Relax-and-Recover

on SUSE Linux Enterprise 12

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Topics

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What is Relax-and-Recover ?

- disaster recovery framework
- complements backup (backup is external)
- for experienced users (system administrators)
- no GUI
- nothing binary
- pure bash scripts
- meant to be adapted and enhanced by the user
- “**rear**” acronym for **Re**lax-**a**nd-**R**ecover
  - Relax-and-Recover was formerly called “ReaR”

What means disaster recovery here ?

- system got destroyed
  - messed up software, configuration, file systems,...
  - broken hardware (partially or completely)
- recreate system
  - on same hardware
  - on compatible replacement hardware
- more than restoring files (more than backup)
  - prepare hard disk (storage)
  - restore files (from backup)
  - reinstall boot loader

How does disaster recovery work ?

- while system is up and running
  - create backup of the files
  - create recovery installer on a recovery medium
- after system was destroyed
  - replace broken hardware (if needed)
  - boot recovery installer (from recovery medium)
  - recovery installer recreates the system
    - prepares storage (partitioning, file systems, mount points)
    - restores files (from backup)
    - reinstalls boot loader

How does Relax-and-Recover work ?

- while system is up and running
  - run: **rear -d -D mkbackup**
    - creates rear recovery install medium (ISO image)
      - analyzes system and results **generated system specific rear recovery installer**
    - calls external tool to backup files (by default “**tar**”)
- after system was destroyed
  - replace broken hardware (if needed)
  - boot rear recovery installer
  - run: **rear -d -D recover**
    - prepares storage (partitioning, file systems, mount points)
    - calls external tool to restore files (by default “**tar**”)
    - reinstalls boot loader

How to set up Relax-and-Recover ?

- how to do the recovery process
  - **/etc/rear/local.conf** (e.g. how to make backup and ISO image)
    - “VAR=value” not “VAR = value” (rear is pure bash scripts)
    - defaults: **/usr/share/rear/conf/default.conf**
- what to recreate (e.g. partitioning, file systems, ...)
  - partially via **/etc/rear/local.conf** (e.g. what to exclude)
  - partially by editing the scripts (e.g. new stuff to include)
- what the recovery process actually does
  - editing the scripts
    - adapt how rear system analyzer generates the rear recovery installer
    - adapt what the rear recovery installer actually does

Relax-and-Recover advantages

which become disadvantages from another point of view

- **generic** (pure bash scripts, nothing binary)
  - can be relatively easily adapted and enhanced
    - but often the scripts must be adapted and enhanced by the user
      - rear RPM package updates almost impossible (overwrites adapted scripts)
- **small** (specifically generated rear recovery installer)
  - rear recovery installer is system specific and minimalist
    - but in case of issues there are only some basic tools available
      - in case of issues one needs to know how to work with basic tools
- **fast** (rear recovery installer works system specific)
  - rear recovery installer does specifically what must be done
    - but when it fails it is usually a dead end (not much graceful error handling)

Handle Relax-and-Recover limitations

There is no such thing as a disaster recovery solution that "just works".

- limited to what the rear recovery installer can do
  - rear installer and SUSE installer (Auto)YaST totally different
    - rear installer may fail where SUSE installer had “just worked”
    - rear installer may recreate system with (possibly subtle) differences
- do actual productive deployment by rear installer
  - proves that rear installer results system as required
- no disaster recovery without continuous verification
  - help and support only feasible in advance while testing
- know system and be prepared for manual recreation
  - storage setup, networking, backup restore, boot loader, ...

Relax-and-Recover live demo

Relax-and-Recover on SLE12

All file systems are equal, but some are more equal than others ...

- ext2 ext3 ext4 are basically equal
  - a mount point matches a whole file system
- btrfs is more equal
  - subvolumes (appear as file system boundaries)
    - subvolumes behave as if they were file systems (can be mounted)
    - list all subvolumes: **btrfs subvolume list -a /**
  - snapshot subvolumes (result multiple paths to identical files)
    - backup results identical files multiple times in archive (like hard links)
  - a mount point matches a btrfs subvolume
    - mount default subvolume: **mount -t btrfs /dev/sdXn /tmp/btrfs-default**
    - show default subvolume: **btrfs subvolume get-default /**

Relax-and-Recover on SLE12 (cont.)

… and the SLE12 btrfs default is the most equal of all ;-)

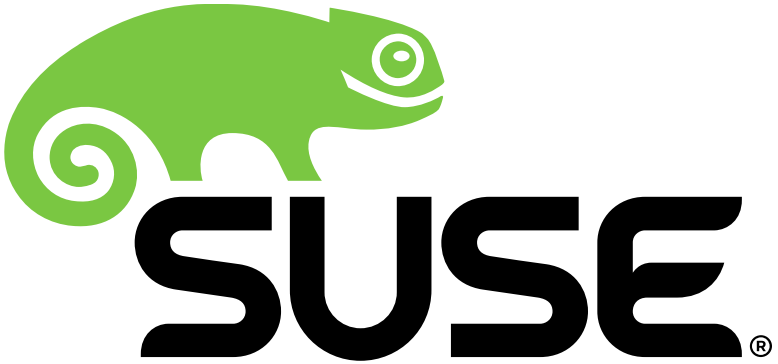
- btrfs default on SLE12
  - btrfs default subvolume is by default <btrfs-root>/@
  - other btrfs subvolumes are under <btrfs-root>/@/
  - mounts default subvolume as / (like “chroot /@” on ext2/3/4)
    - to mount whole btrfs (means to mount btrfs root subvolume) use:
      mount -t btrfs -o subvolid=0 /dev/sdXn /tmp/btrfs-root
  - mounts other subvolumes at moint points under /
    - show where what actual source is mounted: **findmnt -t btrfs**
- rear on SLE12 (currently RPM package “rear116”)
  - adaptions and enhancements for btrfs default on SLE12
  - no recovery of snapshot subvolumes (multiple identical files)

As a general public accessible entry point
visit the openSUSE Wiki page

SDB:Disaster Recovery

http://en.opensuse.org/SDB:Disaster_Recovery

Thank you.



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