DEPLOYING WITH MKCEPHFS

The `mkcephfs` tool is the old method of deploying new Ceph clusters. It is now deprecated in favor of `ceph-deploy`, which has better support for modifying an existing cluster.

ENABLE LOGIN TO CLUSTER HOSTS AS ROOT

To deploy with `mkcephfs`, you will need to be able to login as `root` on each host without a password. For each host, perform the following:

```
sudo passwd root
```

Enter a password for the root user.

On the admin host, generate an `ssh` key without specifying a passphrase and use the default locations.

```
sudo -i
ssh-keygen
Generating public/private key pair.
Enter file in which to save the key (/root/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /root/.ssh/id_rsa.
Your public key has been saved in /root/.ssh/id_rsa.pub.
```

Modify your `/root/.ssh/config` file to login as `root`, as follows:

```
Host myserver01
        Hostname myserver01.fully-qualified-domain.com
        User root
Host myserver02
        Hostname myserver02.fully-qualified-domain.com
        User root
```

You may use RSA or DSA keys. Once you generate your keys, copy them to each OSD host. For example:

```
ssh-copy-id root@myserver01
ssh-copy-id root@myserver02
```

COPY CONFIGURATION FILE TO ALL HOSTS

Ceph's `mkcephfs` deployment script does not copy the configuration file you created from the Administration host to the OSD Cluster hosts. Copy the configuration file you created (*i.e.,* `mycluster.conf` in the example below) from the Administration host to `etc/ceph/ceph.conf` on each OSD Cluster host if you are using `mkcephfs` to deploy Ceph.

```
sudo ssh myserver01 tee /etc/ceph/ceph.conf < /etc/ceph/ceph.conf
sudo ssh myserver02 tee /etc/ceph/ceph.conf < /etc/ceph/ceph.conf
sudo ssh myserver03 tee /etc/ceph/ceph.conf < /etc/ceph/ceph.conf
```

CREATE THE DEFAULT DIRECTORIES

The `mkcephfs` deployment script does not create the default server directories. Create server directories for each instance of a Ceph daemon (if you haven't done so already). The `host` variables in the `ceph.conf` file determine which host runs each instance of a Ceph daemon. Using the exemplary `ceph.conf` file, you would perform the following:

On `myserver01`:

```
sudo mkdir /var/lib/ceph/osd/ceph-0
sudo mkdir /var/lib/ceph/mon/ceph-a
```

On `myserver02`:

```
sudo mkdir /var/lib/ceph/osd/ceph-1
sudo mkdir /var/lib/ceph/mon/ceph-b
```

On `myserver03`:

```
sudo mkdir /var/lib/ceph/osd/ceph-2
sudo mkdir /var/lib/ceph/mon/ceph-c
sudo mkdir /var/lib/ceph/mds/ceph-a
```

MOUNT DISKS TO THE DATA DIRECTORIES

If you are running multiple OSDs per host and one hard disk per OSD, you should mount the disk under the OSD data directory (if you haven't done so already). When mounting disks in this manner, there is no need for an entry in `/etc/fstab`.

New in version 0.56.

For Bobtail (v 0.56) and beyond, you may specify the file system type, filesystem options, and mount options. Add the following to the `[global]` section of your Ceph configuration file, and replace the values in braces with appropriate values:

```
osd mkfs type = {fs-type}
osd mkfs options {fs-type} = {mkfs options}   # default for xfs is "-f"
osd mount options {fs-type} = {mount options} # default mount option is "rw,noatime"
```

For example:

```
osd mkfs type = btrfs
osd mkfs options btrfs = -m raid0
osd mount options btrfs = rw,noatime
```

For each `[osd.n]` section of your configuration file, specify the storage device. For example:

```
[osd.1]
        devs = /dev/sda
[osd.2]
        devs = /dev/sdb
```

RUN MKCEPHFS

Once you have copied your Ceph Configuration to the OSD Cluster hosts and created the default directories, you may deploy Ceph with the `mkcephfs` script.

Note: `mkcephfs` is a quick bootstrapping tool. It does not handle more complex operations, such as upgrades.

To run `mkcephfs`, execute the following:

```
cd /etc/ceph
sudo mkcephfs -a -c /etc/ceph/ceph.conf -k ceph.keyring
```

Note: For `mkcephfs` to use the `mkfs` configuration options, you MUST specify a `devs` entry for each OSD.

The script adds an admin key to the `ceph.keyring`, which is analogous to a root password. See Authentication when running with cephx enabled. To start the cluster, execute the following:

```
sudo service ceph -a start
```

See Operating a Cluster for details. Also see man mkcephfs.