

<http://www.coincoin.fr.eu.org/?Notes-Susecon-2016-Washington>



# Notes Susecon 2016 - Washington

- 1- Blog-Notes - Au boulot -

Date de mise en ligne : lundi 7 novembre 2016

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CEPH, OpenSorce, Software Defined Storage, LTS de 12 mois, Suse Storage 3 basee sur Jewel release

jusqu qu 6 milliards de noeuds par cluster

CERN et toutes les distrib ou constructeurs sont membres du management CEPH

usual strategy is to scale up (vertical) ceph is for scaling out (horizontal)

suse is the first to ship a iscsi gateway wih ceph (supported)

RADOS = CEPH cluster, stockage objet

Librados = app pour acceder aux donnees (C, PHP, Java etc)

Radosgw = gateway REST co:\mpatible S3, Swift

RBD = block sur host qui heberge une instance

CEPH FS = fs pour un client

la gatway irbd presente les donnees en iscsi ou nfs etc

2 co:posants i:portants :

- un OSD pour manager les disques (one per path)

- MONS (3, \$, ...), pour monitorer le cluster

Un algo CRUSH de stockage

Disk-> FileSystem (XFS) -> OSD

Les donnees sont stockees via algo CRUSH

Mimum de 3 MONS, utilise algo PAXOS pour monitorer les nodes et le reseau

=> i:pair absolument

monitor map, contient placement group map, CRUSH map, epoch pour garantir integrite des donnees

rssayer de mettre le moins possible de mons

un client accede a la donnee objet en ;ode osd directement

PAXOS election de l ip la plus petite pour elire un MON

les objets sont ranges dans des storage pools

defaultpool rbd

regles de placement de snapshot par pool

l osd voit les placement group, chaque objet est associe a um placement group

il faut faire attention au nbre de PG

CRUSH

controllable

Replication

Under

les donnees ne sont pas centralisees

OSD run CRUSH => besoin de CPU

Step2, install, hardware voir la doc suse

ceph unprivileged, 167 if possible

DNS recommande

ipv4 tres bien

timesync

and at least 2 networks : pub for client/admin and priv for osd to osd

SES3 dispo en extension de SLES 12sp0

zypper in ceph-deploy and that s all folks

ceph-deploy install ceph-deply new -cluster moncluster ceph.conf contient les cles et le rep du journal

ceph-deploy mon create-initial utiliser create pour ajouter des nodes MON

```
puis ajouter les OSD
ceph-deploy osd prepare node:dev
```

```
when check with
ceph -k ceph.client.admin.keyring status
```

```
ceph -w (watch)
```

```
geeko@ses-admin:~/Desktop> sudo su -
```

```
We trust you have received the usual lecture from the local System
Administrator. It usually boils down to these three things:
```

- #1) Respect the privacy of others.
- #2) Think before you type.
- #3) With great power comes great responsibility.

```
root's password:
```

```
ses-admin:~ # yast
```

```
yast yast2
```

```
ses-admin:~ # yast2
```

```
ses-admin:~ # useradd -m cephadm
```

```
ses-admin:~ # passwd cephadm
```

```
New password:
```

```
BAD PASSWORD: it is too short
```

```
BAD PASSWORD: is too simple
```

```
Retype new password:
```

```
passwd: password updated successfully
```

```
ses-admin:~ # visudo
```

```
visudo: /etc/sudoers.tmp unchanged
```

```
ses-admin:~ # visudo
```

```
ses-admin:~ # su - cephadm
```

```
su: user - does not exist
```

```
ses-admin:~ # su - cephadm
```

```
cephadm@ses-admin:~> ssh-keygen
```

```
Generating public/private rsa key pair.
```

```
Enter file in which to save the key (/home/cephadm/.ssh/id_rsa):
```

```
Created directory '/home/cephadm/.ssh'.
```

```
Enter passphrase (empty for no passphrase):
```

```
Enter same passphrase again:
```

```
Your identification has been saved in /home/cephadm/.ssh/id_rsa.
```

```
Your public key has been saved in /home/cephadm/.ssh/id_rsa.pub.
```

```
The key fingerprint is:
```

```
9e:b2:bd:31:6f:32:10:b6:7e:84:77:33:79:86:a3:e6 [MD5] cephadm@ses-admin
```

```
The key's randomart image is:
```

```
+--[ RSA 2048 ]-----+
```

```
| |
```

```
| |
```

```
| |
```

```
| o |
```

```
| . +S o |
```

```
| +.O.B o |  
| ..+=o * |  
| .+*+. |  
| .+E=. |
```

```
+--[MD5]-----+
```

```
cephadm@ses-admin:~> ssh-copy-id cephadm@ses-node1
```

```
The authenticity of host 'ses-node1 (192.168.100.11)' can't be established.
```

```
ECDSA key fingerprint is 33:4d:5a:db:e7:69:26:2b:90:11:91:ad:ab:3d:49:eb [MD5].
```

```
Are you sure you want to continue connecting (yes/no)? yes
```

```
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already  
installed
```

```
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the  
new keys
```

```
Password:
```

```
Number of key(s) added: 1
```

```
Now try logging into the machine, with: "ssh 'cephadm@ses-node1'"  
and check to make sure that only the key(s) you wanted were added.
```

```
cephadm@ses-admin:~> ssh-copy-id cephadm@ses-node2
```

```
The authenticity of host 'ses-node2 (192.168.100.12)' can't be established.
```

```
ECDSA key fingerprint is 33:4d:5a:db:e7:69:26:2b:90:11:91:ad:ab:3d:49:eb [MD5].
```

```
Are you sure you want to continue connecting (yes/no)? yes
```

```
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already  
installed
```

```
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the  
new keys
```

```
Password:
```

```
Number of key(s) added: 1
```

```
Now try logging into the machine, with: "ssh 'cephadm@ses-node2'"  
and check to make sure that only the key(s) you wanted were added.
```

```
cephadm@ses-admin:~> ssh-copy-id cephadm@ses-node3
```

```
The authenticity of host 'ses-node3 (192.168.100.13)' can't be established.
```

```
ECDSA key fingerprint is 33:4d:5a:db:e7:69:26:2b:90:11:91:ad:ab:3d:49:eb [MD5].
```

```
Are you sure you want to continue connecting (yes/no)? yes
```

```
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already  
installed
```

```
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the  
new keys
```

```
Password:
```

```
Number of key(s) added: 1
```

```
Now try logging into the machine, with: "ssh 'cephadm@ses-node3'"  
and check to make sure that only the key(s) you wanted were added.
```

```
cephadm@ses-admin:~> ssh ses-node3 id
```

```
uid=1001(cephadm) gid=100(users) groups=100(users)
```

```
cephadm@ses-admin:~> exit
logout
ses-admin:~ # zypper in ceph ceph-deploy
Loading repository data...
Reading installed packages...
Resolving package dependencies...
```

The following 42 NEW packages are going to be installed:

```
FastCGI babeltrace ceph ceph-base ceph-common ceph-deploy ceph-mds ceph-mon ceph-osd gperftools
libboost_iostreams1_54_0 libboost_program_options1_54_0 libboost_random1_54_0 libcephfs1 libibverbs1
libleveldb1 librados2 libradosstriper1 librbd1 librdmacm1 librgw2 liburcu0 libxio lttng-ust python-Flask
python-Jinja2 python-MarkupSafe python-Werkzeug python-apipkg python-argparse python-cephfs python-ecdsa
python-execnet python-itsdangerous python-paramiko python-pushy python-pycrypto python-rados python-rbd
python-remoto python-requests supportutils-plugin-ses
```

The following package is not supported by its vendor:

```
libxio
```

42 new packages to install.

Overall download size: 48.7 MiB. Already cached: 0 B. After the operation, additional 211.7 MiB will be used.

Continue? [y/n/? shows all options] (y): y

```
Retrieving package python-Werkzeug-0.9.6-5.2.noarch (1/42), 483.9 KiB ( 2.2 MiB unpacked)
Retrieving package python-apipkg-1.2-1.2.noarch (2/42), 9.2 KiB ( 18.2 KiB unpacked)
Retrieving package python-ecdsa-0.13-2.1.noarch (3/42), 77.4 KiB (261.8 KiB unpacked)
Retrieving package python-itsdangerous-0.24-2.1.noarch (4/42), 20.2 KiB ( 69.1 KiB unpacked)
Retrieving package supportutils-plugin-ses-1.0+git.1463485157.269428c-4.1.noarch
(5/42), 13.7 KiB ( 26.0 KiB unpacked)
Retrieving package FastCGI-2.4.0-167.1.x86_64 (6/42), 184.8 KiB (587.6 KiB unpacked)
Retrieving package libboost_random1_54_0-1.54.0-13.1.x86_64 (7/42), 20.0 KiB ( 10.3 KiB unpacked)
Retrieving package libleveldb1-1.18-1.3.x86_64 (8/42), 132.8 KiB (361.3 KiB unpacked)
Retrieving package python-MarkupSafe-0.18-7.1.x86_64 (9/42), 24.6 KiB ( 66.0 KiB unpacked)
Retrieving package python-pycrypto-2.6.1-4.1.x86_64 (10/42), 371.5 KiB ( 2.0 MiB unpacked)
Retrieving package python-execnet-1.4.1-1.3.noarch (11/42), 73.7 KiB (249.5 KiB unpacked)
Retrieving package python-Jinja2-2.7.3-17.1.noarch (12/42), 278.5 KiB ( 1.7 MiB unpacked)
Retrieving package python-paramiko-1.15.2-1.1.noarch (13/42), 860.0 KiB ( 5.1 MiB unpacked)
Retrieving package python-remoto-0.0.27-1.1.noarch (14/42), 80.6 KiB (298.2 KiB unpacked)
Retrieving package python-Flask-0.10.1-2.1.noarch (15/42), 178.0 KiB (827.7 KiB unpacked)
Retrieving package python-pushy-0.5.3-1.5.noarch (16/42), 58.3 KiB (238.5 KiB unpacked)
Retrieving package python-argparse-1.2.1-15.8.noarch (17/42), 248.6 KiB (490.1 KiB unpacked)
Retrieving package python-requests-2.3.0-6.5.2.noarch (18/42), 334.6 KiB ( 1.7 MiB unpacked)
Retrieving package babeltrace-1.2.4-3.2.x86_64 (19/42), 159.0 KiB (463.9 KiB unpacked)
Retrieving package gperftools-2.2-2.2.x86_64 (20/42), 554.3 KiB ( 2.2 MiB unpacked)
Retrieving package libboost_iostreams1_54_0-1.54.0-13.1.x86_64 (21/42), 39.8 KiB (103.1 KiB unpacked)
Retrieving package libboost_program_options1_54_0-1.54.0-13.1.x86_64 (22/42), 125.5 KiB (456.7 KiB
unpackd)
Retrieving package libibverbs1-1.1.7-12.2.x86_64 (23/42), 34.1 KiB ( 71.4 KiB unpacked)
Retrieving package liburcu0-0.8.8-1.2.x86_64 (24/42), 49.4 KiB (182.6 KiB unpacked)
Retrieving package librdmacm1-1.0.18.1-1.14.x86_64 (25/42), 53.4 KiB (129.1 KiB unpacked)
Retrieving package lttng-ust-2.7.0-1.2.x86_64 (26/42), 171.4 KiB (754.7 KiB unpacked)
Retrieving package ceph-deploy-1.5.32+git.1464082518.5aab689-1.1.noarch (27/42), 174.7 KiB (740.3 KiB
unpackd)
```

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```
Retrieving package libxio-1.6+git.1461071064.e0ed264-2.1.x86_64 (28/42), 242.5 KiB (885.9 KiB unpacked)
Retrieving package librados2-10.2.1+git.1464009581.b8ee9e4-1.1.x86_64 (29/42), 1.7 MiB ( 6.3 MiB unpacked)
Retrieving package libcephfs1-10.2.1+git.1464009581.b8ee9e4-1.1.x86_64 (30/42), 1.8 MiB ( 6.0 MiB unpacked)
Retrieving package python-rados-10.2.1+git.1464009581.b8ee9e4-1.1.x86_64 (31/42), 209.0 KiB (493.4 KiB
unpackd)
Retrieving package librgw2-10.2.1+git.1464009581.b8ee9e4-1.1.x86_64 (32/42), 2.7 MiB ( 10.3 MiB unpacked)
Retrieving package librbd1-10.2.1+git.1464009581.b8ee9e4-1.1.x86_64 (33/42), 2.1 MiB ( 7.5 MiB unpacked)
Retrieving package libradosstriper1-10.2.1+git.1464009581.b8ee9e4-1.1.x86_64
(34/42), 1.8 MiB ( 6.9 MiB unpacked)
Retrieving package python-cephfs-10.2.1+git.1464009581.b8ee9e4-1.1.x86_64
(35/42), 138.1 KiB (227.4 KiB unpacked)
Retrieving package python-rbd-10.2.1+git.1464009581.b8ee9e4-1.1.x86_64 (36/42), 133.1 KiB (184.9 KiB
unpackd)
Retrieving package ceph-common-10.2.1+git.1464009581.b8ee9e4-1.1.x86_64 (37/42), 14.9 MiB ( 67.1 MiB
unpackd)
Retrieving package ceph-base-10.2.1+git.1464009581.b8ee9e4-1.1.x86_64 (38/42), 3.9 MiB ( 33.1 MiB unpacked)
Retrieving package ceph-osd-10.2.1+git.1464009581.b8ee9e4-1.1.x86_64 (39/42), 9.0 MiB ( 33.2 MiB unpacked)
Retrieving package ceph-mon-10.2.1+git.1464009581.b8ee9e4-1.1.x86_64 (40/42), 2.7 MiB ( 9.3 MiB unpacked)
Retrieving package ceph-mds-10.2.1+git.1464009581.b8ee9e4-1.1.x86_64 (41/42), 2.7 MiB ( 9.3 MiB unpacked)
Retrieving package ceph-10.2.1+git.1464009581.b8ee9e4-1.1.x86_64 (42/42), 79.1 KiB ( 0 B unpacked)
Checking for file conflicts:
.....[done]
( 1/42) Installing: python-Werkzeug-0.9.6-5.2
.....[done]
( 2/42) Installing: python-apipkg-1.2-1.2
.....[done]
( 3/42) Installing: python-ecdsa-0.13-2.1
.....[done]
( 4/42) Installing: python-itsdangerous-0.24-2.1
.....[done]
( 5/42) Installing: supportutils-plugin-ses-1.0+git.1463485157.269428c-4.1
.....[done]
( 6/42) Installing: FastCGI-2.4.0-167.1
.....[done]
( 7/42) Installing: libboost_random1_54_0-1.54.0-13.1
.....[done]
( 8/42) Installing: libleveldbl-1.18-1.3
.....[done]
( 9/42) Installing: python-MarkupSafe-0.18-7.1
.....[done]
(10/42) Installing: python-pycrypto-2.6.1-4.1
.....[done]
(11/42) Installing: python-execnet-1.4.1-1.3
.....[done]
(12/42) Installing: python-Jinja2-2.7.3-17.1
.....[done]
(13/42) Installing: python-paramiko-1.15.2-1.1
.....[done]
(14/42) Installing: python-remoto-0.0.27-1.1
.....[done]
(15/42) Installing: python-Flask-0.10.1-2.1
.....[done]
```

```
(16/42) Installing: python-pushy-0.5.3-1.5
.....[done]
(17/42) Installing: python-argparse-1.2.1-15.8
.....[done]
(18/42) Installing: python-requests-2.3.0-6.5.2
.....[done]
(19/42) Installing: babeltrace-1.2.4-3.2
.....[done]
(20/42) Installing: gperftools-2.2-2.2
.....[done]
(21/42) Installing: libboost_iostreams1_54_0-1.54.0-13.1
.....[done]
(22/42) Installing: libboost_program_options1_54_0-1.54.0-13.1
.....[done]
(23/42) Installing: libibverbs1-1.1.7-12.2
.....[done]
(24/42) Installing: liburcu0-0.8.8-1.2
.....[done]
(25/42) Installing: librdmacm1-1.0.18.1-1.14
.....[done]
(26/42) Installing: lttng-ust-2.7.0-1.2
.....[done]
(27/42) Installing: ceph-deploy-1.5.32+git.1464082518.5aab689-1.1
.....[done]
(28/42) Installing: libxio-1.6+git.1461071064.e0ed264-2.1
.....[done]
(29/42) Installing: librados2-10.2.1+git.1464009581.b8ee9e4-1.1
.....[done]
(30/42) Installing: libcephfs1-10.2.1+git.1464009581.b8ee9e4-1.1
.....[done]
(31/42) Installing: python-rados-10.2.1+git.1464009581.b8ee9e4-1.1
.....[done]
(32/42) Installing: librgw2-10.2.1+git.1464009581.b8ee9e4-1.1
.....[done]
(33/42) Installing: librbd1-10.2.1+git.1464009581.b8ee9e4-1.1
.....[done]
(34/42) Installing: libradosstriper1-10.2.1+git.1464009581.b8ee9e4-1.1
.....[done]
(35/42) Installing: python-cephfs-10.2.1+git.1464009581.b8ee9e4-1.1
.....[done]
(36/42) Installing: python-rbd-10.2.1+git.1464009581.b8ee9e4-1.1
.....[done]
(37/42) Installing: ceph-common-10.2.1+git.1464009581.b8ee9e4-1.1
.....[done]
(38/42) Installing: ceph-base-10.2.1+git.1464009581.b8ee9e4-1.1
.....[done]
Additional rpm output:
Updating /etc/sysconfig/ceph...

(39/42) Installing: ceph-osd-10.2.1+git.1464009581.b8ee9e4-1.1
.....[done]
(40/42) Installing: ceph-mon-10.2.1+git.1464009581.b8ee9e4-1.1
```

```
.....[done]
(41/42) Installing: ceph-mds-10.2.1+git.1464009581.b8ee9e4-1.1
.....[done]
(42/42) Installing: ceph-10.2.1+git.1464009581.b8ee9e4-1.1
.....[done]
ses-admin:~ # su - cephadm
su: user - does not exist
ses-admin:~ # su - cephadm
cephadm@ses-admin:~> ls
bin public_html
cephadm@ses-admin:~> ceph-deploy install ses-nodel ses-node2 ses-node3
[ceph_deploy.conf][DEBUG ] found configuration file at: /home/cephadm/.cephdeploy.conf
[ceph_deploy.cli][INFO ] Invoked (1.5.32): /usr/bin/ceph-deploy install ses-nodel ses-node2 ses-node3
[ceph_deploy.cli][INFO ] ceph-deploy options:
[ceph_deploy.cli][INFO ] verbose : False
[ceph_deploy.cli][INFO ] testing : None
[ceph_deploy.cli][INFO ] cd_conf : <ceph_deploy.conf.cephdeploy.Conf instance at 0x7f12cbf6cef0>
[ceph_deploy.cli][INFO ] cluster : ceph
[ceph_deploy.cli][INFO ] dev_commit : None
[ceph_deploy.cli][INFO ] install_mds : False
[ceph_deploy.cli][INFO ] stable : None
[ceph_deploy.cli][INFO ] default_release : False
[ceph_deploy.cli][INFO ] username : None
[ceph_deploy.cli][INFO ] adjust_repos : True
[ceph_deploy.cli][INFO ] func : [ceph_deploy.cli][INFO ] install_all : False
[ceph_deploy.cli][INFO ] repo : False
[ceph_deploy.cli][INFO ] host : ['ses-nodel', 'ses-node2', 'ses-node3']
[ceph_deploy.cli][INFO ] install_rgw : False
[ceph_deploy.cli][INFO ] install_tests : False
[ceph_deploy.cli][INFO ] repo_url : None
[ceph_deploy.cli][INFO ] ceph_conf : None
[ceph_deploy.cli][INFO ] install_osd : False
[ceph_deploy.cli][INFO ] version_kind : stable
[ceph_deploy.cli][INFO ] install_common : False
[ceph_deploy.cli][INFO ] overwrite_conf : False
[ceph_deploy.cli][INFO ] quiet : False
[ceph_deploy.cli][INFO ] dev : master
[ceph_deploy.cli][INFO ] local_mirror : None
[ceph_deploy.cli][INFO ] release : None
[ceph_deploy.cli][INFO ] install_mon : False
[ceph_deploy.cli][INFO ] gpg_url : None
[ceph_deploy.install][DEBUG ] Installing stable version infernalis on cluster ceph hosts ses-nodel
ses-node2 ses-node3
[ceph_deploy.install][DEBUG ] Detecting platform for host ses-nodel ...
[ses-nodel][DEBUG ] connection detected need for sudo
[ses-nodel][DEBUG ] connected to host: ses-nodel
[ses-nodel][DEBUG ] detect platform information from remote host
[ses-nodel][DEBUG ] detect machine type
[ceph_deploy.install][INFO ] Distro info: SUSE Linux Enterprise Server 12 x86_64
[ses-nodel][INFO ] installing Ceph on ses-nodel
[ses-nodel][INFO ] Running command: sudo zypper --non-interactive --quiet refresh
[ses-nodel][INFO ] Running command: sudo zypper --non-interactive --quiet install ceph ceph-radosgw
```



```
[ses-node1][DEBUG ]
[ses-node1][DEBUG ] The following 35 NEW packages are going to be installed:
[ses-node1][DEBUG ] babeltrace ceph ceph-base ceph-common ceph-mds ceph-mon ceph-osd ceph-radosgw FastCGI
gperftools libboost_iostreams1_54_0 libboost_program_options1_54_0 libboost_random1_54_0 libcephfs1
libibverbs1 libleveldb1 librados2 libradosstriper1 librbd1 librdmacm1 librgw2 liburcu0 libxio lttng-ust
python-cephfs python-Flask python-itsdangerous python-Jinja2 python-MarkupSafe python-rados python-rbd
python-requests python-setuptools python-Werkzeug supportutils-plugin-ses
[ses-node1][DEBUG ]
[ses-node1][DEBUG ] The following package is not supported by its vendor:
[ses-node1][DEBUG ] libxio
[ses-node1][DEBUG ]
[ses-node1][DEBUG ] 35 new packages to install.
[ses-node1][DEBUG ] Overall download size: 47.3 MiB. Already cached: 0 B. After the operation, additional
204.1 MiB will be used.
[ses-node1][DEBUG ] Continue? [y/n/? shows all options] (y): y
[ses-node1][INFO ] Running command: sudo ceph --version
[ses-node1][DEBUG ] ceph version 10.2.1-112-gb8ee9e4 (b8ee9e4007f0443ef50debla691c3ea8bd0a11fe)
[ceph_deploy.install][DEBUG ] Detecting platform for host ses-node2 ...
[ses-node2][DEBUG ] connection detected need for sudo
[ses-node2][DEBUG ] connected to host: ses-node2
[ses-node2][DEBUG ] detect platform information from remote host
[ses-node2][DEBUG ] detect machine type
[ceph_deploy.install][INFO ] Distro info: SUSE Linux Enterprise Server 12 x86_64
[ses-node2][INFO ] installing Ceph on ses-node2
[ses-node2][INFO ] Running command: sudo zypper --non-interactive --quiet refresh
[ses-node2][INFO ] Running command: sudo zypper --non-interactive --quiet install ceph ceph-radosgw
[ses-node2][DEBUG ]
[ses-node2][DEBUG ] The following 35 NEW packages are going to be installed:
[ses-node2][DEBUG ] babeltrace ceph ceph-base ceph-common ceph-mds ceph-mon ceph-osd ceph-radosgw FastCGI
gperftools libboost_iostreams1_54_0 libboost_program_options1_54_0 libboost_random1_54_0 libcephfs1
libibverbs1 libleveldb1 librados2 libradosstriper1 librbd1 librdmacm1 librgw2 liburcu0 libxio lttng-ust
python-cephfs python-Flask python-itsdangerous python-Jinja2 python-MarkupSafe python-rados python-rbd
python-requests python-setuptools python-Werkzeug supportutils-plugin-ses
[ses-node2][DEBUG ]
[ses-node2][DEBUG ] The following package is not supported by its vendor:
[ses-node2][DEBUG ] libxio
[ses-node2][DEBUG ]
[ses-node2][DEBUG ] 35 new packages to install.
[ses-node2][DEBUG ] Overall download size: 47.3 MiB. Already cached: 0 B. After the operation, additional
204.1 MiB will be used.
[ses-node2][DEBUG ] Continue? [y/n/? shows all options] (y): y
[ses-node2][INFO ] Running command: sudo ceph --version
[ses-node2][DEBUG ] ceph version 10.2.1-112-gb8ee9e4 (b8ee9e4007f0443ef50debla691c3ea8bd0a11fe)
[ceph_deploy.install][DEBUG ] Detecting platform for host ses-node3 ...
[ses-node3][DEBUG ] connection detected need for sudo
[ses-node3][DEBUG ] connected to host: ses-node3
[ses-node3][DEBUG ] detect platform information from remote host
[ses-node3][DEBUG ] detect machine type
[ceph_deploy.install][INFO ] Distro info: SUSE Linux Enterprise Server 12 x86_64
[ses-node3][INFO ] installing Ceph on ses-node3
[ses-node3][INFO ] Running command: sudo zypper --non-interactive --quiet refresh
[ses-node3][INFO ] Running command: sudo zypper --non-interactive --quiet install ceph ceph-radosgw
```

```
[ses-node3][DEBUG ]
[ses-node3][DEBUG ] The following 35 NEW packages are going to be installed:
[ses-node3][DEBUG ] babeltrace ceph ceph-base ceph-common ceph-mds ceph-mon ceph-osd ceph-radosgw FastCGI
gperftools libboost_iostreams1_54_0 libboost_program_options1_54_0 libboost_random1_54_0 libcephfs1
libibverbs1 libleveldb1 librados2 libradosstriper1 librbd1 librdmacm1 librgw2 liburcu0 libxio lttng-ust
python-cephfs python-Flask python-itsdangerous python-Jinja2 python-MarkupSafe python-rados python-rbd
python-requests python-setuptools python-Werkzeug supportutils-plugin-ses
[ses-node3][DEBUG ]
[ses-node3][DEBUG ] The following package is not supported by its vendor:
[ses-node3][DEBUG ] libxio
[ses-node3][DEBUG ]
[ses-node3][DEBUG ] 35 new packages to install.
[ses-node3][DEBUG ] Overall download size: 47.3 MiB. Already cached: 0 B. After the operation, additional
204.1 MiB will be used.
[ses-node3][DEBUG ] Continue? [y/n/? shows all options] (y): y
[ses-node3][INFO ] Running command: sudo ceph --version
[ses-node3][DEBUG ] ceph version 10.2.1-112-gb8ee9e4 (b8ee9e4007f0443ef50debla691c3ea8bd0a11fe)
cephadm@ses-admin:~> ls
bin ceph-deploy-ceph.log public_html
cephadm@ses-admin:~> cat ceph-deploy-ceph.log
[2016-11-07 11:37:32,854][ceph_deploy.conf][DEBUG ] found configuration file at:
/home/cephadm/.cephdeploy.conf
[2016-11-07 11:37:32,854][ceph_deploy.cli][INFO ] Invoked (1.5.32): /usr/bin/ceph-deploy install ses-node1
ses-node2 ses-node3
[2016-11-07 11:37:32,854][ceph_deploy.cli][INFO ] ceph-deploy options:
[2016-11-07 11:37:32,854][ceph_deploy.cli][INFO ] verbose : False
[2016-11-07 11:37:32,854][ceph_deploy.cli][INFO ] testing : None
[2016-11-07 11:37:32,855][ceph_deploy.cli][INFO ] cd_conf : <ceph_deploy.conf.cephdeploy.Conf instance at
0x7f12cbf6cef0> [2016-11-07 11:37:32,855][ceph_deploy.cli][INFO ] cluster : ceph
[2016-11-07 11:37:32,855][ceph_deploy.cli][INFO ] dev_commit : None
[2016-11-07 11:37:32,855][ceph_deploy.cli][INFO ] install_mds : False
[2016-11-07 11:37:32,855][ceph_deploy.cli][INFO ] stable : None
[2016-11-07 11:37:32,855][ceph_deploy.cli][INFO ] default_release : False
[2016-11-07 11:37:32,855][ceph_deploy.cli][INFO ] username : None
[2016-11-07 11:37:32,855][ceph_deploy.cli][INFO ] adjust_repos : True
[2016-11-07 11:37:32,855][ceph_deploy.cli][INFO ] func : [2016-11-07 11:37:32,855][ceph_deploy.cli][INFO ]
install_all : False
[2016-11-07 11:37:32,855][ceph_deploy.cli][INFO ] repo : False
[2016-11-07 11:37:32,855][ceph_deploy.cli][INFO ] host : ['ses-node1', 'ses-node2', 'ses-node3']
[2016-11-07 11:37:32,855][ceph_deploy.cli][INFO ] install_rgw : False
[2016-11-07 11:37:32,855][ceph_deploy.cli][INFO ] install_tests : False
[2016-11-07 11:37:32,855][ceph_deploy.cli][INFO ] repo_url : None
[2016-11-07 11:37:32,855][ceph_deploy.cli][INFO ] ceph_conf : None
[2016-11-07 11:37:32,855][ceph_deploy.cli][INFO ] install_osd : False
[2016-11-07 11:37:32,855][ceph_deploy.cli][INFO ] version_kind : stable
[2016-11-07 11:37:32,856][ceph_deploy.cli][INFO ] install_common : False
[2016-11-07 11:37:32,856][ceph_deploy.cli][INFO ] overwrite_conf : False
[2016-11-07 11:37:32,856][ceph_deploy.cli][INFO ] quiet : False
[2016-11-07 11:37:32,856][ceph_deploy.cli][INFO ] dev : master
[2016-11-07 11:37:32,856][ceph_deploy.cli][INFO ] local_mirror : None
[2016-11-07 11:37:32,856][ceph_deploy.cli][INFO ] release : None
[2016-11-07 11:37:32,856][ceph_deploy.cli][INFO ] install_mon : False
```

```
[2016-11-07 11:37:32,856][ceph_deploy.cli][INFO ] gpg_url : None
[2016-11-07 11:37:32,856][ceph_deploy.install][DEBUG ] Installing stable version infernalis on cluster ceph
hosts ses-nodel ses-node2 ses-node3
[2016-11-07 11:37:32,856][ceph_deploy.install][DEBUG ] Detecting platform for host ses-nodel ...
[2016-11-07 11:37:33,075][ses-nodel][DEBUG ] connection detected need for sudo
[2016-11-07 11:37:33,221][ses-nodel][DEBUG ] connected to host: ses-nodel
[2016-11-07 11:37:33,221][ses-nodel][DEBUG ] detect platform information from remote host
[2016-11-07 11:37:33,256][ses-nodel][DEBUG ] detect machine type
[2016-11-07 11:37:33,260][ceph_deploy.install][INFO ] Distro info: SUSE Linux Enterprise Server 12 x86_64
[2016-11-07 11:37:33,260][ses-nodel][INFO ] installing Ceph on ses-nodel
[2016-11-07 11:37:33,263][ses-nodel][INFO ] Running command: sudo zypper --non-interactive --quiet refresh
[2016-11-07 11:37:33,491][ses-nodel][INFO ] Running command: sudo zypper --non-interactive --quiet install
ceph ceph-radosgw
[2016-11-07 11:37:33,758][ses-nodel][DEBUG ]
[2016-11-07 11:37:33,758][ses-nodel][DEBUG ] The following 35 NEW packages are going to be installed:
[2016-11-07 11:37:33,758][ses-nodel][DEBUG ] babeltrace ceph ceph-base ceph-common ceph-mds ceph-mon
ceph-osd ceph-radosgw FastCGI gperftools libboost_iostreams1_54_0 libboost_program_options1_54_0
libboost_random1_54_0 libcephfs1 libibverbs1 libleveldbl librados2 libradosstriper1 librbd1 librdmacml
librgw2 liburcu0 libxio lttng-ust python-cephfs python-Flask python-itsdangerous python-Jinja2
python-MarkupSafe python-rados python-rbd python-requests python-setuptools python-Werkzeug
supportutils-plugin-ses
[2016-11-07 11:37:33,758][ses-nodel][DEBUG ]
[2016-11-07 11:37:33,758][ses-nodel][DEBUG ] The following package is not supported by its vendor:
[2016-11-07 11:37:33,758][ses-nodel][DEBUG ] libxio
[2016-11-07 11:37:33,758][ses-nodel][DEBUG ]
[2016-11-07 11:37:33,759][ses-nodel][DEBUG ] 35 new packages to install.
[2016-11-07 11:37:33,759][ses-nodel][DEBUG ] Overall download size: 47.3 MiB. Already cached: 0 B. After
the operation, additional 204.1 MiB will be used.
[2016-11-07 11:37:33,759][ses-nodel][DEBUG ] Continue? [y/n/? shows all options] (y): y
[2016-11-07 11:37:44,565][ses-nodel][INFO ] Running command: sudo ceph --version
[2016-11-07 11:37:44,683][ses-nodel][DEBUG ] ceph version 10.2.1-112-gb8ee9e4
(b8ee9e4007f0443ef50debl1a691c3ea8bd0a11fe)
[2016-11-07 11:37:44,683][ceph_deploy.install][DEBUG ] Detecting platform for host ses-node2 ...
[2016-11-07 11:37:44,876][ses-node2][DEBUG ] connection detected need for sudo
[2016-11-07 11:37:45,016][ses-node2][DEBUG ] connected to host: ses-node2
[2016-11-07 11:37:45,017][ses-node2][DEBUG ] detect platform information from remote host
[2016-11-07 11:37:45,055][ses-node2][DEBUG ] detect machine type
[2016-11-07 11:37:45,060][ceph_deploy.install][INFO ] Distro info: SUSE Linux Enterprise Server 12 x86_64
[2016-11-07 11:37:45,060][ses-node2][INFO ] installing Ceph on ses-node2
[2016-11-07 11:37:45,062][ses-node2][INFO ] Running command: sudo zypper --non-interactive --quiet refresh
[2016-11-07 11:37:45,335][ses-node2][INFO ] Running command: sudo zypper --non-interactive --quiet install
ceph ceph-radosgw
[2016-11-07 11:37:45,602][ses-node2][DEBUG ]
[2016-11-07 11:37:45,602][ses-node2][DEBUG ] The following 35 NEW packages are going to be installed:
[2016-11-07 11:37:45,602][ses-node2][DEBUG ] babeltrace ceph ceph-base ceph-common ceph-mds ceph-mon
ceph-osd ceph-radosgw FastCGI gperftools libboost_iostreams1_54_0 libboost_program_options1_54_0
libboost_random1_54_0 libcephfs1 libibverbs1 libleveldbl librados2 libradosstriper1 librbd1 librdmacml
librgw2 liburcu0 libxio lttng-ust python-cephfs python-Flask python-itsdangerous python-Jinja2
python-MarkupSafe python-rados python-rbd python-requests python-setuptools python-Werkzeug
supportutils-plugin-ses
[2016-11-07 11:37:45,602][ses-node2][DEBUG ]
[2016-11-07 11:37:45,603][ses-node2][DEBUG ] The following package is not supported by its vendor:
```

```
[2016-11-07 11:37:45,603][ses-node2][DEBUG ] libxio
[2016-11-07 11:37:45,603][ses-node2][DEBUG ]
[2016-11-07 11:37:45,603][ses-node2][DEBUG ] 35 new packages to install.
[2016-11-07 11:37:45,603][ses-node2][DEBUG ] Overall download size: 47.3 MiB. Already cached: 0 B. After
the operation, additional 204.1 MiB will be used.
[2016-11-07 11:37:45,603][ses-node2][DEBUG ] Continue? [y/n/? shows all options] (y): y
[2016-11-07 11:37:56,699][ses-node2][INFO ] Running command: sudo ceph --version
[2016-11-07 11:37:56,819][ses-node2][DEBUG ] ceph version 10.2.1-112-gb8ee9e4
(b8ee9e4007f0443ef50deb1a691c3ea8bd0a11fe)
[2016-11-07 11:37:56,820][ceph_deploy.install][DEBUG ] Detecting platform for host ses-node3 ...
[2016-11-07 11:37:57,028][ses-node3][DEBUG ] connection detected need for sudo
[2016-11-07 11:37:57,173][ses-node3][DEBUG ] connected to host: ses-node3
[2016-11-07 11:37:57,173][ses-node3][DEBUG ] detect platform information from remote host
[2016-11-07 11:37:57,210][ses-node3][DEBUG ] detect machine type
[2016-11-07 11:37:57,215][ceph_deploy.install][INFO ] Distro info: SUSE Linux Enterprise Server 12 x86_64
[2016-11-07 11:37:57,216][ses-node3][INFO ] installing Ceph on ses-node3
[2016-11-07 11:37:57,218][ses-node3][INFO ] Running command: sudo zypper --non-interactive --quiet refresh
[2016-11-07 11:37:57,494][ses-node3][INFO ] Running command: sudo zypper --non-interactive --quiet install
ceph ceph-radosgw
[2016-11-07 11:37:57,762][ses-node3][DEBUG ]
[2016-11-07 11:37:57,762][ses-node3][DEBUG ] The following 35 NEW packages are going to be installed:
[2016-11-07 11:37:57,762][ses-node3][DEBUG ] babeltrace ceph ceph-base ceph-common ceph-mds ceph-mon
ceph-osd ceph-radosgw FastCGI gperftools libboost_iostreams1_54_0 libboost_program_options1_54_0
libboost_random1_54_0 libcephfs1 libibverbs1 libleveldbl librados2 libradosstriper1 librbd1 librdmacml
librgw2 liburcu0 libxio ltng-ust python-cephfs python-Flask python-itsdangerous python-Jinja2
python-MarkupSafe python-rados python-rbd python-requests python-setuptools python-Werkzeug
supportutils-plugin-ses
[2016-11-07 11:37:57,762][ses-node3][DEBUG ]
[2016-11-07 11:37:57,762][ses-node3][DEBUG ] The following package is not supported by its vendor:
[2016-11-07 11:37:57,762][ses-node3][DEBUG ] libxio
[2016-11-07 11:37:57,762][ses-node3][DEBUG ]
[2016-11-07 11:37:57,762][ses-node3][DEBUG ] 35 new packages to install.
[2016-11-07 11:37:57,762][ses-node3][DEBUG ] Overall download size: 47.3 MiB. Already cached: 0 B. After
the operation, additional 204.1 MiB will be used.
[2016-11-07 11:37:57,762][ses-node3][DEBUG ] Continue? [y/n/? shows all options] (y): y
[2016-11-07 11:38:08,867][ses-node3][INFO ] Running command: sudo ceph --version
[2016-11-07 11:38:08,987][ses-node3][DEBUG ] ceph version 10.2.1-112-gb8ee9e4
(b8ee9e4007f0443ef50deb1a691c3ea8bd0a11fe)
cephadm@ses-admin:~> ceph -v
ceph version 10.2.1-112-gb8ee9e4 (b8ee9e4007f0443ef50deb1a691c3ea8bd0a11fe)
cephadm@ses-admin:~> ceph-deploy new ses-node1
[ceph_deploy.conf][DEBUG ] found configuration file at: /home/cephadm/.cephdeploy.conf
[ceph_deploy.cli][INFO ] Invoked (1.5.32): /usr/bin/ceph-deploy new ses-node1
[ceph_deploy.cli][INFO ] ceph-deploy options:
[ceph_deploy.cli][INFO ] username : None
[ceph_deploy.cli][INFO ] verbose : False
[ceph_deploy.cli][INFO ] overwrite_conf : False
[ceph_deploy.cli][INFO ] quiet : False
[ceph_deploy.cli][INFO ] cd_conf : <ceph_deploy.conf.cephdeploy.Conf instance at 0x7fbd48a4df80>
[ceph_deploy.cli][INFO ] cluster : ceph
[ceph_deploy.cli][INFO ] ssh_copykey : True
[ceph_deploy.cli][INFO ] mon : ['ses-node1']
```

```
[ceph_deploy.cli][INFO ] func : [ceph_deploy.cli][INFO ] public_network : None
[ceph_deploy.cli][INFO ] ceph_conf : None
[ceph_deploy.cli][INFO ] cluster_network : None
[ceph_deploy.cli][INFO ] default_release : False
[ceph_deploy.cli][INFO ] fsid : None
[ceph_deploy.new][DEBUG ] Creating new cluster named ceph
[ceph_deploy.new][INFO ] making sure passwordless SSH succeeds
[ses-nodel][DEBUG ] connected to host: ses-admin
[ses-nodel][INFO ] Running command: ssh -CT -o BatchMode=yes ses-nodel
[ses-nodel][DEBUG ] connection detected need for sudo
[ses-nodel][DEBUG ] connected to host: ses-nodel
[ses-nodel][DEBUG ] detect platform information from remote host
[ses-nodel][DEBUG ] detect machine type
[ses-nodel][DEBUG ] find the location of an executable
[ses-nodel][INFO ] Running command: sudo /bin/ip link show
[ses-nodel][INFO ] Running command: sudo /bin/ip addr show
[ses-nodel][DEBUG ] IP addresses found: ['192.168.100.11', '192.168.200.11']
[ceph_deploy.new][DEBUG ] Resolving host ses-nodel
[ceph_deploy.new][DEBUG ] Monitor ses-nodel at 192.168.100.11
[ceph_deploy.new][DEBUG ] Monitor initial members are ['ses-nodel']
[ceph_deploy.new][DEBUG ] Monitor addrs are ['192.168.100.11']
[ceph_deploy.new][DEBUG ] Creating a random mon key...
[ceph_deploy.new][DEBUG ] Writing monitor keyring to ceph.mon.keyring...
[ceph_deploy.new][DEBUG ] Writing initial config to ceph.conf...
cephadm@ses-admin:~>
```

### Creation de pool

pool name

number of placement groups : (nber of OSD \* 100 ) / nber of replicas

pool size : 2,10 g take 20 g of storage and 20 g of netw transfert

pool size : 3,10 g take 30 g of storage and 30 g of netw transfert

=> il vaut mieux bcp de petits data pool plutot qu un gros

rados attaque en direct le pool sans passer par la couche osd

default, replicate all datas

=> full replication, 3x stockage et bande passante

### RDB Storage

pour avoir du block storage, il faut creer une image d abord puis rappe en block device

format1 or 2 => 2 support snapshots

rbd create, puis map pour connect

si besoin, faire le pool avant

rbd create -p poolname rdbimagename --size xxx --image format 2

size en mb par defaut

rbd list

```
cephadm@ses-admin:~> ceph osd map test myobj
```

```
osdmap e23 pool 'test' (1) object 'myobj' -> pg 1.c3ca3d86 (1.6) -> up ([2,1], p2) acting ([2,1], p2)
```

```
cephadm@ses-admin:~> ceph osd tree
```

```
ID WEIGHT TYPE NAME UP/DOWN REWEIGHT PRIMARY-AFFINITY
```

```
-1 0.04376 root default
```

```
-2 0.01459 host ses-node1
  0 0.01459 osd.0 up 1.00000 1.00000
-3 0.01459 host ses-node2
  1 0.01459 osd.1 up 1.00000 1.00000
-4 0.01459 host ses-node3
  2 0.01459 osd.2 up 1.00000 1.00000
```

```
cephadm@ses-admin:~> ceph osd pool set test size 3
set pool 1 size to 3
```

```
cephadm@ses-admin:~> ceph osd tree
ID WEIGHT TYPE NAME UP/DOWN REWEIGHT PRIMARY-AFFINITY
-1 0.04376 root default
-2 0.01459 host ses-node1
  0 0.01459 osd.0 up 1.00000 1.00000
-3 0.01459 host ses-node2
  1 0.01459 osd.1 up 1.00000 1.00000
-4 0.01459 host ses-node3
  2 0.01459 osd.2 up 1.00000 1.00000
```

Mapping pour utilisation en direct  
persistance de mapping se fait dans fstab

```
cephadm@ses-admin:~> rbd create -p block-pool block-storage --size 1024
```

```
cephadm@ses-admin:~> rbd -p block-pool info block-storage
```

```
rbd image 'block-storage':
```

```
size 1024 MB in 256 objects
```

```
order 22 (4096 kB objects)
```

```
block_name_prefix: rbd_data.108f238elf29
```

```
format: 2
```

```
features: layering
```

```
flags:
```

```
cephadm@ses-admin:~> sudo su -
```

```
ses-admin:~ # cat /etc/fstab
```

```
UUID=a8cecc6a-ed55-45ec-9092-08cccd1d1fa5 swap swap defaults 0 0
```

```
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb / btrfs defaults 0 0
```

```
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /boot/grub2/i386-pc btrfs subvol=@/boot/grub2/i386-pc 0 0
```

```
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /boot/grub2/x86_64-efi btrfs subvol=@/boot/grub2/x86_64-efi 0 0
```

```
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /home btrfs subvol=@/home 0 0
```

```
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /opt btrfs subvol=@/opt 0 0
```

```
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /srv btrfs subvol=@/srv 0 0
```

```
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /tmp btrfs subvol=@/tmp 0 0
```

```
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /usr/local btrfs subvol=@/usr/local 0 0
```

```
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /var/crash btrfs subvol=@/var/crash 0 0
```

```
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /var/lib/libvirt/images btrfs subvol=@/var/lib/libvirt/images 0 0
```

```
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /var/lib/mailman btrfs subvol=@/var/lib/mailman 0 0
```

```
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /var/lib/mariadb btrfs subvol=@/var/lib/mariadb 0 0
```

```
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /var/lib/mysql btrfs subvol=@/var/lib/mysql 0 0
```

```
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /var/lib/named btrfs subvol=@/var/lib/named 0 0
```

```
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /var/lib/pgsql btrfs subvol=@/var/lib/pgsql 0 0
```

```
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /var/log btrfs subvol=@/var/log 0 0
```

```
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /var/opt btrfs subvol=@/var/opt 0 0
```

```
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /var/spool btrfs subvol=@/var/spool 0 0
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /var/tmp btrfs subvol=@/var/tmp 0 0
UUID=f809d9df-cc52-43e0-a42c-3f2c8ee680eb /.snapshots btrfs subvol=@/.snapshots 0 0
ses-admin:~ # rbd map -p block-pool --image block-storage
/dev/rbd0
ses-admin:~ # rbd showmapped
id pool image snap device
0 block-pool block-storage - /dev/rbd0
ses-admin:~ # ls /dev/rbd*
/dev/rbd0

/dev/rbd:
block-pool
```

Snapshot sans overhead  
rbd snap (etc)

Copy on write  
snapshot layering, image au format 2 obligatoirement  
mais les snapshots sont alors indispensables, il faut les protéger avec la fonction lock

rfc3720 for iscsi

json configuration authentication to iscsi authentication  
[https://www.suse.com/docrep/documents/kgu61iyowz/suse\\_enterprise\\_storage\\_3\\_and\\_iscsi.pdf](https://www.suse.com/docrep/documents/kgu61iyowz/suse_enterprise_storage_3_and_iscsi.pdf)

```
ses-node3:~ # targetcli ls
o- / .....
[...]
  o- backstores .....
[...]
    | o- fileio ..... [0 Storage
Object]
    | o- iblock ..... [1 Storage
Object]
    | | o- iscsi ..... [/dev/rbd/rbd/iscsi
activated]
    | o- pscsi ..... [0 Storage
Object]
    | o- rbd ..... [0 Storage
Object]
    | o- rd_mcp ..... [0 Storage
Object]
  o- ib_srpt ..... [0
Targets]
  o- iscsi ..... [1
Target]
    | o- iqn.2003-01.org.linux-iscsi.ses-node3.x8664:sn.76494aa74ebc ..... [1
TPG]
    | o- tpg1 .....
[enabled]
    | o- acls ..... [0
```

```

ACLs]
| o- luns ..... [1
LUN]
| | o- lun0 ..... [iblock/iscsi
(/dev/rbd/rbd/iscsi)]
| o- portals ..... [1
Portal]
| o- 192.168.100.13:3260 ..... [OK, iser disabled]
o- loopback ..... [0
Targets]
o- qla2xxx ..... [0
Targets]
o- tcm_fc ..... [0
Targets]
o- vhost ..... [0
Targets]

```

## erasure code profile

une sorte de qos pour econo;iser du reseau pour limiter les controles d integrite  
chaque erreur part dans une sorte de poubelle

```

cephadm@ses-admin:~> ceph osd erasure-code-profile get default
k=2
m=1
plugin=jerasure
technique=reed_sol_van

```

exemple k+m (10+6), on peut perdre 6 sur 16 disks (totalite des disques)  
10 disks requis  
prend 60% de capacite  
attention aux perf, se rapproche d un raid6  
si erasure profile fixe, ne peut pas etre change  
utile sur des donnees chaudes/donnees froides/cout de stockage

ceph status : look at placement group  
ex : recovering en bas de page

## monitor :

health, mon quorum, osd status, pg status, full disk, nodes status  
=> ceph health  
=> ceph status

```

cephadm@ses-admin:~> ceph -w
cluster 9a5b2edf-4d00-4b46-a010-3420d96450e5
health HEALTH_WARN
too many PGs per OSD (408 > max 300)
monmap e3: 3 mons at
{ses-node1=192.168.100.11:6789/0,ses-node2=192.168.100.12:6789/0,ses-node3=192.168.100.13:6789/0}
election epoch 6, quorum 0,1,2 ses-node1,ses-node2,ses-node3
osdmap e57: 3 osds: 3 up, 3 in
flags sortbitwise
pgmap v3256: 408 pgs, 15 pools, 70949 kB data, 505 objects

```



322 MB used, 45724 MB / 46046 MB avail

408 active+clean

ceph calamari backend, romana frontend

inclus avec suse enterprise storage

install calamari puis deploy --master monitoring-mode

alaister@suse.com