Lab Exercise – storage stack

Plan: in the following exercises we will explore the standard storage stack as used with SLES11 SP3 and watch some of the differences in SLES12SP2

verify, that you have an additional disk (/dev/vda4 of Type „Linux LVM“ and size 3,7GB) in your guest by executing:

```
fdisk -l
```

use pvcreate to initialize the device for use by LVM of Type “Linux LVM”

```
pvcreate /dev/vda4

vgcreate vgtest /dev/vda4

lvcreate -L 500M -n lvtest vgtest

mkfs.xfs /dev/mapper/vgtest-lvtest

mkdir -p /mnt2
```

add the following line to /etc/fstab:

```
/dev/mapper/vgtest-lvtest /mnt2 xfs nofail,defaults,noatime 0 0
```

reboot

after reboot verify that the VM has started the storage stack correctly without any further adaption.

```
# systemctl status mnt2.mount

read the manpage for systemd-fstab-generator to understand how systemd
translates the /etc/fstab entry into a native systemd unit early at boot

# systemctl status dev-disk-by\\x2did-
dm\\x2dname\\x2dvgtest\\x2dlvtest.device
```

```
example output
sles12sp2beta3:~ # systemctl status mnt2.mount
● mnt.mount - /mnt
   Loaded: loaded (/etc/fstab; bad; vendor preset: disabled)
   Active: active (mounted) since Wed 2016-07-13 12:19:46 CEST; 3min 53s
ago
    Where: /mnt
     What: /dev/mapper/vgtest-lvtest
     Docs: man:fstab(5)
           man:systemd-fstab-generator(8)
  Process: 921 ExecMount=/usr/bin/mount /dev/mapper/vgtest-lvtest /mnt
-t xfs -o defaults,noatime (code=exited, status=0/SUCCESS)
    Tasks: 0 (limit: 512)

Jul 13 12:19:45 sles12sp2beta3 systemd[1]: Mounting /mnt2...
```

How do you change the timeout parameter for the /mnt2 mountpoint ?

Hint: man systemd-system.conf

make a copy first:

```
cp -p  /etc/systemd/system.conf
/etc/systemd/system.conf.orig
```

Change the parameter DefaultTimeoutStartSec to 30 seconds, we will need it for the next exercise.

change /etc/fstab to

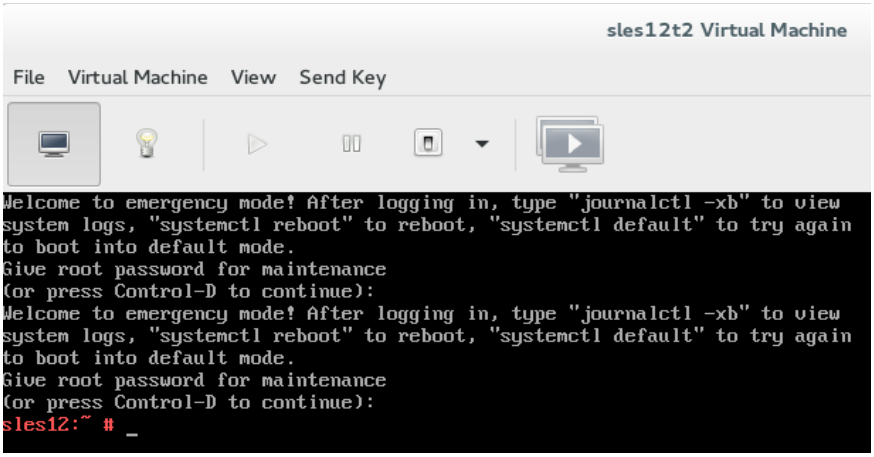
```
/dev/mapper/vgtest-lvtest2 /mnt2 xfs defaults,noatime 0 0
```

notice, that we rename the LV so it doesn't exist!

• reboot

what happened after the reboot, as you omitted the nofail mount option in /etc/fstab?

we are in emergency target



In emergency mode, use journalctl -xb to explore

• Execute:

```
systemctl status mnt2.mount
```

There is a „Dependency failed“ error

add an /etc/fstab entry of noauto, but keep the „wrong“ LV and reboot

```
/dev/mapper/vgtest-lvtest2 /mnt2 xfs noauto,defaults,noatime 0 0
```

We changed the Timeout parameter globally for all units.

Change the Timeout parameter in a way, that only the mnt2.mount unit takes 30 seconds, but all other units are unaffected and still keep the default timeout of 90 seconds.

Hint: provide a conf file in a correctly created subdirectory.

Alternatively you can add another mount option to /etc/fstab

```
x-systemd.device-timeout=
```

```
systemctl status local-fs.target
```

in emergency mode change /etc/fstab back to the correct entry.

Execute

```
mount -a
```

is the mountpoint there?

```
mount|grep mnt
systemctl status mnt2.mount
```

it says: unit file changed on disk, systemctl daemon-reload

Execute again:

```
mount -a
journalctl -xb
systemctl status local-fs.target
systemctl start local-fs.target
```

you don't have to reboot, everything should be fixed and we can simply change runlevels:

```
systemctl isolate graphical.target
```

Some more explanations:

Without the nofail mount option the mount unit has a dependencies to local-fs.target. If the dependency fails, local-fs.target will also fail stopping the further boot process.

Read the man page of local-fs.target for further details, which man page is it ?

Hint: systemctl cat local-fs.target

Further details in: man 5 systemd.mount

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If nofail is given, this mount will be only wanted, not required, by the local-fs.target. This means that the boot will continue even if this mount point is not mounted successfully. Option fail has the opposite meaning and is the default.

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optional exercise:

with systemd-analyze you can analyze system boot-up performance, systemd-analyze plot prints an SVG graphic detailing which system services have been started at what time, highlighting the time they spent on initialization.

```
systemd-analyze plot > /srv/www/htdocs/analyze-plot.svg
```

enable port 80 on Firewall with yast

graph will be shown from host on

```
http://192.168.2.160/analyze-plot.svg
```