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TUT-1071

Simplifying HA Cluster bootstrap and shutdown with SLE-HA 15 SP4

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Agenda:

1. SLE-HA 15 SP4 highlights to improve UI/UX
2. Example scenario to setup a cluster
3. Things behind the scene

   Preventing LVM2 autoactivation during OS boot
   Cluster predefined configuration
   Cluster with the disk-based SBD in VM
   Cluster with the disk-less SBD
   Cluster stack graceful shutdown
4. Future TODO list

SLE-HA 15 SP4 highlights to improve UI/UX

The continous effort over years ...

- Easier initial setup with crmsh predefined bootstrap profiles
- Cluster graceful shutdown using crmsh "--all" option

  It improves diskless sbd cluster and the dlm cluster

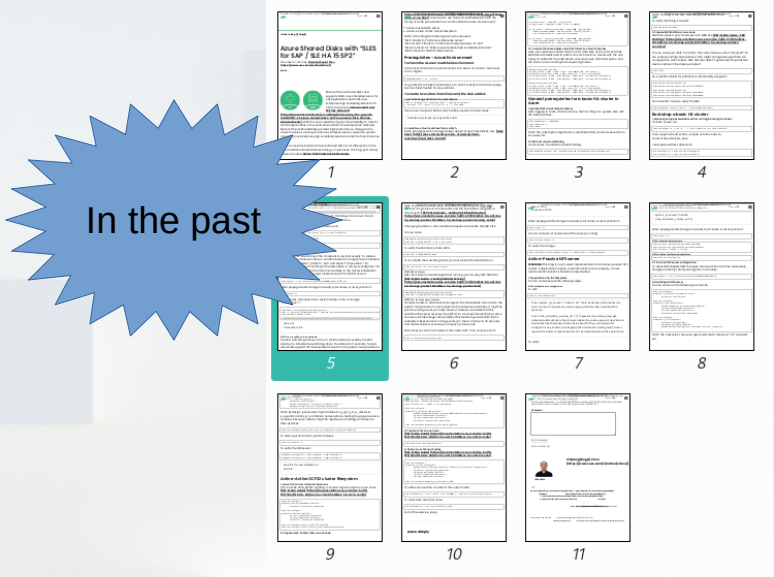
- ocfs2 ‘nocluster’ mount option as the local mount without the cluster stack running
- pacemaker supports ocf1.1
- corosync adds resilience to cope with the Public Cloud packet inspection hiccup

Example scenario to setup a cluster filesystem

- Now, only need two commands, for example:

```
ssh -t 15sp4-1 crm cluster init -y \
    -s /dev/disk/by-partlabel/sbd-154 \
    -o /dev/disk/by-partlabel/ocfs2 \
    -m /srv/ocfs2 -C

ssh -t 15sp4-2 crm cluster join -yc 15sp4-1
```



- NOTE

  -C option indicates to use the lvmlockd based Cluster LVM for ocfs2.

  -u option is no longer needed now. By default crmsh bootstraps corosync with udpu.

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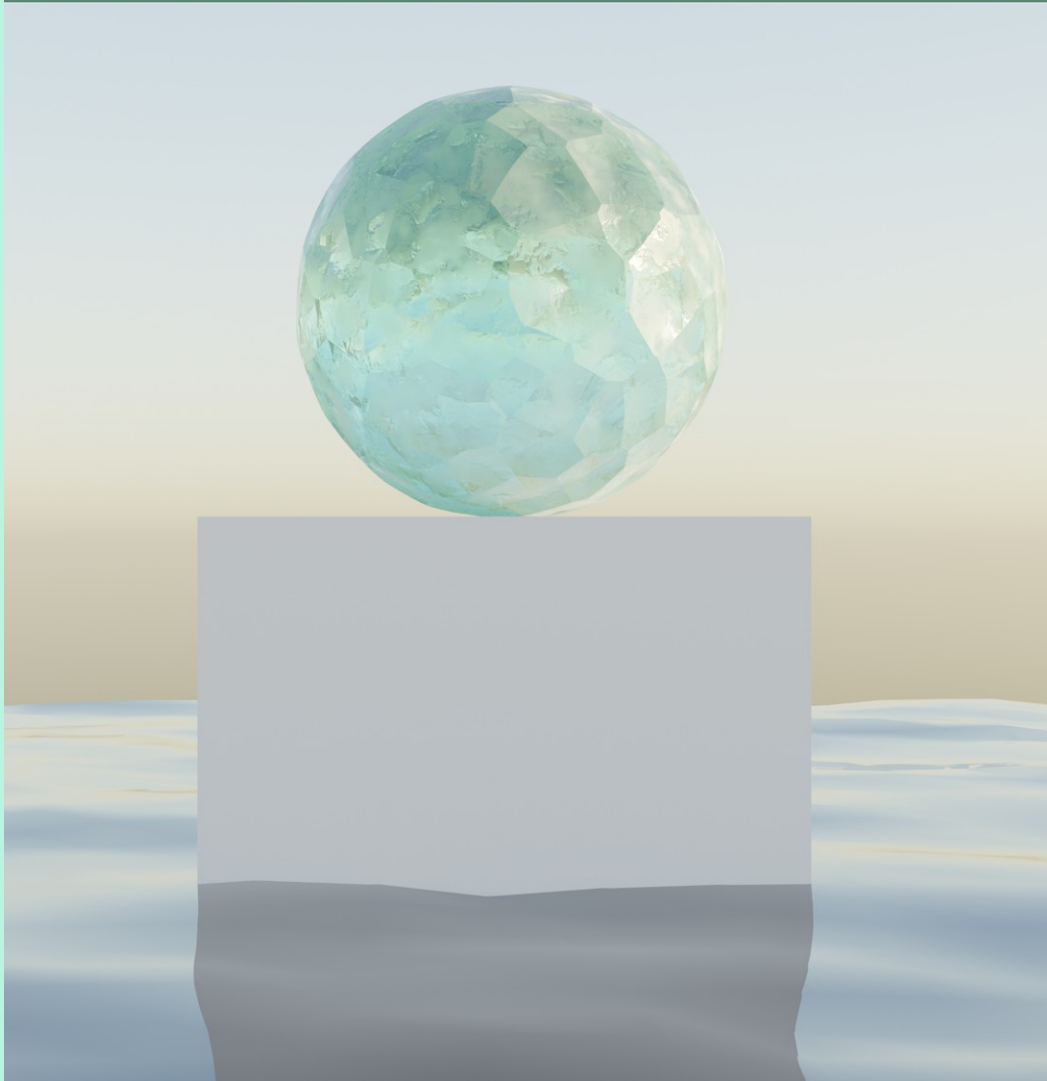
Behind the Scene

during bootstraping



Behind the scene

To use LVM2 in the cluster, we need prevent LVM2 autoactivation during os boot

- For the shared VG, it can not be activated without the cluster stack in the very early stage during the os boot.
- For the specified ‘systemid’ volumes, to prevent them getting activated during the os boot, LVM-Activate Resouce Agent levarages a new --setautoactivation lvm2 option. It defers lvm activation operations to the pacemaker stack.
- crmsh sets “no-quorum-policy=freeze” as the general advice for a dlm cluster. This avoids the "stop failure" to cause the node reset.

Behind the scene

crmsh has the predefined cluster configuration in /etc/crm/profile.yml

- For example, the typical cluster in “microsoft-azure”

  corosync.totem.token 30000

  sbd.watchdog_timeout 60

Behind the scene

Cluster with the disk-based SBD use case

- crmsh checks watchdog, and will configure and modprobe the softdog driver during the os boot, if need.
- to set pcmk_delay_max 30s if the cluster is 2-node without qdevice.
- to ensure the determinate state of the stonith operation stonith-timeout > pcmk_delay_max + msgwait
- to prevent the fence failure to trigger double fencing stonith-timeout > token + consensus

Behind the scene

Cluster with the disk-based SBD in VM environment (eg. kvm/xen, vmware, hyper-v)

— to avoid a node returns to the cluster too quickly and print the critical message "We were alleged just fenced by ..."

SBD_DELAY_START > token + consensus + pcmk_delay_max + msgwait

— to avoid systemd giveup starting sbd service
crmsh bootstrap adjusts TimeoutStartSec > SBD_DELAY_START

Behind the scene

Cluster with the disk-less sbd use case

- stonith-timeout > stonith-watchdog-timeout

  stonith-watchdog-timeout = 2*SBD_WATCHDOG_TIMEOUT

- For the VM environment

  SBD_DELAY_START > token + consensus + 2*SBD_WATCHDOG_TIMEOUT

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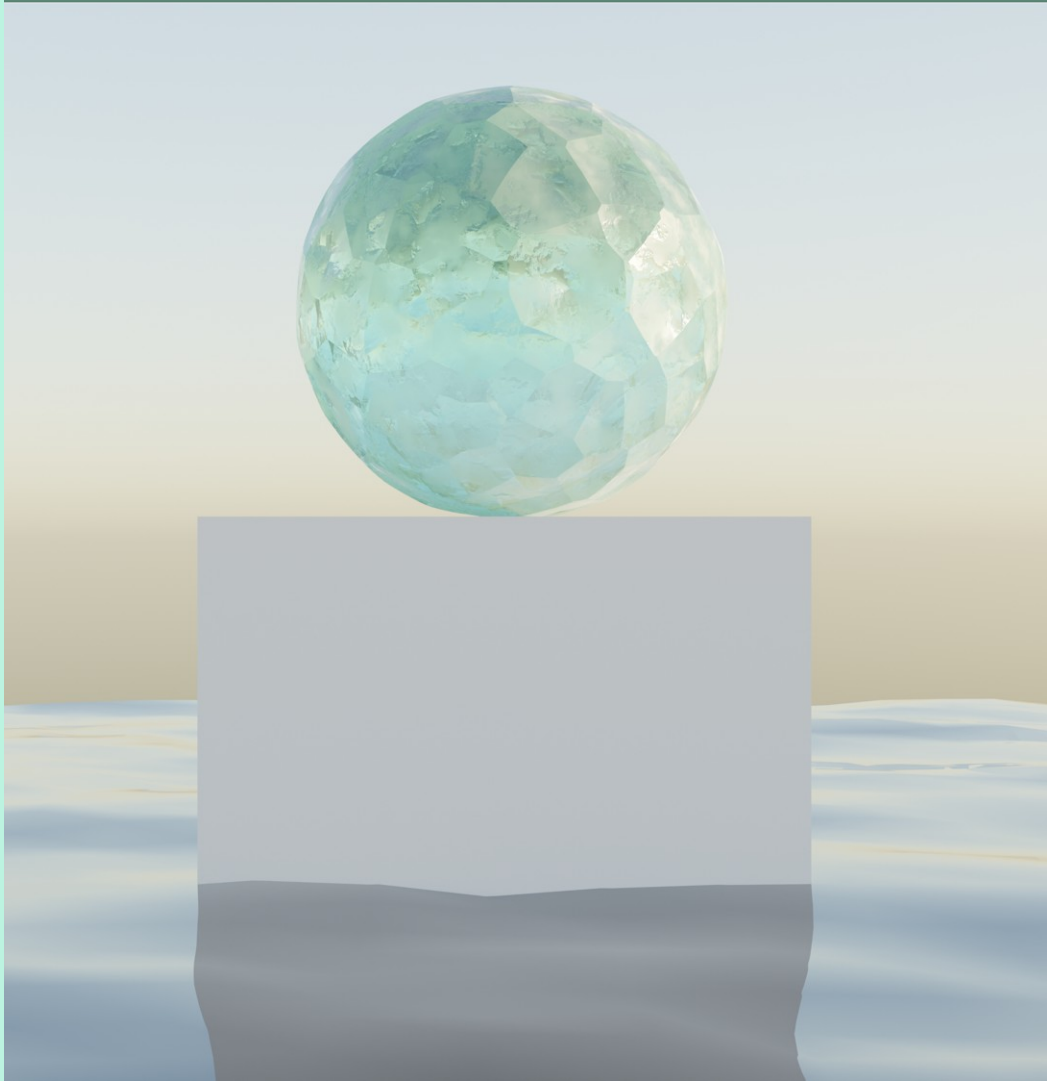
Behind the Scene

cluster graceful shutdown



Behind the scene: graceful shutdown of the whole cluster

- `crm cluster stop --all` stops pacemaker at all nodes first, then stops corosync afterwards at all nodes.
- This intends to solve two issues of the cluster shutdown in the node-by-node approach. In that case, once the node loses quorum:
  1. the diskless sbd cluster will trigger self reset
  2. the dlm will hang and it prevents shutdown
- Furthermore, dlm_tool implements a brand new `set_config` option. crmsh leverages it to shutdown the hanging dlm above.

Future TODO

The continous effort to improve UI/UX ...

- bootstrap the priority fence delay feature for the 2-node cluster
- gradually start the large cluster, eg. tens of nodes
- speedup time by isolating csync2 for the normal bootstraping
- ...
- Looking forward to your feedback. They count!

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Thank you

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