

```
[WRN] OSD_DOWN: 1 osds down
    osd.4 (root=default,host=servere) is down
[WRN] PG_DEGRADED: Degraded data redundancy: 63/567 objects degraded (11.111%), 15
pgs degraded, 16 pgs undersized
    pg 2.4 is stuck undersized for 4m, current state active+undersized, last
acting [1,3]
...output omitted...
    pg 5.6 is stuck undersized for 4m, current state active+undersized, last
acting [2,5]
```

3. Troubleshoot the down OSD issue. Use diagnostic logging to find and correct a non-working configuration.

- 3.1. Locate the down OSD.

```
[ceph: root@clienta /]# ceph osd tree
ID CLASS WEIGHT TYPE NAME STATUS REWEIGHT PRI-AFF
-1 0.08817 root default
-3 0.02939 host serverc
 0 hdd 0.00980 osd.0 up 1.00000 1.00000
 1 hdd 0.00980 osd.1 up 1.00000 1.00000
 2 hdd 0.00980 osd.2 up 1.00000 1.00000
-5 0.02939 host serverd
 3 hdd 0.00980 osd.3 up 1.00000 1.00000
 5 hdd 0.00980 osd.5 up 1.00000 1.00000
 7 hdd 0.00980 osd.7 up 1.00000 1.00000
-7 0.02939 host servere
 4 hdd 0.00980 osd.4 down 1.00000 1.00000
 6 hdd 0.00980 osd.6 up 1.00000 1.00000
 8 hdd 0.00980 osd.8 up 1.00000 1.00000
```

- 3.2. Attempt to restart the OSD 4 service with the `ceph orch` command.  
OSD 4 remains down after waiting a sufficient time.

```
[ceph: root@clienta /]# ceph orch daemon restart osd.4
Scheduled to restart osd.4 on host 'servere.lab.example.com'
```

- 3.3. Attempt to retrieve the configuration from the OSD 4 service.  
An error messages indicates a communication problem with the OSD 4 service.

```
[ceph: root@clienta /]# ceph tell osd.4 config show
Error ENXIO: problem getting command descriptions from osd.4
```

- 3.4. Open a second terminal and log in to `servere` as the `admin` user. On the `servere` system, list the Ceph units.

```
[student@workstation ~]$ ssh admin@servere
[admin@servere ~]$ systemctl list-units --all 'ceph*'
UNIT                                                                    LOAD
ACTIVE SUB DESCRIPTION
ceph-2ae6...fa0c@crash.servere.service loaded active running Ceph
crash.servere for 2ae6...fa0c
```