

Apply the formula for each pool to get the total number of PGs for the cluster. Red Hat recommends between 100 and 200 PGs per OSD.



Note

Red Hat provides the **Ceph Placement Groups (PGs) per Pool Calculator** to recommend the number of PGs per pool, at <https://access.redhat.com/labs/cephpgc/>.

Splitting PGs

Ceph supports increasing or decreasing the number of PGs in a pool. If you do not specify a value when creating a pool, it is created with a default value of 8 PGs, which is very low.

The `pg_autoscale_mode` property allows Ceph to make recommendations and automatically adjust the `pg_num` and `pgp_num` parameters. This option is enabled by default when creating a new pool. The `pg_num` parameter defines the number of PGs for a specific pool. The `pgp_num` parameter defines the number of PGs that the CRUSH algorithm considers for placement.

Red Hat recommends that you make incremental increases in the number of placement groups until you reach the desired number of PGs. Increasing the number of PGs by a significant amount can cause cluster performance degradation, because the expected data relocation and rebalancing is intensive.

Use the `ceph osd pool set` command to manually increase or decrease the number of PGs by setting the `pg_num` parameter. You should only increase the number of PGs in a pool by small increments when doing it manually with the `pg_autoscale_mode` option disabled. Setting the total number of placement groups to a number that is a power of 2 provides better distribution of the PGs across the OSDs. Increasing the `pg_num` parameter automatically increases the `pgp_num` parameter, but at a gradual rate to minimize the impact on cluster performance.

Merging PGs

Red Hat Ceph Storage can merge two PGs into a larger PG, reducing the total number of PGs. Merging can be useful when the number of PGs in a pool is too large and performance is degraded. Because merging is a complex process, merge only one PG at a time to minimize the impact on cluster performance.

PG Auto-scaling

As discussed, the PG autoscale feature allows Ceph to make recommendations and automatically adjust the number of PGs. This feature is enabled by default when creating a pool. For existing pools, configure autoscaling with this command:

```
[admin@node ~]$ ceph osd pool set pool-name pg_autoscale_mode mode
```

Set the `mode` parameter to `off` to disable it, `on` to enable it and allow Ceph to automatically make adjustments in the number of PGs, or `warn` to raise health alerts when the number of PGs must be adjusted.

View the information provided by the autoscale module:

```
[admin@node ~]$ ceph osd pool autoscale-status
```

POOL	SIZE	TARGET SIZE	RATE	RAW CAPACITY	RATIO
pool1	0		3.0	92124M	0.0000
pool2	1323		3.0	92124M	0.0000