performance. With sharding, these operations are independent from the used space level, allowing a more precise compaction and minimizing the effect on OSD performance.

Note
Red Hat recommends that the configured space for RocksDB is at least 4% of the data device size.

In Red Hat Ceph Storage 5, sharding is enabled by default. Sharding is not enabled in OSDs from clusters that are migrated from earlier versions. OSDs from clusters migrated from previous versions will not have sharding enabled.

Use `ceph config get` to verify whether sharding is enabled for an OSD and to view the current definition.

```
[ceph: root@node /]# ceph config get osd.1 bluestore_rocksdb_cf
true
[ceph: root@node /]# ceph config get osd.1 bluestore_rocksdb_cfs
m(3) p(3,0-12) O(3,0-13)=block_cache={type=binned_lru} L P
```

The default values result in good performance in most Ceph use cases. The optimal sharding definition for your production cluster depends on several factors. Red Hat recommends use of default values unless you are faced with significant performance issues. In a production-upgraded cluster, you might want to weigh the performance benefits against the maintenance effort to enable sharding for RocksDB in a large environment.

You can use the BlueStore administrative tool, `ceph-bluestore-tool`, to reshard the RocksDB database without reprovisioning OSDs. To reshard an OSD, stop the daemon and pass the new sharding definition with the `--sharding` option. The `--path` option refers to the OSD data location, which defaults to `/var/lib/ceph/$fsid/osd.$ID/`.

```
[ceph: root@node /]# ceph-bluestore-tool --path <data path> \
  --sharding="m(3) p(3,0-12) O(3,0-13)= block_cache={type=binned_lru} L P" \
  reshard
```

Provisioning BlueStore OSDs

As a storage administrator, you can use the Ceph Orchestrator service to add or remove OSDs in a cluster. To add an OSD, the device must meet the following conditions:

- The device must not have partitions.
- The device must not be mounted.
- The device must have at least 5 GB of space.
- The device must not contain a Ceph BlueStore OSD.

Use the `ceph orch device ls` command to list devices across the hosts in the cluster.