Installing Smart-1 150 Hard Disk Drives

Smart-1 150 uses a dedicated LSI Logic RAID controller to perform RAID 10 mirroring and striping across all of the hard disk drives. The appliance supports RAID configurations with 4, 8, or 12 hard disk drives.

Adding Hard Drive Storage

Smart-1 150 can contain up to 12 hard drives. This section explains how to add more hard drive storage to appliances that were purchased with less than 12 hard drives.

**Overview**

1. Turn off the appliance.
2. Install the additional four or eight hard disk drives.
3. Turn on the appliance.
4. Run the commands to add more RAID arrays to the appliance.
**RAID Storage Guidelines**

- Only install additional hard disk drives in multiples of four. The appliance only supports a configuration with 4, 8 or 12 hard disk drives.
- For each group of 4 hard disk drives, the RAID controller creates a separate RAID 10 array. The initial setup is 4 hard drives configured in one RAID 10 array.
- A Smart-1 150 appliance that uses 8 hard disk drives uses two RAID 10 arrays.
- A Smart-1 150 appliance that uses 12 hard disk drives uses three RAID 10 arrays.
- Additional storage is always added to the `/dev/vg_splat/lv_log` logical volume.

**Adding RAID Arrays**

Install four or eight more hard disk drives and configure the RAID arrays on the appliance.

**To add a new RAID array:**

1. Shut down the appliance and disconnect the power cords.
2. Install the new hard disk drives:
   a) Slide the replacement hard disk drive into the slot.
   b) Push the extraction handle to close it.
      The hard disk drive clicks into place.
   c) Do these steps again for all the hard disk drives.
3. Connect the power cords and turn on the appliance.
4. Log in to the appliance and run `raidconfig status`.
5. Make sure that the appliance recognizes the additional hard disk drives.
6. Stop all Check Point processes, run `cpstop` or `mdsstopp`.
7. Stop all other processes that use `/var/log`.
   Run `lsof /var/log` to show a list of these processes.
8. Run `raidconfig extendstorage`.
    The new hard disk drives are configured as a new RAID array.
9. If there is an error and the new RAID array is not configured:
   a) Run `/opt/MegaRAID/MegaCli/MegaCli -CfgForeign -Clear -a0`
   b) Do steps 5 - 8 again.
To make sure that the RAID array is configured correctly:

1. Run `raidconfig status`
   The new hard disk drives are shown with the RAID 10 arrays.
2. Run `lvdisplay /dev/vg_splat/lv_log`
   The additional hard drive storage is shown.

**Replacing Hard Disk Drives**

Any single hard disk can be safely replaced and you do not risk the integrity of the RAID array or compromise the data.

The hard disk drives are numbered 1-4 on Smart-1 50 from left to right, and 1-12 on Smart-1 150 from left to right, top to bottom. The upper left hard drive is #1, upper right hard drive is #4. On Smart-1 150 the lower right hard drive is #12.

⚠️ **Warning** - When replacing more than one hard drive, DO NOT REMOVE both of the hard drives in these pairs. Failing to do so can have an effect on the RAID data integrity and cause data loss.

These are the hard drive pairs:

- 1 & 2
- 3 & 4
- 5 & 6
- 7 & 8
- 9 & 10
- 11 & 12

For example, you can safely replace hard disk drives 1 and 3, or 2 and 4.
**Removing a Hard Disk Drive**

To remove a hard disk drive:

1. On the hard disk drive, push left on the ejector handle to unlock the hard disk drive.
2. Pull on the ejector handle and the hard disk drive bezel to remove the hard disk drive.
3. Move the hard disk drive away from the appliance.

**Installing a Hard Disk Drive**

Insert the replacement hard disk drive into the appliance and make sure that the RAID array is rebuilding on it.

To install a hard disk drive:

1. Slide the replacement hard disk drive into the slot.
2. Push the extraction handle to close it.
   - The hard disk drive clicks into place.
3. Make sure that the RAID array is rebuilding on the hard disk drive.
   a) From the CLI, run `raidconfig status`
   b) If the results show that the replacement hard disk drive is not rebuilding, run `raidconfig rebuild`