the Cables

After the switch has booted up with its full restored configuration, connect the rest of the cables to the switch.