of the cluster does not recognize a quorum. This problem is mainly caused by a failed clock synchronization, an improperly working network, or the NTP synchronization is not correct.

clock skew
This error message indicates that the clocks for the MON might not be synchronized. The `mon_clock_drift_allowed` parameter controls the maximum difference between clocks that your cluster allows before showing the warning message. This problem is mainly caused by a failed clock synchronization, an improperly working network, or the NTP synchronization is not correct.

mon.X store is getting too big!
Ceph MON shows this warning message when the store is too big and it delays the response to client queries.

Troubleshooting Ceph OSDs

Use the `ceph status` command to review your monitor's quorum. If the cluster shows a health status, then your cluster can form a quorum. If you do not have a monitor quorum, or if there are errors with the monitor status, address the monitor issues first, and then proceed to verify the network.

The following is a list of the most common Ceph OSD error messages:

full osds
Ceph returns the `HEALTH_ERR full osds` message when the cluster reaches the capacity set by the `mon_osd_full_ratio` parameter. By default, this parameter is set to 0.95 which means 95% of the cluster capacity.

Use the `ceph df` command to determine the percentage of used raw storage, given by the `%RAW USED` column. If the percentage of raw storage is above 70%, then you can delete unnecessary data or scale the cluster by adding new OSD nodes to reduce it.

nearfull osds
Ceph returns the `nearfull osds` message when the cluster reaches the capacity set by the `mon_osd_nearfull_ratio` default parameter. By default, this parameter is set to 0.85 which means 85% of the cluster capacity.

The main causes for this warning message are:
- The OSDs are not balanced among the OSD nodes in the cluster.
- The placement group count is not correct based on number of OSDs, use case, target PGs per OSD, and OSD utilization.
- The cluster uses disproportionate CRUSH tunables.
- The back-end storage for OSDs is almost full.

To troubleshoot this issue:
- Verify that the PG count is sufficient.
- Verify that you use CRUSH tunables optimal to the cluster version and adjust them if not.
- Change the weight of OSDs by utilization.
- Determine how much space is left on the disks used by OSDs.

osds are down
Ceph returns the `osds are down` message when OSDs are down or flapping. The main cause for this message is that one of the `ceph-osd` processes is unavailable due to a possible failure, or problems networking with other OSDs.

Troubleshooting the RADOS Gateway

You can troubleshoot the Ceph RESTful interface and some common RADOS Gateway issues.