You can set the weight of an OSD with the `ceph osd crush reweight` command. CRUSH tree bucket weights should equal the sum of their leaf weights. If you manually edit the CRUSH map weights, then you should execute the following command to ensure that the CRUSH tree bucket weights accurately reflect the sum of the leaf OSDs within the bucket.

```
[ceph: root@node /]# ceph osd crush reweight-all
reweighted crush hierarchy
```

- The class of the storage device. Multiple types of storage devices can be used in a storage cluster, such as HDDs, SSDs, or NVMe SSDs. A storage device's class reflects this information and you can use that to create pools optimized for different application workloads. OSDs automatically detect and set their device class. You can explicitly set the device class of an OSD with the `ceph osd crush set-device-class` command. Use the `ceph osd crush rm-device-class` to remove a device class from an OSD.

The `ceph osd crush tree` command shows the CRUSH map's current CRUSH hierarchy:

```
[ceph: root@node /]# ceph osd crush tree
 ID CLASS WEIGHT  TYPE NAME
 -1       1.52031 root default
 -3       0.48828     host serverg
  0   hdd 0.48828         osd.0
 -5       0.48828     host serverh
  1   hdd 0.48828         osd.1
 -7       0.48828     host serveri
  2   hdd 0.48828         osd.2
 -9       0.01849     host serverj
  3   ssd 0.01849         osd.3
-11       0.01849     host serverk
  4   ssd 0.01849         osd.4
-13       0.01849     host serverl
  5   ssd 0.01849         osd.5
```

Device classes are implemented by creating a "shadow" CRUSH hierarchy for each device class in use that contains only devices of that class. CRUSH rules can then distribute data over the shadow hierarchy. You can view the CRUSH hierarchy with shadow items with the `ceph osd crush tree --show-shadow` command.

Create a new device class by using the `ceph osd crush class create` command. Remove a device class using the `ceph osd crush class rm` command.

List configured device classes with the `ceph osd crush class ls` command.

Using CRUSH Rules

The CRUSH map also contains the data placement rules that determine how PGs are mapped to OSDs to store object replicas or erasure coded chunks.

The `ceph osd crush rule ls` command lists the existing rules and the `ceph osd crush rule dump` *`rule_name`* command prints the details of a rule.

The decompiled CRUSH map also contains the rules and might be easier to read: