Smart-1 Installing and Removing the SAN Card

This document is for appliance models Smart-1 5050 and Smart-1 5150.

Safety Instructions

• Lift the appliance with assistance. To avoid injury, do not attempt to lift the appliance by yourself.

• Opening or removing the appliance cover, while the appliance is powered on may expose you to a risk of electric shock.

• Do not operate the appliance without the cover for more than five minutes. Operating the appliance without the cover can result in component damage.

• Many repairs may only be done by a certified service technician. Only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the technical support.

• We recommend that you always use an antistatic mat and antistatic strap on your wrist, while working on components inside the appliance.

• To ensure proper operation and cooling, all bays in the appliance and cooling fans must be always populated with a component or a blank.

For more information, see the Enterprise Products Safety, Environmental, and Regulatory Information booklet supplied in the original appliance shipping carton.
Important - We recommend that only experienced personnel install or remove hardware components. Installing or removing components incorrectly can permanently damage the Security Appliance.

Important - Make sure that you are electromagnetically grounded when working with hardware components of the appliance. ESD (electrostatic discharge) can damage the appliance.

Hardware Components

Smart-1 5050

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Front panel</td>
</tr>
<tr>
<td>2</td>
<td>Riser 1</td>
</tr>
<tr>
<td>3</td>
<td>Riser 2</td>
</tr>
<tr>
<td>4</td>
<td>Rear panel</td>
</tr>
</tbody>
</table>
Smart-1 5150

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
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<tr>
<td>1</td>
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</tr>
<tr>
<td>3</td>
<td>Rear panel</td>
</tr>
</tbody>
</table>

**Procedure**

Use the relevant install or replace workflow for your appliance. For each step in the workflow, follow the instructions as described in the subsequent sections of this guide.

To install a new expansion SAN card on Smart-1 5050 appliances:

1. Prepare the appliance with a shut down, halt and disconnection of power.
2. Remove the riser.
3. Replace the long bracket on the SAN card with a smaller bracket. See *Replacing the Bracket on a SAN Card* at the end of the guide.
4. Install a new expansion SAN card into the riser.
5. Install the riser.
6. Reassemble the appliance.
7. Install a transceiver.

To install a new expansion SAN card on Smart-1 5150 appliances:
1. Prepare the appliance with a shut down, halt and disconnection of power.
2. Install a new expansion SAN card into the riser.
   We recommend that you populate the bottom-most slot first.
3. Reassemble the appliance.
4. Install a transceiver.

To replace an existing expansion SAN card on Smart-1 5050 appliances:
1. Prepare the appliance with a shut down, halt and disconnection of power.
2. Remove the riser.
3. Remove the existing expansion SAN card from the riser.
4. Replace the long bracket on the new SAN card with a smaller bracket.
   See Replacing the Bracket on a SAN Card at the end of the guide.
5. Install a new expansion SAN card into the riser.
6. Install the riser.
7. Reassemble the appliance.
8. Install a transceiver.

To replace an existing expansion SAN card on Smart-1 5150 appliances:
1. Prepare the appliance with a shut down, halt and disconnection of power.
2. Remove the existing expansion SAN card from the riser.
3. Install a new expansion SAN card into the riser.
4. Reassemble the appliance.
5. Install a transceiver.
Preparing the Appliance

To prepare the appliance:

1. Make sure to follow the safety instructions.
2. Shut down the appliance:
   - In Gaia Portal:
     Go to **Maintenance > Shut Down**, and click **Halt**
   - In Gaia Clish:
     Run: `halt`
3. Open the retention strap that secures the power cables to the PSUs. This example shows AC PSUs:

![Image of AC PSUs]

4. If AC PSUs are installed in the appliance:
   Disconnect the power cables from the AC PSUs.
5. If DC PSUs are installed in the appliance:
   Disconnect the safety ground wires from the DC PSUs.
   Disconnect the DC power connectors from the DC PSUs.
6. Remove the hook-and-loop straps that hold and secure the system cables, if they interfere with the PSU removal.
7. Remove any other attached cables, if necessary.
8. Remove the appliance from the rack.
   See the relevant *Installing the Telescoping Rails* booklets for illustrated installation procedures:
   Smart-1 525 and Smart-1 5050 Telescoping Rails
9. Put the Electrostatic Discharge (ESD) grounding strap on your wrist and attach the other end to a grounding point.

10. Remove the appliance cover:

   a) Use a flat or a Phillips head screwdriver to rotate the latch release lock counter-clockwise to the unlocked position.

   b) Lift the latch.

   c) Slide the cover back.

      The tabs on the cover should disengage from the guide slots on the appliance.

   d) Hold the cover on both sides and lift the cover away from the appliance.

**Removing the Riser**

**Smart-1 5050**

Hold the touch points and lift the riser, from the riser connector, on the system board.

Removing expansion riser 1:
Removing expansion riser 2:

**Smart-1 5150**

Press the release latches, and lift the riser from the riser connector on the system board.
Installing an Expansion SAN Card into the Riser

Smart-1 5050 and Smart-1 5150

1. Unpack the expansion SAN card and prepare it for installation.
   
   **Note** - If the appliance is a Smart-1 5050, see *Replacing the Bracket on a SAN card* at the end of the guide.

2. If applicable, lift/pull the expansion SAN card latch and remove the filler bracket.

3. Hold the card by its edges, and align the card edge connector with the expansion SAN card connector on the riser.

4. Insert the card edge connector firmly into the expansion SAN card connector until the card is fully seated.

5. Close/push the expansion SAN card latch.

Installing an expansion SAN card into the expansion riser 1 on Smart-1 5050:
Installing an expansion SAN card into the expansion riser 2 on Smart-1 5050:

Installing an expansion SAN card into the expansion riser 1 on Smart-1 5150:
We recommend that you populate the bottom-most slot first.
Removing an Expansion SAN Card from the Riser

Smart-1 5050 and Smart-1 5150

1. If applicable, lift the expansion SAN card latch(es) out of the slot.

2. Hold the expansion SAN card by its edges, and pull the card until the card edge connector disengages from the expansion SAN card connector on the riser.

   **Note** - If you do not immediately install a replacement expansion SAN card when a SAN card fails, leave the failed SAN card in place to ensure proper appliance cooling until the new SAN card is installed.

Removing an expansion SAN card from the expansion riser 1 on Smart-1 5050:
Removing an expansion SAN card from the expansion riser 2 on Smart-1 5050:

Removing an expansion SAN card from the expansion riser 1 on Smart-1 5150:
Installing the Riser

**Smart-1 5050**

1. Holding the touch points, align the riser with the connector and the riser guide pin on the system board.
2. Lower the riser into place until the riser connector is fully seated in the connector.

Installing expansion riser 1:

![Image showing installation process]

Installing expansion riser 2:

**Smart-1 5150**

Align the guide rails on the riser with the standoffs on the side of the system.
Lower the riser into the system until the riser connector engages with the connector on the system board.

Reassembling the Appliance

To reassemble the appliance:

1. Install the cover.
   a) Make sure all internal cables are routed correctly and connected, and no tools or extra parts are left inside the system.
   b) Align the tabs on the cover with the guide slots on the appliance.
   c) Push the latch down.
   d) Slide the cover forward.
      The tabs on the cover should engage with the guide slots on the appliance.
      The latch should lock into place.
   e) Use a flat or Phillips head screwdriver to rotate the latch release lock clockwise to the locked position.
2. Install the appliance into the rack.
   See the relevant *Installing the Telescoping Rails* booklets for illustrated installation procedures:
   Smart-1 525 and Smart-1 5050 Telescoping Rails
   Smart-1 5150 Telescoping Rails

3. If you have transceivers for your expansion SAN card, install them now. See Installing a Transceiver.
   If not, install them later.

4. If AC PSUs are installed in the appliance:
   Connect the power cables from the AC PSUs.

5. If DC PSUs are installed in the appliance:
   Connect the safety ground wires from the DC PSUs.
   Connect the DC power connectors from the DC PSUs.

6. If you opened the hook-and-loop straps, close them to secure the system cables.

7. Make a loop and secure the power cables to the PSUs using the retention strap.
   This example shows AC PSUs:

8. Press the **Power** button on the front panel to turn on the Security Appliance.
Replacing a Transceiver

If your expansion SAN card contains removable transceivers, you can install and replace these transceivers.

**Note** - The optical transceivers on the SAN card are delicate.

- Remove and install the transceivers carefully.
- Use ESD (Electrostatic Discharge) precautions such as an antistatic floor mat and an antistatic wrist strap.
- Store transceivers in a safe place using ESD (Electrostatic Discharge) precautions such as antistatic bags.

To install a transceiver:
1. Push the transceiver into an expansion SAN card port gently until it snaps into position.
2. Turn the transceiver latch lever up to lock into the expansion SAN card.
3. Connect the fiber optic cable to the transceiver.

To remove a transceiver:
1. Disconnect the fiber optic cables from the transceiver.
2. Pull the latch lever down to release the transceiver.
3. Gently, pull the transceiver out of the expansion SAN card.
Attaching Cables

The Emulex Host Bus Adapter (16GFC) has two ports (Port 0 and Port 1) for fiber optic cables.

These tables show the supported cables with length limitations for 16GFC.

**Multimode Fiber Optic Cables with Short-Wave Lasers**

<table>
<thead>
<tr>
<th>Fiber-Optic Cable</th>
<th>Maximum Length</th>
<th>Min Length</th>
<th>Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM4: Multimode 50/125 micron fiber (4700 MHz*km bandwidth cable)</td>
<td>4GFC: 0.5m to 400m 8GFC: 0.5m to 190m 16GFC: 0.5m to 125m</td>
<td>0.5m</td>
<td>LC</td>
</tr>
<tr>
<td>OM3: Multimode 50/125 micron fiber (2000 MHz*km bandwidth cable)</td>
<td>4GFC: 0.5m to 380m 8GFC: 0.5m to 150m 16GFC: 0.5m to 100m</td>
<td>0.5m</td>
<td>LC</td>
</tr>
<tr>
<td>OM2: Multimode 50/125 micron fiber (500 MHz*km bandwidth cable)</td>
<td>4GFC: 0.5m to 150m 8GFC: 0.5m to 50m 16GFC: 0.5m to 35m</td>
<td>0.5m</td>
<td>LC</td>
</tr>
<tr>
<td>OM1: Multimode 62.5/125 micron fiber (200 MHz*km bandwidth cable)</td>
<td>4GFC: 0.5m to 70m 8GFC: 0.5m to 21m 16GFC: 0.5m to 15m</td>
<td>0.5m</td>
<td>LC</td>
</tr>
</tbody>
</table>
**Viewing LEDs on the SAN Card**

After the cabling is complete, make sure to see the LEDs on each port.

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### Self-Test Conditions and Results for the Ports

<table>
<thead>
<tr>
<th>Green LED</th>
<th>Yellow LED</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>Off</td>
<td>No SFP modules installed or boot failure (dead board)</td>
</tr>
<tr>
<td>Off</td>
<td>On</td>
<td>POST failure (dead board)</td>
</tr>
<tr>
<td>Off</td>
<td>Slow blink</td>
<td>Boot failure after POST</td>
</tr>
<tr>
<td>Off</td>
<td>Flashing</td>
<td>POST processing in progress</td>
</tr>
<tr>
<td>On</td>
<td>Off</td>
<td>Failure in common code module</td>
</tr>
<tr>
<td>On</td>
<td>On</td>
<td>Failure in common code module</td>
</tr>
<tr>
<td>On</td>
<td>2 Fast blinks</td>
<td>Normal (link up at 4GFC)</td>
</tr>
<tr>
<td>On</td>
<td>3 Fast blinks</td>
<td>Normal (link up at 8GFC)</td>
</tr>
<tr>
<td>On</td>
<td>4 Fast blinks</td>
<td>Normal (link up at 16GFC)</td>
</tr>
<tr>
<td>On</td>
<td>5 Fast blinks</td>
<td>Normal (link up at 32GFC)</td>
</tr>
<tr>
<td>Green LED</td>
<td>Yellow LED</td>
<td>State</td>
</tr>
<tr>
<td>------------</td>
<td>--------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Slow blink</td>
<td>Off</td>
<td>Normal link down</td>
</tr>
<tr>
<td>Fast blink</td>
<td>Fast blink</td>
<td>Beaconing</td>
</tr>
</tbody>
</table>

## Replacing the Bracket on a SAN Card

The Emulex LPe31002 Dual, 16GFC Host Bus Adapter SFP+ ships with the short bracket for the Smart-1 5050 appliance. The long bracket for the Smart-1 5150 appliance is in the carton.

If your appliance is a Smart-1 5150, you must replace the SAN card's bracket to make the card fit into the appliance. This applies to the Smart-1 5150 only.

**Note** - The optical transceivers on the SAN card are delicate.

- Remove and install the transceivers carefully.
- Use ESD (Electrostatic Discharge) precautions such as an antistatic floor mat and an antistatic wrist strap.

### To remove the transceivers:

1. Pull the bail (handle) out and down to release the latch for a typical optical transceiver.
2. Pull the transceiver gently (without force).
3. The transceiver slides out easily after the latch releases.

4. Remove the second optical transceiver.
5. Store the transceivers in a safe place using ESD (Electrostatic Discharge) precautions such as antistatic bags.

To remove the bracket:

1. Remove the mounting bracket screws from the top of the adapter.

2. Remove the bracket.

3. Align the new bracket tabs with the holes in the adapter.

   **Note** -
   - Be careful not to push the bracket past the EMI (Electromagnetic Interference) compression tabs of the SFP+ (Small Form-Factor Pluggable) transceiver cages.
   - Make sure that the LEDs for the SAN card ports align properly with the holes in the bracket.

4. Reinstall the screws to attach the new bracket to the SAN card.

To reinstall the transceivers:

1. Slide the transceiver into the housing.

2. Gently engage the latch until it clicks.

3. Push the bail (handle) back into place.