

Creating and Configuring Pools

Objectives

After completing this section, you should be able to describe and compare replicated and erasure coded pools, and create and configure each pool type.

Understanding Pools

Pools are logical partitions for storing objects. Ceph clients write objects to pools.

Ceph clients require the cluster name (`ceph` by default) and a monitor address to connect to the cluster. Ceph clients usually obtain this information from a Ceph configuration file, or by being specified as command-line parameters.

A Ceph client uses the list of pools retrieved with the cluster map, to determine where to store new objects.

The Ceph client creates an input/output context to a specific pool and the Ceph cluster uses the CRUSH algorithm to map these pools to placement groups, which are then mapped to specific OSDs.

Pools provide a layer of resilience for the cluster because pools define the number of OSDs that can fail without losing data.

Pool Types

The available pool types are `replicated` and `erasure coded`. You decide which pool type to use based on your production use case and the type of workload.

The default pool type is `replicated`, which functions by copying each object to multiple OSDs. This pool type requires more storage because it creates multiple copies of objects, however, read operation availability is increased through redundancy.

Erasure coded pools require less storage and network bandwidth but use more CPU processing time because of parity calculations.

Erasure coded pools are recommended for infrequently accessed data that does not require low latency. Replicated pools are recommended for frequently accessed data that requires fast read performance. The recovery time for each pool type can vary widely and is based on the cluster deployment, failure, and sizing characteristics.

A pool's type cannot be changed after creating the pool.

Pool Attributes

You must specify certain attributes when you create a pool:

- The `pool name`, which must be unique in the cluster.
- The `pool type`, which determines the protection mechanism the pool uses to ensure data durability. The `replicated` type distributes multiple copies of each object across the cluster. The `erasure coded` type splits each object into chunks, and distributes them along with