Smart-1 Installing and Removing Memory

This document is for appliance models Smart-1 525, 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 in Smart-1 5050 appliances.
- For proper heat dissipation and cooling:
  - Smart-1 525 appliances contain a cooling air shroud that covers the memory module sockets.
  - Smart-1 5050 appliances contain DIMM blank fillers in memory sockets that are not occupied.
  - Smart-1 5150 appliances contain a cooling air shroud that covers the empty memory module sockets that are not occupied.
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 Management 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-1 525**

<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>4 Memory module sockets (located under the cooling air shroud)</td>
</tr>
<tr>
<td>3</td>
<td>Rear panel</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>Front panel</td>
</tr>
<tr>
<td>2</td>
<td>24 Memory module sockets</td>
</tr>
<tr>
<td>3</td>
<td>Rear panel</td>
</tr>
</tbody>
</table>
### Smart-1 5150

<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>24 Memory module sockets (located under the cooling air shroud)</td>
</tr>
<tr>
<td>3</td>
<td>Rear panel</td>
</tr>
</tbody>
</table>
About Memory DIMM Sockets

The memory sockets have black and white colored ejectors. In the appliance configuration diagrams, note that:

- The view shown is always from the top.
- The front panel of the appliance is always at the bottom of the diagram.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Memory sockets with DIMMs installed" /></td>
<td>Memory sockets with DIMMs installed</td>
</tr>
<tr>
<td><img src="image" alt="Memory sockets with DIMM blank fillers installed in Smart-1 5050 appliances" /></td>
<td>Memory sockets with DIMM blank fillers installed in Smart-1 5050 appliances or Empty memory sockets in Smart-1 5150 appliances</td>
</tr>
</tbody>
</table>

**Important** - In Smart-1 5050 appliances, DIMM blank fillers contribute to proper heat dissipation and cooling.

To ensure proper system cooling, DIMM blank fillers must be installed in any memory socket that is not occupied. Remove DIMM blank fillers only if you intend to install DIMMs in those sockets.

In Smart-1 5150 appliances, the cooling air shroud covers empty memory sockets and ensures proper cooling.
Smart-1 525 DIMM Configuration

The Smart-1 525 Security Management Appliance has a default memory configuration of 32GB: 4x8GB, with four DIMMs.

<table>
<thead>
<tr>
<th>To upgrade to</th>
<th>Use DIMMs</th>
<th>Procedure</th>
<th>Sockets</th>
</tr>
</thead>
<tbody>
<tr>
<td>64GB</td>
<td>4x16GB</td>
<td>Remove the four 8GB DIMMs and install four 16GB DIMMs in the same sockets.</td>
<td>A1-A4</td>
</tr>
</tbody>
</table>

The memory socket numbers, shown in the configuration diagrams, are marked on the cooling shroud and align with the respective memory sockets.

Default and Upgraded Configuration

Top View
(front of the Smart-1 525 is at the bottom of the diagram)
Smart-1 5050 and Smart-1 5150 DIMM Configuration

The Smart-1 5050 Security Management Appliance has a default memory configuration of 64GB: 8x8GB, with eight DIMMs.

<table>
<thead>
<tr>
<th>To upgrade to</th>
<th>Use DIMMs</th>
<th>Procedure</th>
<th>Sockets</th>
</tr>
</thead>
<tbody>
<tr>
<td>128GB</td>
<td>16x8GB</td>
<td>1. Remove the blank fillers from the sockets into which you will install new DIMMs. 2. Install an additional eight 8GB DIMMs. See the Upgraded Configuration diagram for the socket numbers.</td>
<td>16 out of 24</td>
</tr>
</tbody>
</table>

Note - Store the blank fillers for future use. If you remove a DIMM in Smart-1 5050, it must be replaced with a blank filler to ensure proper air flow.

The Smart-1 5150 Security Management Appliance has a default memory configuration of 128GB: 8x16GB, with eight DIMMs.

<table>
<thead>
<tr>
<th>To upgrade to</th>
<th>Use DIMMs</th>
<th>Procedure</th>
<th>Sockets</th>
</tr>
</thead>
<tbody>
<tr>
<td>256GB</td>
<td>16x16GB</td>
<td>Install an additional eight 16GB DIMMs. See the Upgraded Configuration diagram for the socket numbers.</td>
<td>16 out of 24</td>
</tr>
</tbody>
</table>

The memory socket numbers, shown in the configuration diagrams, are marked on the cooling shroud and align with the respective memory sockets.
**Default Configuration for Smart-1 5050 and Smart-1 5150**

Top View

(front of the Security Management Appliance is at the bottom of the diagram)

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**Important** - We recommend that you keep the DIMMs in the socket numbers as specified in the Default Configuration diagram. Changing the default configuration placement may impact performance.

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**Upgraded Configuration for Smart-1 5050 and Smart-1 5150**

Top View

(front of the Security Management Appliance is at the bottom of the diagram)
Important - We recommend that you place the DIMMs in the socket numbers as specified in the Upgraded Configuration diagram. Changing the upgrade configuration placement may impact performance.

Procedure

Memory Kit Contents

- Installation guide - **Smart-1 Installing and Removing Memory**
- Expansion DIMMs
- Electrostatic Discharge (ESD) grounding wrist strap (anti-static)

To install a new DIMM:

1. Prepare the appliance.
2. In Smart-1 525 and Smart-1 5150 appliances - Remove the cooling air shroud.
3. Remove a DIMM or DIMM blank filler (only Smart-1 5050 appliances contain blank fillers in unoccupied slots).
4. Install a DIMM.
5. In Smart-1 525 and Smart-1 5150 appliances - Install the cooling air shroud.
6. Reassemble the appliance.
7. Verify the memory configuration.
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:
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 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
   http://supportcontent.checkpoint.com/documentation_download?ID=58649
   Smart-1 5150 Telescoping Rails
   http://supportcontent.checkpoint.com/documentation_download?ID=58650
8. Put the Electrostatic Discharge (ESD) grounding strap on your wrist and attach the other end to a grounding point.

9. Remove the appliance cover:
   a) Using a flat or a Phillips head screwdriver, 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.

This example shows the Smart-1 525 cover:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Latch release lock</td>
</tr>
<tr>
<td>2</td>
<td>Latch</td>
</tr>
<tr>
<td>3</td>
<td>Cover</td>
</tr>
</tbody>
</table>
Removing the Cooling Air Shroud

1. Hold the cooling shroud at both ends.
2. Lift the cooling shroud away from the appliance.

**Smart-1 525**

*Note* - The guide on the cooling air shroud and the guide pin on the appliance wall must be aligned when installing the cooling shroud.
Removing a DIMM

⚠️ **Warning** - Allow the DIMMs to cool after you power off the system. Handle the memory DIMMs by the card edges and avoid touching the components or metallic contacts on the DIMM.

⚠️ **Caution** - To ensure proper system cooling, DIMM blank fillers must be installed in any memory socket that is not occupied in Smart-1 5050 appliances. Remove DIMM blank fillers only if you intend to install DIMMs in those sockets. The removal of a DIMM blank filler is similar to that of a DIMM.

**To remove a DIMM:**

1. Locate the appropriate memory socket.  
   **Caution** - Handle each DIMM only by the card edges, ensuring not to touch the middle of the DIMM or metallic contacts.

2. Push the ejectors outward on both ends of the memory socket to release from the socket.

3. Lift and remove the DIMM from the system.
Installing a DIMM

**Caution** - To ensure proper system cooling, DIMM blank fillers must be installed in any memory socket that is not occupied in Smart-1 5050 appliances. Remove DIMM blank fillers only if you intend to install DIMMs in those sockets.

To install a DIMM:

1. Locate the appropriate memory socket.
   
   **Caution** - Handle each DIMM only by the card edges, ensuring not to touch the middle of the DIMM or metallic contacts.
   
   **Caution** - To prevent damage to the DIMM or the memory socket during installation, do not bend or flex the DIMM. You must insert both ends of the DIMM simultaneously.

2. Open the ejectors on the memory socket outward to allow the DIMM to be inserted into the socket.

3. Align the edge connector of the DIMM with the alignment key of the memory socket, and insert the DIMM in the socket.
   
   **Caution** - Do not apply pressure at the center of the DIMM; apply pressure at both ends of the DIMM evenly.
   
   **Note** - The memory socket has an alignment key that enables you to install the DIMM in the socket in only one orientation.
4. Press the DIMM with your thumbs until the socket levers firmly click into place.
Installing the Cooling Air Shroud

Smart-1 525
1. Align the guide on the cooling shroud with the guide pin on the appliance wall.
2. Lower the air shroud into the appliance until it is firmly seated.

Smart-1 5150
1. Align the tabs on the air shroud with the slots on the appliance.
2. Lower the air shroud into the appliance until it is firmly seated.

Note - When firmly seated, the memory socket numbers marked on the air shroud will align with the respective memory sockets.
Reassembling the Appliance

To reassemble the appliance:

1. Make sure all internal cables are routed correctly and connected, and no tools or extra parts are left inside the system.
2. Align the tabs on the cover with the guide slots on the appliance.
3. Push the latch down.
4. Slide the cover forward - the tabs on the cover should engage with the guide slots on the appliance.
   The latch should lock into place.
5. Use a flat or Phillips head screwdriver to rotate the latch release lock clockwise to the locked position.

This example shows the Smart-1 525 cover:

<table>
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<tr>
<th>Item</th>
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</tr>
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<tbody>
<tr>
<td>1</td>
<td>Latch release lock</td>
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<td>2</td>
<td>Latch</td>
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6. 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
   http://supportcontent.checkpoint.com/documentation_download?ID=58649
   Smart-1 5150 Telescoping Rails
   http://supportcontent.checkpoint.com/documentation_download?ID=58650

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

8. 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.

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

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

11. Press the **Power** button on the front panel to turn on the Security Management Appliance.
Verifying the Memory Configuration

To make sure that the memory configuration is correct:

1. In the CLI, enter Expert mode.
2. Run: `# free -g`

Example output from Smart-1 5150 with 128GB of memory:

<table>
<thead>
<tr>
<th>Mem:</th>
<th>total</th>
<th>used</th>
<th>free</th>
<th>shared</th>
<th>buffers</th>
<th>cached</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mem:</td>
<td>125</td>
<td>125</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>-/+ buffers/cache:</td>
<td>125</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swap:</td>
<td>125</td>
<td>0</td>
<td>125</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note - The amount of installed memory is shown in the row named Mem under the column named total.

In the above example, 128GB of RAM are installed on the system. This corresponds to the 125GB of total memory shown by the `free` utility.