SES 5.5

Appendix :

SAP Data Hub 2 installation on premise requires SUSE Enterprise Storage 5 or higher. If you plan to use SUSE Enterprise Storage not only for your Kubernetes dynamic storageclass but also for your Kubernetes Control plan, virtualised or not, you should reserve enough resources to address etcd requirements regarding https://github.com/etcd-io/etcd/blob/master/Documentation/op-guide/hardware.md.

Follow the next steps to deploy a minimalistic, virtualised, test oriented, SUSE Enterprise Storage 5.5.

In the following exemple, we're going to build a 4 nodes (1 admin + 3 OSD) Ceph Cluster providing a RBD pool.

Before starting :

- Collect your SUSE Linux Enterprise Server 12 SP3 and SUSE Enterprise Storage Registration code from scc.suse.com or have a SMT/RMT properly set up and already mirroring theses products. (https://documentation.suse.com/sles/12-SP4/html/SLES-all/book-smt.html)

- Your DNS zone should be already set, in our exemple where all Datahub components are in the same dns zone and same subnet, it should looks like :

- Also, in order to be as efficient as possible when using interactive shell scripted infrastructure deployment, we advice you to use an advanced terminal client or

multiplexer which permits to address multiple shells at once.

```
➜  ~   ssh root@10.10.10.103
Last login: Thu Oct 17 16:21:18 2019 from 10.10.8.2
utnodec:~ # sudo virt-install --name ses55-admin --ram 16384 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-admin.qcow2,size=40 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-admin-osd0.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-admin-osd1.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-admin-osd2.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-admin-osd3.qcow2,size=20
 --vcpus 4 --os-type linux --os-variant generic --network bridge=caasp3 --graphics none --console pty,target_type=serial --location '/var/lib/libvirt/ISOS/SLE-12-SP3-Server-DVD-x86_64-GM-DVD1.iso' --extra-args 'console=ttyS0,115200n8 serial autoyast-ses5=http://10.10.10.101/autoyast-ses5 ifcfg=eth0=10.18.10.200/24,10.18.10.1,10.10.10.11,suse-sap.net domain=suse-sap.net Textmode=1'
```

```
➜  ~   ssh root@10.10.10.103
Last login: Thu Oct 17 16:21:18 2019 from 10.10.8.2
utnodec:~ # sudo virt-install --name ses55-osd0 --ram 16384 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd0.qcow2,size=40 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd0-osd0.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd0-osd1.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd0-osd2.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd0-osd3.qcow2,size=20 --vcpus 4 --os-type linux --os-variant generic --network bridge=caasp3 --graphics none --console pty,target_type=serial --location '/var/lib/libvirt/ISOS/SLE-12-SP3-Server-DVD-x86_64-GM-DVD1.iso' --extra-args 'console=ttyS0,115200n8 serial autoyast-ses5=http://10.10.10.101/autoyast-ses5 ifcfg=eth0=10.18.10.230/24,10.18.10.1,10.10.10.11,suse-sap.net domain=suse-sap.net Textmode=1'
```

```
➜  ~   ssh root@10.10.10.103
Last login: Thu Oct 17 16:21:18 2019 from 10.10.8.2
utnodec:~ # sudo virt-install --name ses55-osd1 --ram 16384 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd1.qcow2,size=40 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd1-osd0.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd1-osd1.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd1-osd2.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd1-osd3.qcow2,size=20 --vcpus 4 --os-type linux --os-variant generic --network bridge=caasp3 --graphics none --console pty,target_type=serial --location '/var/lib/libvirt/ISOS/SLE-12-SP3-Server-DVD-x86_64-GM-DVD1.iso' --extra-args 'console=ttyS0,115200n8 serial autoyast-ses5=http://10.10.10.101/autoyast-ses5 ifcfg=eth0=10.18.10.231/24,10.18.10.1,10.10.10.11,suse-sap.net domain=suse-sap.net Textmode=1'
```

```
➜  ~   ssh root@10.10.10.103
Last login: Thu Oct 17 15:02:22 2019 from 10.10.8.2
utnodec:~ # sudo virt-install --name ses55-osd2 --ram 16384 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd2.qcow2,size=40 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd2-osd0.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd2-osd1.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd2-osd2.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd2-osd3.qcow2,size=20 --vcpus 4 --os-type linux --os-variant generic --network bridge=caasp3 --graphics none --console pty,target_type=serial --location '/var/lib/libvirt/ISOS/SLE-12-SP3-Server-DVD-x86_64-GM-DVD1.iso' --extra-args 'console=ttyS0,115200n8 serial autoyast-ses5=http://10.10.10.101/autoyast-ses5 ifcfg=eth0=10.18.10.232/24,10.18.10.1,10.10.10.11,suse-sap.net domain=suse-sap.net Textmode=1'
```

- ```sudo virt-install --name ses55-admin --ram 16384 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-admin.qcow2,size=40 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-admin-osd0.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-admin-osd1.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-admin-osd2.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-admin-osd3.qcow2,size=20 --vcpus 4 --os-type linux --os-variant generic --network bridge=caasp3 --graphics none --console pty,target_type=serial --location '/var/lib/libvirt/ISOS/SLE-12-SP3-Server-DVD-x86_64-GM-DVD1.iso' --extra-args 'console=ttyS0,115200n8 serial autoyast-ses5=http://10.10.10.101/autoyast-ses5 ifcfg=eth0=10.18.10.200/24,10.18.10.1,10.10.10.11,suse-sap.net domain=suse-sap.net Textmode=1'

- sudo virt-install --name ses55-osd0 --ram 16384 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd0.qcow2,size=40 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd0-osd0.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd0-osd1.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd0-osd2.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd0-osd3.qcow2,size=20 --vcpus 4 --os-type linux --os-variant generic --network bridge=caasp3 --graphics none --console pty,target_type=serial --location '/var/lib/libvirt/ISOS/SLE-12-SP3-Server-DVD-x86_64-GM-DVD1.iso' --extra-args 'console=ttyS0,115200n8 serial autoyast-ses5=http://10.10.10.101/autoyast-ses5

ifcfg=eth0=10.18.10.230/24,10.18.10.1,10.10.10.11,suse-sap.net domain=suse-sap.net Textmode=1'

- sudo virt-install --name ses55-osd1 --ram 16384 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd1.qcow2,size=40 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd1-osd0.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd1-osd1.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd1-osd2.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd1-osd3.qcow2,size=20 --vcpus 4 --os-type linux --os-variant generic --network bridge=caasp3 --graphics none --console pty,target_type=serial --location '/var/lib/libvirt/ISOS/SLE-12-SP3-Server-DVD-x86_64-GM-DVD1.iso' --extra-args 'console=ttyS0,115200n8 serial autoyast-ses5=http://10.10.10.101/autoyast-ses5 ifcfg=eth0=10.18.10.231/24,10.18.10.1,10.10.10.11,suse-sap.net domain=suse-sap.net Textmode=1'

- sudo virt-install --name ses55-osd2 --ram 16384 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd2.qcow2,size=40 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd2-osd0.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd2-osd1.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd2-osd2.qcow2,size=20 --disk bus=virtio,path=/var/lib/libvirt/VMS/ses55-osd2-osd3.qcow2,size=20 --vcpus 4 --os-type linux --os-variant generic --network bridge=caasp3 --graphics none --console pty,target_type=serial --location '/var/lib/libvirt/ISOS/SLE-12-SP3-Server-DVD-x86_64-GM-DVD1.iso' --extra-args 'console=ttyS0,115200n8 serial autoyast-ses5=http://10.10.10.101/autoyast-ses5 ifcfg=eth0=10.18.10.232/24,10.18.10.1,10.10.10.11,suse-sap.net domain=suse-sap.net Textmode=1’```

- Select the SUSE Entreprise Storage 5 Extension

- On the hypervisor you should also be able to route or bridge (either a traditional bridge using brctl or a virtual-bridge) your upcoming SUSE Enterprise Storage 5.5 network segment. In our example, for simplicity, we're using the same bridge and network address than our CaaSP cluster "**`--network bridge=caasp3`**"
- `In the following example, each node is powered by 16GB of RAM, 4`

VCPU, 40 GB for the root disk, 4 * 20GB OSDB disk.

- NTP must be configured on each nodes

- Unselect AppArmor and unnecessary X and Gnome Patterns, but select the SUSE Enterprise Storage pattern

- Desactivate the Firewall on the nodes.
- Start the Installation on all nodes.

- Once nodes have reboot, log in and finish network/hostname and NTP configurations so that ```hostname -f``` returns the FQDN of the nodes and ```ntpq -p``` returns a stratum less than 16.

```
root@10.10.10.103 (ssh)
ses55-admin:~ # hostname -f
ses55-admin.suse-sap.net
ses55-admin:~ # ntpq -p
     remote           refid      st t when poll reach   delay   offset  jitter
==============================================================================
*194.169.214.72  145.238.203.14   2 u   58   64    3  157.477   62.071  31.448
ses55-admin:~ #
```

```
root@10.10.10.103 (ssh)
ses55-osd0:~ # hostname -f
ses55-osd0.suse-sap.net
ses55-osd0:~ # ntpq -p
     remote           refid      st t when poll reach   delay   offset  jitter
==============================================================================
*tor-exit-2.tuxl 188.165.236.162  3 u   21   64  377  159.973    0.114   1.569
ses55-osd0:~ #
```

```
root@10.10.10.103 (ssh)
ses55-osd1:~ # hostname -f
ses55-osd1.suse-sap.net
ses55-osd1:~ # ntpq -p
     remote           refid      st t when poll reach   delay   offset  jitter
==============================================================================
*villisika.miuku 85.199.214.98    2 u   19   64  377  170.462    0.034   1.475
ses55-osd1:~ #
```

```
root@10.10.10.103 (ssh)
ses55-osd2:~ # hostname -f
ses55-osd2.suse-sap.net
ses55-osd2:~ # ntpq -p
     remote           refid      st t when poll reach   delay   offset  jitter
==============================================================================
*megaman.thican. 91.121.7.182     3 u   26   64   37  178.548   -1.466   3.290
ses55-osd2:~ #
```

Using ssh-keygen then ssh-copy-id, spread your SUSE Entreprise Storage Admin node ssh pub key to all other nodes.

Verify that the drive we're going to allocate for SUSE Entreprise Storage OSDs are clean by wiping them (refer to p36 of the deployment guide : https://documentation.suse.com/ses/5.5/pdf/book-storage-deployment_color_en.pdf)

Install salt-minion on all nodes (admin also) and salt-master only on admin (in our example ses55-admin.suse-sap.net). Install also deepsea on admin node.

Then restart salt-minion on all nodes and restart salt-master on admin

```
root@10.10.10.103 (ssh)
Refreshing service 'SUSE_Enterprise_Storage_5_x86_64'.
Refreshing service 'SUSE_Linux_Enterprise_Server_12_SP3_x86_64'.
Loading repository data...
Reading installed packages...
Forcing installation of 'salt-master-2016.11.4-48.7.1.x86_64' from repository 'SUSE-Enterprise
-Storage-5-Updates'.
Resolving package dependencies...

The following package is going to be reinstalled:
  salt-master

1 package to reinstall.
Overall download size: 1.7 MiB. Already cached: 0 B. No additional space will be
used or freed after the operation.
Continue? [y/n/...? shows all options] (y): y
Retrieving package salt-master-2016.11.4-48.7.1.x86_64
                                        (1/1),   1.7 MiB (  1.6 MiB unpacked)
Retrieving: salt-master-2016.11.4-48.7.1.x86_64.rpm .....................[done]

Checking for file conflicts: ............................................[done]
(1/1) Installing: salt-master-2016.11.4-48.7.1.x86_64 ...................[done]
ses55-admin:~/SES-scripts # systemctl restart salt-minion.service
ses55-admin:~/SES-scripts # systemctl restart salt-master.service
ses55-admin:~/SES-scripts #
```

```
root@10.10.10.103 (ssh)
ses55-osd0:~ # systemctl restart salt-minion.service
ses55-osd0:~ #
```

```
root@10.10.10.103 (ssh)
ses55-osd1:~ # systemctl restart salt-minion.service
ses55-osd1:~ #
```

```
root@10.10.10.103 (ssh)
ses55-osd2:~ # systemctl restart salt-minion.service
ses55-osd2:~ #
```

Accept pending Salt key.

```
ses55-admin:/ # salt-key -L
Accepted Keys:
ses55-admin.suse-sap.net
ses55-osd0.suse-sap.net
ses55-osd1.suse-sap.net
ses55-osd2.suse-sap.net
Denied Keys:
Unaccepted Keys:
Rejected Keys:
ses55-admin:/ #
```

- **Accept pending Salt key.**

Verify that /srv/pillar/ceph/master_minion.sls point to your admin node, in our example it contains our salt-master FQDN : master_minion: ses55-admin.suse-sap.net

Prepare the cluster ```salt-run state.orch ceph.stage.0```

```
Use Ctrl+C to stop the monitor
Initializing DeepSea progess monitor... done.
Starting stage: ceph.stage.0
Parsing ceph.stage.0 steps... ⏳

Parsing ceph.stage.0 steps... ✓


Stage initialization output:
deepsea_minions          : valid
master_minion            : valid
ceph_version             : valid

[1/14]    ceph.sync on
          ses55-admin.suse-sap.net..................................... ✓ (1s)

[2/14]    ceph.salt-api on
          ses55-admin.suse-sap.net..................................... ✓ (3s)

[3/14]    ceph.repo on
          ses55-admin.suse-sap.net..................................... ✓ (0.4s)

[4/14]    ceph.metapackage on
          ses55-admin.suse-sap.net..................................... ✓ (3s)

[5/14]    ceph.updates on
          ses55-admin.suse-sap.net..................................... ✓ (8s)

[6/14]    filequeue.remove(item=lock)................................... ✓ (0.0s)

[7/14]    filequeue.add(item=complete)                                  ✓ (0.0s)
```

```
[8/14]    minions.ready(timeout=300)................................ ✓ (0.5s)

[9/14]    ceph.repo on
          ses55-osd1.suse-sap.net.................................. ✓ (0.4s)
          ses55-admin.suse-sap.net................................. ✓ (0.3s)
          ses55-osd0.suse-sap.net.................................. ✓ (0.4s)
          ses55-osd2.suse-sap.net.................................. ✓ (0.3s)

[10/14]   ceph.metapackage on
          ses55-osd1.suse-sap.net.................................. ✓ (3s)
          ses55-admin.suse-sap.net................................. ✓ (3s)
          ses55-osd0.suse-sap.net.................................. ✓ (3s)
          ses55-osd2.suse-sap.net.................................. ✓ (3s)

[11/14]   ceph.packages.common on
          ses55-osd1.suse-sap.net.................................. ✓ (3s)
          ses55-admin.suse-sap.net................................. ✓ (3s)
          ses55-osd0.suse-sap.net.................................. ✓ (3s)
          ses55-osd2.suse-sap.net.................................. ✓ (3s)

[12/14]   ceph.sync on
          ses55-osd1.suse-sap.net.................................. ✓ (2s)
          ses55-admin.suse-sap.net................................. ✓ (2s)
          ses55-osd0.suse-sap.net.................................. ✓ (2s)
          ses55-osd2.suse-sap.net.................................. ✓ (2s)

[13/14]   ceph.mines on
          ses55-osd1.suse-sap.net.................................. ✓ (3s)
          ses55-admin.suse-sap.net................................. ✓ (3s)
          ses55-osd0.suse-sap.net.................................. ✓ (3s)
          ses55-osd2.suse-sap.net.................................. ✓ (3s)

[14/14]   ceph.updates on
          ses55-osd1.suse-sap.net.................................. ✓ (8s)
          ses55-admin.suse-sap.net................................. ✓ (8s)
          ses55-osd0.suse-sap.net.................................. ✓ (9s)
          ses55-osd2.suse-sap.net.................................. ✓ (7s)

Ended stage: ceph.stage.0 succeeded=14/14 time=57.7s
```

- **Collect informations about the nodes : salt-run state.orch ceph.stage.1**

```
Starting stage: ceph.stage.1
Parsing ceph.stage.1 steps...  ⌛

Parsing ceph.stage.1 steps... ✓


Stage initialization output:
salt-api                  : valid
deepsea_minions           : valid
master_minion             : valid
ceph_version              : valid

[1/4]     minions.ready(timeout=300)................................ ✓ (0.5s)

[2/4]     ceph.refresh on
          ses55-admin.suse-sap.net................................. ✓ (0.3s)

[3/4]     populate.proposals....................................... ✓ (5s)

[4/4]     proposal.populate........................................ ✓ (3s)

Ended stage: ceph.stage.1 succeeded=4/4 time=24.0s
```

- Adapt the file /srv/pillar/ceph/proposals/policy.cfg to your needs.

In our example we are not using services

cluster-ceph/cluster/ses55-osd2.suse-sap.net.sls
config/stack/default/ceph/cluster.yml
config/stack/default/global.yml
profile-default/cluster/ses55-admin.suse-sap.net.sls
profile-default/cluster/ses55-osd0.suse-sap.net.sls
profile-default/cluster/ses55-osd1.suse-sap.net.sls
profile-default/cluster/ses55-osd2.suse-sap.net.sls
profile-default/stack/default/ceph/minions/ses55-admin.suse-sap.net.yml
profile-default/stack/default/ceph/minions/ses55-osd0.suse-sap.net.yml
profile-default/stack/default/ceph/minions/ses55-osd1.suse-sap.net.yml
profile-default/stack/default/ceph/minions/ses55-osd2.suse-sap.net.yml
role-admin/cluster/ses55-admin.suse-sap.net.sls
role-admin/cluster/ses55-osd0.suse-sap.net.sls
role-admin/cluster/ses55-osd1.suse-sap.net.sls
role-admin/cluster/ses55-osd2.suse-sap.net.sls
role-master/cluster/ses55-admin.suse-sap.net.sls
role-mgr/cluster/ses55-osd0.suse-sap.net.sls
role-mgr/cluster/ses55-osd1.suse-sap.net.sls
role-mgr/cluster/ses55-osd2.suse-sap.net.sls
role-mon/cluster/ses55-osd0.suse-sap.net.sls
role-mon/cluster/ses55-osd1.suse-sap.net.sls
role-mon/cluster/ses55-osd2.suse-sap.net.sls
role-openattic/cluster/ses55-admin.suse-sap.net.sls

Prepare the final set of configuration files

```
salt-run state.orch ceph.stage.2
```

```
Starting stage: ceph.stage.2
Parsing ceph.stage.2 steps...

Parsing ceph.stage.2 steps... ✓


Stage initialization output:
deepsea_minions          : valid
yaml_syntax              : valid
profiles_populated       : valid

[1/15]    push.proposal..................................................... ✓ (0.1s)

[2/15]    ceph.refresh on
          ses55-osd1.suse-sap.net........................................... ✓ (0.3s)
          ses55-admin.suse-sap.net.......................................... ✓ (0.5s)
          ses55-osd0.suse-sap.net........................................... ✓ (0.4s)
          ses55-osd2.suse-sap.net........................................... ✓ (0.4s)

[3/15]    advise.networks................................................... ✓ (0.5s)

[4/15]    ceph.admin.key on
          ses55-admin.suse-sap.net.......................................... ✓ (0.4s)

[5/15]    ceph.mon.key on
          ses55-admin.suse-sap.net.......................................... ✓ (0.5s)

[6/15]    ceph.mgr.key on
          ses55-admin.suse-sap.net.......................................... ✓ (3s)

[7/15]    ceph.osd.key on
          ses55-admin.suse-sap.net.......................................... ✓ (0.5s)

[8/15]    ceph.igw.key on
          ses55-admin.suse-sap.net.......................................... ✓ (2s)

[9/15]    ceph.mds.key on
          ses55-admin.suse-sap.net.......................................... ✓ (2s)

[10/15]   ceph.rgw.key on
          ses55-admin.suse-sap.net.......................................... ✓ (2s)

[11/15]   ceph.ganesha.key on
          ses55-admin.suse-sap.net.......................................... ✓ (2s)

[12/15]   ceph.openattic.key on
          ses55-admin.suse-sap.net.......................................... ✓ (0.4s)

[13/15]   ceph.monitoring on
          ses55-admin.suse-sap.net.......................................... ✓ (11s)

[14/15]   ceph.monitoring.prometheus.exporters.node_exporter on
          ses55-osd1.suse-sap.net........................................... ✓ (3s)
          ses55-admin.suse-sap.net.......................................... ✓ (3s)
          ses55-osd0.suse-sap.net........................................... ✓ (3s)
          ses55-osd2.suse-sap.net........................................... ✓ (3s)

[15/15]   advise.osds....................................................... ✓ (0.5s)

Ended stage: ceph.stage.2 succeeded=15/15 time=40.7s
```

Time to deploy your configuration
salt-run state.orch ceph.stage.3

```
Parsing ceph.stage.3 steps...
```

```
Parsing ceph.stage.3 steps... ✓


Stage initialization output:
firewall                  : disabled
apparmor                  : disabled
fsid                      : valid
public_network            : valid
cluster_network           : valid
cluster_interface         : valid
monitors                  : valid
mgrs                      : valid
storage                   : valid
rgw                       : valid
ganesha                   : valid
master_role               : valid
time_server               : valid
fqdn                      : valid

[1/50]    ceph.time on
          ses55-osd1.suse-sap.net..................................... ✓ (4s)
          ses55-admin.suse-sap.net.................................... ✓ (4s)
          ses55-osd0.suse-sap.net..................................... ✓ (4s)
          ses55-osd2.suse-sap.net..................................... ✓ (4s)

[2/50]    ceph.packages on
          ses55-osd1.suse-sap.net..................................... ✓ (3s)
          ses55-admin.suse-sap.net.................................... ✓ (3s)
          ses55-osd0.suse-sap.net..................................... ✓ (3s)
          ses55-osd2.suse-sap.net..................................... ✓ (3s)

[3/50]    ceph.configuration.check on
          ses55-admin.suse-sap.net.................................... ✓ (0.4s)

[4/50]    ceph.configuration.create on
          ses55-admin.suse-sap.net.................................... ✓ (6s)

[5/50]    ceph.configuration on
          ses55-osd1.suse-sap.net..................................... ✓ (0.5s)
          ses55-admin.suse-sap.net.................................... ✓ (0.6s)
          ses55-osd0.suse-sap.net..................................... ✓ (0.5s)
          ses55-osd2.suse-sap.net..................................... ✓ (0.5s)

[6/50]    ceph.admin on
          ses55-osd1.suse-sap.net..................................... ✓ (0.6s)
          ses55-admin.suse-sap.net.................................... ✓ (0.6s)
          ses55-osd0.suse-sap.net..................................... ✓ (0.5s)
          ses55-osd2.suse-sap.net..................................... ✓ (0.5s)

[7/50]    ceph.mgr.keyring on
          ses55-osd1.suse-sap.net..................................... ✓ (0.5s)
          ses55-osd0.suse-sap.net..................................... ✓ (0.5s)
          ses55-osd2.suse-sap.net..................................... ✓ (0.4s)

[8/50]    ceph.mon on
          ses55-osd1.suse-sap.net..................................... ✓ (2s)
          ses55-osd0.suse-sap.net..................................... ✓ (2s)
          ses55-osd2.suse-sap.net..................................... ✓ (2s)

[9/50]    ceph.mgr.auth on
          ses55-admin.suse-sap.net.................................... ✓ (7s)
```

```
[10/50]   ceph.mgr on
          ses55-osd1.suse-sap.net..................................... ✓ (2s)
          ses55-osd0.suse-sap.net..................................... ✓ (2s)

[50/50]   ceph.osd.restart on
          ses55-osd2.suse-sap.net..................................... ✓ (2s)

Ended stage: ceph.stage.3 succeeded=50/50 time=246.1s
```

Once the stage 3 has been successfully passed, check the cluster health to insure that all is running properly

```
ses55-admin:~ #  ceph -s
  cluster:
    id:     520a906e-e6a3-324f-ba18-856c2e155395
    health: HEALTH_OK

  services:
    mon: 3 daemons, quorum ses55-osd0,ses55-osd1,ses55-osd2
    mgr: ses55-osd0(active), standbys: ses55-osd1, ses55-osd2
    osd: 16 osds: 16 up, 16 in

  data:
    pools:   0 pools, 0 pgs
    objects: 0 objects, 0B
    usage:   16.1GiB used, 302GiB / 318GiB avail
    pgs:
```

In order to take benefits of the OpenAttic WebUI you now have to initiate the ceph.stage.4 which will install OpenAttic service.

```
Starting stage: ceph.stage.4
Parsing ceph.stage.4 steps...  ⏳

Parsing ceph.stage.4 steps... ✓


Stage initialization output:
openattic                 : valid

[1/7]     ceph.openattic.auth on
          ses55-admin.suse-sap.net..................................... ✓ (1s)

[2/7]     ceph.openattic
          (pillar={'salt_api_shared_secret':
           'ecbaac6e-11db-4941-a37a-5a01bcc7bd73'}) on
          ses55-admin.suse-sap.net..................................... ✓ (61s)

[3/7]     ceph.openattic.keyring on
          ses55-admin.suse-sap.net..................................... ✓ (0.7s)

[4/7]     ceph.openattic.oaconfig on
          ses55-admin.suse-sap.net..................................... ✓ (6s)

[5/7]     ceph.wait on
          ses55-admin.suse-sap.net..................................... ✓ (6s)

[6/7]     ceph.processes.openattic on
          ses55-admin.suse-sap.net..................................... ✓ (0.4s)

[7/7]     ceph.openattic.restart on
          ses55-admin.suse-sap.net..................................... ✓ (3s)

Ended stage: ceph.stage.4 succeeded=7/7 time=105.2s
```

You can now manage your cluster through the WebUI

You could now proceed to the Pool creation.

And provide access to this pool through a RBD device.

http://ses55-admin.suse-sap.net/openattic/#/
SUSE Enterprise Storage
openattic
English
Notifications
Background-Tasks
API-Recorder
Logout
Dashboard
OSDs
RBDs
Pools
Nodes
iSCSI
NFS
Object Gateway
CRUSH Map
System
Ceph RBDs » Add
Create RBD: sapdh26rbd
Name *
sapdh26rbd
Pool *
sapdh26 (95.48 GiB free)
0 B of 95.48 GiB used
95.48 GiB free - use max
Size *
50GB
Object size *
4 MiB
Features *
Use default features
Create
Back