

# Transactional Updates with btrfs and zypper

# Definition

“transactional updates” is a kind of update that:

## **Is atomic**

The update does not influence your running system

## **Can be roll back**

If the upgrade fails or if the update is not compatible, you can quickly restore the situation as it was before the upgrade.

# When transactional updates?

What is more expensive?

- Service interruption during package update?
- Reboot of server?

Most customers would only use it, if they have to reboot anyway

- Service-Pack update
- Major version update (online migration would be possible)

# We need

The system at least

- Suse Linux Enterprise server 12 SP1
- openSUSE leap 42.1
- Current openSUSE Tumbleweed

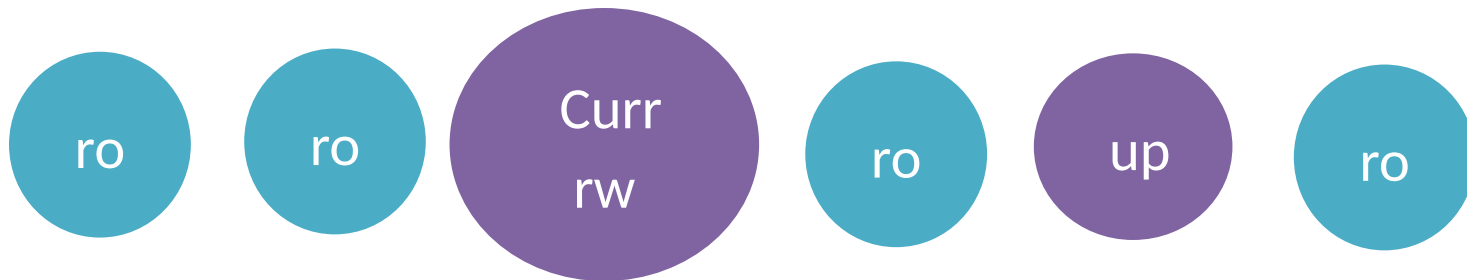
Works only on standard installation system

Fresh installation

# Why so complicated?

- Btrfs with snapshots and rollback enable by default
- Zyppper
- Snapper
- Btrfs progs

# User view abstract



1. Clone ro
2. Change ro to rw
3. zypper up
4. change ro
5. rw clone = rollback  
btrfs subvol set default



# How to?

```
SNAPSHOT_ID= `snapper create -p -d "snapshot Update"`  
btrfs property set $(SNAPSHOT_DIR) ro false  
zypper -R $(SNAPSHOT_DIR) up|patch|dup  
btrfs property set $(SNAPSHOT_DIR) ro true  
snapper rollback $(SNAPSHOT_ID)  
systemctl reboot
```

# Detailed steps:

- `snapper create -p -d "Snapshot Update"`
- `btrfs property set /.snapshots/20/snapshot ro false`
- `touch /.snapshots/20/snapshot/var/tmp/update_snapshot.test`
- `rm -rf /.snapshots/20/snapshot/var/tmp/update_snapshot.test`
- `DIR_TO_MOUNT="dev sys proc opt usr/local var/log"`
- `for d in $DIR_TO_MOUNT;do mount -o bind /$d /.snapshots/20/snapshot/$d; done`
- `if [ -d /.snapshots/20/snapshot/var/cache/zypp ]; then echo "a"; fi (CLEANUP=0)`
- `mktemp -d`
- `mount -o rbind /.snapshots/20/snapshot/ /tmp/tmp.JuDqVrsV2`
- `zypper -R /tmp/tmp.NShP0YvRAw/ in syzkaller`
- `for d in $DIR_TO_MOUNT;do umount /.snapshots/20/snapshot/$d; done`
- `umount /tmp/tmp.JuDqVrsV2`
- `rmdir /tmp/tmp.JuDqVrsV2`
- `rm -rf /.snapshots/20/snapshot/var/cache/zypp/* (CLEANUP=1)`
- `rm -rf /.snapshots/20/snapshot/run/* /.snapshots/20/snapshot/var/spool/*`
- `btrfs property set /.snapshots/20/snapshot ro true`
- `snapper rollback 20`
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