16000 and 26000 Appliances
Replacing Storage Devices

Important - Make sure that you are electromagnetically grounded when you perform these procedures. ESD (electrostatic discharge) can damage the appliance.

This document is for 16000 and 26000 appliance models. 
The figures in this document show the 3.5" HDD storage devices on 26000. 
Note that the 2.5" SATA SSD (7cm thick) and 2.5" U.2 SSD (15cm thick) will be different.
## Removing a Storage Device

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ejector handle</td>
</tr>
<tr>
<td>2</td>
<td>Power LED</td>
</tr>
<tr>
<td></td>
<td>• Off - Storage device power is off</td>
</tr>
<tr>
<td></td>
<td>• On (Green) - Storage device power is on</td>
</tr>
<tr>
<td>3</td>
<td>Activity LED</td>
</tr>
<tr>
<td></td>
<td>• Off - No storage device activity</td>
</tr>
<tr>
<td></td>
<td>• On (Amber) - Storage device activity</td>
</tr>
<tr>
<td>4</td>
<td>Storage device casing</td>
</tr>
</tbody>
</table>

**Note** - The illustration above shows a hard disk drive but applies to a solid state disk as well.
To remove a storage device:

1. On the storage device, push left on the ejector handle to unlock the device.
2. While holding the ejector handle, gently pull the storage device casing and remove the hard disk drive or solid state disk from the appliance.

⚠️ **Important** - Be careful when you pull the ejector handle to remove the storage device from the appliance. If you pull too hard on the ejector handle, it can break off from the storage device casing.

Installing a Storage Device

Insert the replacement storage device into the appliance.

To install a storage device:

1. Hold the storage device casing and insert the replacement storage device into the slot.
2. Push the ejector handle to close it.
   The storage device clicks into position.

>Note - Both storage devices must be the same type. You cannot mix hard disk drives with solid state disks.

Migrating Existing Storage

If you replace all storage devices at the same time, all the data and configuration are not saved. For backup and restore information, see sk112215 http://supportcontent.checkpoint.com/solutions?id=sk112215.
Synchronizing RAID

All 16000 and 26000 appliances support two storage devices. By default, the 26000 Base appliance is shipped with only one storage device.

For appliances with two storage devices, the appliance uses RAID1 mirroring across both storage devices. This lets the appliance continue to work if there is a storage device failure.

The mirror rebuild is automatic. Both storage devices must be the same type.

First Boot Up

At first boot up, wait for up to six hours to let the storage devices fully synchronize. If you reboot the appliance before the storage devices are synchronized, the synchronization starts again from scratch at the next boot.

To monitor the RAID status of the storage devices from the CLI:

1. Log in to the appliance.
2. Run `raid_diagnostic` to monitor the RAID status of the storage devices:
   This shows data about the RAID and storage devices, with the percent of synchronization done.

   **DiskID 0** is the left storage device. **DiskID 1** is the right storage device.

   When you first turn on the appliance, the RAID state (in the VolumeID line) shows **DEGRADED** (this indicates that the drives are not synchronized). The DiskID:0 state shows **ONLINE** and the DiskID:1 state shows **INITIALIZING**.

   After the RAID is synchronized, the RAID state (in the VolumeID line) shows **OPTIMAL** (this indicates that the drives are synchronized). The DiskID:0 and DiskID:1 states show **ONLINE**.

   For example:

   ```
   Server123> raid_diagnostic
   Raid status:
   VolumeID:0 RaidLevel: RAID-1 NumberOfDisks:2 RaidSize:9316GB State:OPTIMAL Flags:ENABLED
   DiskID:0 DiskNumber:0 Vendor:ATA ProductID:ST1000NM0008-2F2 Revision:SN02 Size:9316GB State:ONLINE Flags:NONE
   DiskID:1 DiskNumber:1 Vendor:ATA ProductID:ST1000NM0008-2F2 Revision:SN02 Size:9316GB State:ONLINE Flags:NONE
   ```

   This example shows that the storage devices are fully synchronized.
To monitor the RAID status of the storage devices from the WebUI:

1. Log in to the WebUI.
2. Select **Maintenance > RAID Monitoring**.

To monitor the RAID status of the storage devices from SmartConsole:

1. From **Gateways & Servers**, select the object that represents the appliance.
2. In the **Summary** tab, click **Device & License Information**.
3. Click **Device Information**.
4. Scroll to the end of the window and click **RAID Volumes**.
The window shows volume and disk information.

To monitor the RAID status of the storage devices using SNMP:
Set up SNMP traps to send information about the RAID.
Use OID: 1.3.6.1.4.1.2620.1.6.7.7

For more about how to configure the SNMP settings on the appliance, see the *Gaia Administration Guide* for the applicable version.

To hot swap a storage device:

⚠️ **Important** - Make sure that there is at least one fully synchronized storage device in the system.

1. When the system is up, remove the failed storage device.
2. Wait 15 seconds.
   The appliance recognizes that you removed a storage device.
3. Insert a new storage device. If necessary, you can reboot the appliance with one storage device and install the new storage device later.
   The system automatically adds the new storage device to the RAID configuration.