

```
...output omitted...
    "debug_ms": "5/5",
...output omitted...
```

Comparing Ceph Versions and Features

Earlier versions of Ceph clients might not benefit from features provided by the installed version of the Ceph cluster. For example, an earlier client might fail to retrieve data from an erasure-coded pool. Therefore, when upgrading a Ceph cluster, you should also update the clients. The RADOS Gateway, the FUSE client for CephFS, the librbd, or the command-line tools, such as RADOS or RBD, are examples of Ceph clients.

From a client, you can find the version of the running Ceph cluster with the `ceph versions` command:

```
[ceph: root@node /]# ceph versions
{
  "mon": {
    "ceph version 16.2.0-117.el8cp (0e34bb74700060ebfaa22d99b7d2cdc037b28a57)
    pacific (stable)": 4
  },
  "mgr": {
    "ceph version 16.2.0-117.el8cp (0e34bb74700060ebfaa22d99b7d2cdc037b28a57)
    pacific (stable)": 4
  },
  "osd": {
    "ceph version 16.2.0-117.el8cp (0e34bb74700060ebfaa22d99b7d2cdc037b28a57)
    pacific (stable)": 9
  },
  "mds": {
    "ceph version 16.2.0-117.el8cp (0e34bb74700060ebfaa22d99b7d2cdc037b28a57)
    pacific (stable)": 1
  },
  "rgw": {
    "ceph version 16.2.0-117.el8cp (0e34bb74700060ebfaa22d99b7d2cdc037b28a57)
    pacific (stable)": 2
  },
  "overall": {
    "ceph version 16.2.0-117.el8cp (0e34bb74700060ebfaa22d99b7d2cdc037b28a57)
    pacific (stable)": 20
  }
}
```

You can also list the supported level of features with the `ceph features` command.

If you cannot upgrade the clients, the `ceph osd set-require-min-compat-client version-name` command specifies the minimum client version that the Ceph cluster must support.

Using this minimum client setting, Ceph denies the use of features that are not compatible with the current client version. Historically, the main exception has been changes to CRUSH. For example, if you run the `ceph osd set-require-min-compat-client jewel` command, then you cannot use the `ceph osd pg-upmap` command. This fails because "Jewel" version