



Relax and Recover

Relax and Recover (rear) Workshop



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Getting started with rear

- Download it from
 - The official tar-balls
 - <https://github.com/rear/rear/downloads/>
 - The rear-snapshot rpm's build from SVN
 - <http://download.opensuse.org/repositories/home:/sschapiro/>
 - The official source
 - <https://github.com/rear/rear>
 - The official repo's (Fedora, EPEL and SLES)
 - yum install rear
 - zypper install rear



Installation of rear

- E.g. on Fedora 17

```
# yum install rear
```

```
Installing:
```

rear	noarch	1.13.0-1.fc17	fedora	327 k
Installing for dependencies:				
at	i686	3.1.13-7.fc17	fedora	61 k
bc	i686	1.06.95-6.fc17	fedora	106 k
binutils	i686	2.22.52.0.1-5.fc17	fedora	3.6 M
ed	i686	1.5-3.fc17	fedora	72 k
ethtool	i686	2:3.2-2.fc17	fedora	93 k
genisoimage	i686	1.1.11-10.fc17	fedora	338 k

```
....
```

```
Install 1 Package (+40 Dependent packages)
```

```
Total download size: 21 M
```

```
Installed size: 65 M
```

```
Is this ok [y/N]: y
```

- **We also need syslinux (and to boot on USB: extlinux)**

```
# yum install syslinux
```
- **Install nfs-utils, cifs-utils, rsync if required**
- **Do not forget openssh(-clients)**



Decide on DR strategy

- Which backup mechanism to use?
 - GNU tar, rsync, bacula, commercial backup program
- Where will the backups reside?
 - NFS share, CIFS share, external USB disk, tape, local spare disk
 - Remote network location
- How shall we start the rescue image
 - Via CDROM (ISO image), tape (OBDR), network (PXE), USB disk



Backup Types

- The major backup types available are
 - **NETFS:** NFS, CIFS, USB, TAPE
 - RSYNC: rsync method
 - REQUESTRESTORE, EXTERNAL
 - BACULA (open source backup software)
 - DP, NBU, TSM, GALAXY[7] (commercial stuff)
- Some not (yet) implemented backup types
 - NSR (Legato Networker)
 - CDROM



BACKUP type NETFS

isolinux
OUTPUT=ISO



pxelinux
network



OUTPUT=PXE
BACKUP=NETFS



(NFS|CIFS|local)
disks



OUTPUT=ISO
BACKUP=NETFS

Tape drive



OUTPUT=OBDR
BACKUP=NETFS

extlinux
External USB disks



OUTPUT=USB
BACKUP=NETFS



Location BACKUP_URL

- **BACKUP=NETFS**
- **BACKUP_URL** can be
 - File type: `BACKUP_URL=file:///directory/`
 - NFS type: `BACKUP_URL=nfs://nfs-server/directory/`
 - CIFS type: `BACKUP_URL=cifs://samba/directory/`
 - USB type: `BACKUP_URL=usb:///dev/sdc1/directory/`
 - Tape type: `BACKUP_URL=tape:///dev/nst0`



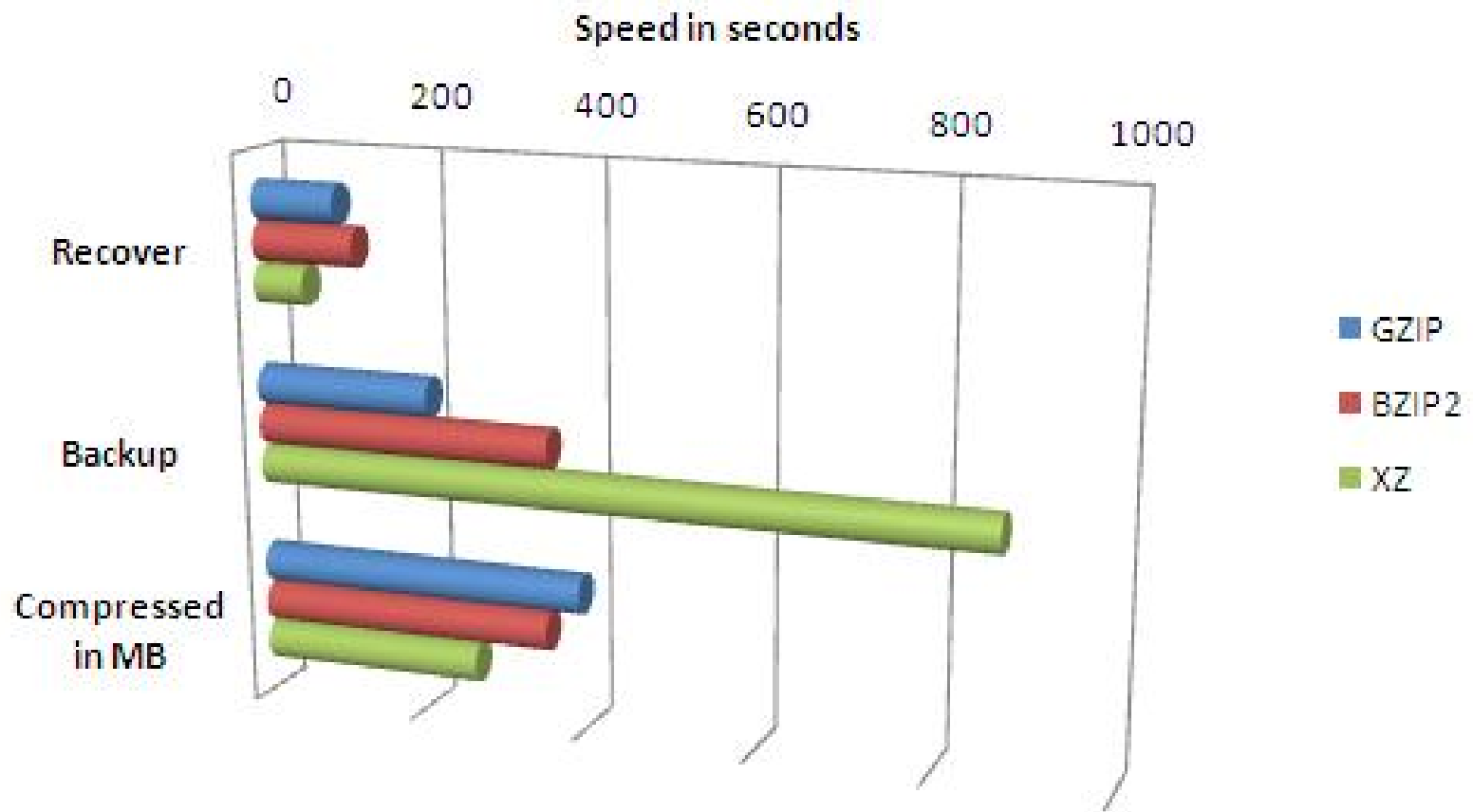
Backup Program

- `BACKUP=NETFS`
- `/usr/share/rear/conf/default.conf`
 - By default is `BACKUP_PROG=tar`
 - However, `BACKUP_PROG=rsync` is possible for local attached storage
 - `BACKUP_PROG_COMPRESS_OPTIONS="--gzip"`
 - `BACKUP_PROG_COMPRESS_SUFFIX=".gz"`
 - `BACKUP_PROG_EXCLUDE=('/tmp/*' '/dev/shm/*')`



BACKUP_PROG_COMPRESS_OPTIONS

Rear Backup/Recover tests (NETFS)





/etc/rear/local.conf

- Define your settings in /etc/rear/local.conf (or /etc/rear/site.conf)
- ```
grep -v -E '(^#|^$)' /etc/rear/local.conf
OUTPUT=ISO
MODULES_LOAD=(vmxnet)
```
- Add:  

```
BACKUP=NETFS
BACKUP_URL=nfs://server/path
```
- On NFS server backup => /path/**\$(hostname)**/



- View system configuration:

```
rear dump
```

```
Relax and Recover 1.13.0 / $Date$
```

```
Dumping out configuration and system information
```

```
This is a 'Linux-x86_64' system, compatible with 'Linux-i386'.
```

```
System definition:
```

```
ARCH = Linux-i386
```

```
OS = GNU/Linux
```

```
OS_MASTER_VENDOR =
```

```
OS_MASTER_VERSION =
```

```
OS_MASTER_VENDOR_ARCH =
```

```
OS_MASTER_VENDOR_VERSION =
```

```
OS_MASTER_VENDOR_VERSION_ARCH =
```

```
OS_VENDOR = Fedora
```

```
OS_VERSION = 16
```

```
OS_VENDOR_ARCH = Fedora/i386
```

```
OS_VENDOR_VERSION = Fedora/16
```



- Usage: rear [-dDsSvV] [-r KERNEL] COMMAND [-- ARGS...]
- Available options:
  - **-d** debug mode; log debug messages
  - **-D** debugscript mode; log every function call
  - **-r KERNEL** kernel version to use; current: '2.6.42.3-2.fc15.i686.PAE'
  - **-s** simulation mode; show what scripts rear would include
  - **-S** step-by-step mode; acknowledge each script individually
  - **-v** verbose mode; show more output
  - **-V** version information



- Usage: rear [-dDsSvV] [-r KERNEL] COMMAND [-- ARGS...]
- List of commands:
  - checklayout check if the disk layout has changed
  - format format and label media for use with rear
  - mkbackup create rescue media and backup system
  - mkbackuponly backup system without creating rescue media
  - mkrescue create rescue media only
  - recover recover the system; only valid during rescue
  - savelayout save the disk layout of the system
  - shell start a bash within rear; development tool



## Disaster Recovery in Practice

- Gather system information
- Store the disk layout
  - Partitioning, LVM and RAID configuration
  - File systems, file system labels ...
  - Boot loader (GRUB, LILO, ELILO)
- Make a system backup (OS and user data)
- Create boot-able rescue media with system configuration (and optional with backup data)
- All steps are done “online”



## Rear mkrescue

- Will create an ISO image stored as
  - `/tmp/rear-$(hostname).iso`
  - On NFS server as `/path/$(hostname)/rear-$(hostname).iso`
- Inspect file `/var/lib/rear/layout/disklayout.conf`
- Try to boot from the ISO image into the RESCUE system
  - Use 'dmesg' to check if devices were found







## Recovery Process in detail

- Boot system from rescue media
- Restore disk layout
  - Create partitions, RAID configuration and LVM
  - Create file systems (mkfs, mkswap)
  - Configure file systems (labels, mount points)
- Restore the backup data
- Restore the boot loader
- Inspect & Reboot



## Recover with rear

- Boot rescue image and select 'recover'

```
Relax and Recover v1.13.0

Recover fedora

Other actions
Help for Relax and Recover
Boot First Local disk (hd0)
Boot Second Local disk (hd1)
Boot Next device
Hardware Detection Tool
ReBoot system
Power off system

Press [Tab] to edit, [F2] for help, [F1] for version info

Rear rescue image kernel 3.1.7-1.fc16.i686.PAE Thu, 03 May 2012 14:46:
BACKUP=NETFS OUTPUT=ISO BACKUP_URL=nfs://192.168.1.100/test
```



## Cloning with rear

- Start the recover process: `rear -v recover`

```
RESCUE beefy:~ # rear -v recover
Relax and Recover 0.0.794 / 2011-06-27 09:07:15 +0200
Calculating backup archive size
Backup archive size is 114M (compressed)
Comparing disks.
Device sda has size 5368709120, 6442450944 expected
Switching to manual disk layout configuration.
Disk /dev/sda does not exist in the target system. Please choose the appropriate
replacement.
1) /dev/sda ←
2) /dev/sdb
3) Do not map disk.
#? 1
```

```
2012-03-20 12:54:48 Disk /dev/sda chosen as replacement for /dev/sda.
Disk /dev/sda chosen as replacement for /dev/sda.
This is the disk mapping table:
/dev/sda /dev/sda
Please confirm that '/var/lib/rear/layout/disklayout.conf' is as you expect.
1) View disk layout (disklayout.conf) 4) Go to Rear shell
2) Edit disk layout (disklayout.conf) 5) Continue recovery
3) View original disk space usage 6) Abort Rear
#? _
```



Get your hands dirty?

- We hope you want to dig deeper into rear!
- Getting started:
  - Use: `rear -s mkbackup`  
to see the flow of the scripts it will execute
  - Depends on BACKUP method, architecture and OS version/brand
  - Be careful: `rear -s recover`  
follows a different flow (seems logically, but you must understand the difference)



Where is the code?

- Main script is `/usr/sbin/rear`
- All the other scripts live under `/usr/share/rear`
- Documentation is at `/usr/share/doc/rear-X.y.Z`
- ***Good news! It's all written in Bash***



## Where to put a script?

- mkbackup method: `/usr/share/rear/...`
  - `conf/` - configuration files (`/etc/rear/*.conf` read last)
  - `prep/` - preparation work; checking the environment
  - `layout/save/` - save the disk layout `/var/lib/rear/layout`
  - `rescue/` - modules, network, storage,...
  - `build/` - populate the initial ramdisk for our rescue image
  - `pack/` - create the initrd and copy kernel
  - `output/` - create the ISO image and copy to `OUTPUT_URL`
  - `backup/` - make the backup archive to `BACKUP_URL`



## Where to put a script? (2)

- recover method: `/usr/share/rear/...`
  - `conf/` - read the configuration file + `/etc/rear/*.conf`
  - `setup/` - user defined scripts to run before recover
  - `verify/` - to check if a recover is possible at all
  - `layout/prepare` – recreate the disk layout
  - `restore/` - restore the archive from `BACKUP_URL`
  - `finalize/` - do some dirty tricks for disks, grub,...
  - `wrapup/` - copy the recover log to `/mnt/local/root/`



## Example script: sysreqs.sh

- A simple script to save basic system requirements – sysreqs.sh
  - OS version; rear version
  - CPU, memory
  - Disk space requirements
  - IP addresses in use; routes
- Copy sysreqs.sh to a flow, e.g. rescue is a good choice
  - `# cp /tmp/sysreqs.sh \`  
`/usr/share/rear/rescue/GNU/Linux/96_sysreqs.sh`





## Test the script

- `# rear -s mkrescue | grep sysreqs`  
Source `rescue/GNU/Linux/96_sysreqs.sh`
- `# rear -v mkrescue`
- `# cat /var/lib/rear/sysreqs/Minimal_System_Requirements.txt`  
Zowiezo - 2012-03-31 19:57

Operating system:

LSB Version: :core-4.0-amd64:core-4.0-noarch

Distributor ID: Fedora

Description: Fedora release 16 (Verne)

Release: 16

Codename: Verne

Relax and recover version:

Relax and Recover 0.0.819 / 2012-03-16 18:37:24 +0100

...



rear.github.com

# Relax and Recover

[Features](#)

[Documentation](#)

[Downloads](#)

[Support](#)

[Development](#)

Rear is again at the [LinuxTag 2012](#) in Berlin May 23 - May 26! Come and visit our booth and attend the [Rear talk](#) and/or [Rear workshop](#)!

Relax and Recover (Rear) is a setup-and-forget *Linux disaster recovery* solution. It is easy to set up and requires no maintenance so there is no excuse for not using it.

Learn more about Rear from the selected usage scenarios below:

Home user

Enterprise user



https://github.com/rear/rear

github

Search...

Explore Gist Blog Help

gdha



PUBLIC

rear / rear

Admin

Pull Request

Unwatch

7

Fork

5

Code

Network

Pull Requests 0

Issues 48

Wiki

Graphs

Relax and Recover - Linux disaster recovery solution

<http://rear.github.com/development/>

Clone in Windows

ZIP

SSH

HTTP

Git Read-Only

git@github.com:rear/rear.git

Read+Write access

branch: master

Files

Commits

Branches 3

Tags 15

Downloads 27

Latest commit to the master branch

Since "mt seek" may not work on all tape devices, do not bail out whe... +...

dagwieers authored a day ago

commit cdd89309a0

rear /

| name | age           | message                                                                              | history |
|------|---------------|--------------------------------------------------------------------------------------|---------|
| etc  | 11 months ago | - Fix mixed indentation (in a single line) [dagwieers]                               |         |
| usr  | a day ago     | Since "mt seek" may not work on all tape devices, do not bail out whe... [dagwieers] |         |

We recommend adding a README to this repository. Visit [github/markup](https://github.com/markup) for details on what formats we support.



https://github.com/rear/rear/issues

github

Search...

Explore Gist Blog Help

gdha



PUBLIC

rear / rear

Admin

Pull Request

Unwatch

< 7

Fork

< 5

Code

Network

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Search: Issues & Milestones...

Everyone's Issues 48

Assigned to you 6

Created by you 1

Mentioning you 1

No milestone selected

Labels

SF 7

bug 10

cleanup 12

collaboration 3

discuss 24

documentation 1

No active filters. Use the sidebar to filter issues.

Keyboard shortcuts available

48 open issues

32 closed issues

Submitted

Updated

Comments

Close

Label

Assignee

Milestone

1 2 Next »

- #80 **Add "StopIfFail" function to \_input-output-functions.sh**  
by djembe65 17 hours ago
- #79 **Items to discuss at LinuxTag 2012 meeting on 24/5 at 10am** collaboration discuss 3 comments  
by dagwieers 2 days ago
- #78 **epel missing dependencies** 1 comment  
by lesmikesell 4 days ago
- #76 **CIFS parameters not correctly passed** 1 comment  
by r0bby 15 days ago
- #75 **DP: press any key** feature SF  
by jhoekx a month ago
- #73 **Problem in lib/compatibility-functions.sh because blkid shows no output when there are no partitions** bug  
by kpieth a month ago
- #72 **Manpage still states sourceforge as project homepage** bug



## Items to be discussed (1)

- State of Relax and Recover (rear)
  - Feature development
  - Contributor involvement
  - Bug squashing
  - Project governance
- Moving to Github
  - Get OBS working
  - Redirect Subversion -> Github
  - Replace all references to Sourceforge



## Items to be discussed (2)

- Moving the website
  - Redirect website -> Github Pages
  - Replace all references to Sourceforge
- Building automated test infrastructure #38
  - Required code changes to make this happen #53 #13 #9
  - Setting up configuration management to drive testing
  - Setting up infrastructure for continuous testing



## Items to be discussed (3)

- Discuss commercial support
- Discuss remaining open "discuss" issues from:  
[https://github.com/rear/rear/issues?\\_=1336690245780&labels=discu](https://github.com/rear/rear/issues?_=1336690245780&labels=discu)
- Any other requests?



## Contacts

**Web-site:** <http://rear.github.com/>

**GitHib:** <https://github.com/rear/rear>

**Mailing list:** [rear-users@lists.sourceforge.net](mailto:rear-users@lists.sourceforge.net)

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