ERASURE CODE PROFILES

Erasure code is defined by a **profile** and is used when creating an erasure coded pool and the associated CRUSH rule.

The **default** erasure code profile (which is created when the Ceph cluster is initialized) provides the same level of redundancy as two copies but requires 25% less disk space. It is described as a profile with **k=2** and **m=1**, meaning the information is spread over three OSD (k+m == 3) and one of them can be lost.

To improve redundancy without increasing raw storage requirements, a new profile can be created. For instance, a profile with **k=10** and **m=4** can sustain the loss of four (**m=4**) OSDs by distributing an object on fourteen (k+m=14) OSDs. The object is first divided in **10** chunks (if the object is 10MB, each chunk is 1MB) and **4** coding chunks are computed, for recovery (each coding chunk has the same size as the data chunk, i.e. 1MB). The raw space overhead is only 40% and the object will not be lost even if four OSDs break at the same time.

- Jerasure erasure code plugin
- ISA erasure code plugin
- Locally repairable erasure code plugin
- SHEC erasure code plugin

OSD ERASURE-CODE-PROFILE SET

To create a new erasure code profile:

```
ceph osd erasure-code-profile set {name} \
     [{directory=directory}] \
     [{plugin=plugin}] \
     [{stripe_unit=stripe_unit}] \
     [{key=value} ...] \
     [--force]
```

Where:

`{directory=directory}`

Description: Set the **directory** name from which the erasure code plugin is loaded.
Type: String
Required: No.
Default: /usr/lib/ceph/erasure-code

`{plugin=plugin}`

Description: Use the erasure code **plugin** to compute coding chunks and recover missing chunks. See the list of available plugins for more information.
Type: String
Required: No.
Default: jerasure

`{stripe_unit=stripe_unit}`

Description: The amount of data in a data chunk, per stripe. For example, a profile with 2 data chunks and stripe_unit=4K would put the range 0-4K in chunk 0, 4K-8K in chunk 1, then 8K-12K in chunk 0 again. This should be a multiple of 4K for best performance. The default value is taken from the monitor config option `osd_pool_erasure_code_stripe_unit` when a pool is created. The stripe_width of a pool using this profile will be the number of data chunks multiplied by this stripe_unit.
Type: String
Required: No.

`{key=value}`

Description: The semantic of the remaining key/value pairs is defined by the erasure code plugin.
Type: String
Required: No.

`--force`

Description: Override an existing profile by the same name, and allow setting a non-4K-aligned stripe_unit.
Type: String
Required: No.

OSD ERASURE-CODE-PROFILE RM

To remove an erasure code profile:

```
ceph osd erasure-code-profile rm {name}
```

If the profile is referenced by a pool, the deletion will fail.

OSD ERASURE-CODE-PROFILE GET

To display an erasure code profile:

```
ceph osd erasure-code-profile get {name}
```

OSD ERASURE-CODE-PROFILE LS

To list the names of all erasure code profiles:

```
ceph osd erasure-code-profile ls
```