Red Hat Enterprise Linux

ReaR

Marc Skinner
Principal Solutions Architect

Red Hat

ReaR = Relax-and-Recover

Linux Disaster Recovery Tooling

ReaR - Linux Disaster Recovery

- History
  - Started in 2006
  - Added to Suse in 2010
  - Added to RHEL in 2015
- Written in BASH
- Included in >= RHEL7

What is it?

- Tool and framework for creating a bootable image for restoring a backup
- Has basic backup functionality but can also integrate with many popular 3rd party/commercial backup solutions
- Very simple to use
- Very simple configuration file

How does it work?

- Install required packages
- Configure the host for backup
- Perform backup
- Create recovery image
  - **Physical media [USB]**
  - PXE Entry
  - **ISO**
- Boot and recover

Install ReaR Packages

- Install required packages

  # dnf -y install rear grub2-efi-x64-modules grub2-tools-extra
- Required for NFS backup

  # dnf -y install nfs-utils
- Required for USB backup

  # dnf -y install syslinux-extlinux

- Example configuration file

  /usr/share/rear/conf/default.conf

Configure the host for backup!

- Which “**OUTPUT**” rescue media am I using? 6 to choose from
- If using “OUTPUT=[ISO,RAMDISK,RAWDISK]
  - Which “**OUTPUT_URL**” recue media target am I using? 12 to choose from

- Which “**BACKUP**” solution am I using? 24 to choose from
- If using “BACKUP=NETFS”
  - Which “**BACKUP_URL**” backup target am I using? 8 to choose from

Which “OUTPUT” Rescue Media to use?

- RAMDISK
- **ISO**
- PXE
- OBDR
- **USB**
- RAWDISK

Which “OUTPUT_URL” Rescue Media option to use?

- Option must be configured if using OUTPUT = ISO, RAMDISK or RAWDISK
  - file://
  - fish://
  - ftp://
  - ftps://
  - http://
  - https://
  - **nfs://**
  - rsync://
  - sshfs://
  - null

Which “BACKUP” Solution to use?

- AVA – Dell EMC Avamar
- BACULA – Bacula
- BAREOS – Bareos
- BLOCKCLONE – block device cloning via dd
- BORG – Borg Backup
- CDM – Rubrik Cloud Data Management
- DP – OpenText Data Protect
- DUPLICITY – Duplicity/Duply
- EXTERNAL – External custom restore method

Which “BACKUP” Solution to use?

- FDRUPSTREAM – FDR/Upstream
- GALAXY[7,10,11] – Commvault Galaxy Versions / Commvault Simpana Versions
- NBKDC – NovaStor DataCenter
- NBU – Veritas NetBackup / Symantec NetBackup
- **NETFS – ReaR built-in backup and restore via rsync or tar**
- NFS4SERVER – NFS4 server to push data to the rescue system
- NSR – Dell EMC NetWorker / EMC NetWorker / Legato NetWorker
- OBDR – One Button Disaster Recovery via tape
- PPDM – Dell PowerProtect Data Manager

Which “BACKUP” Solution to use?

- RBME – Rsync Backup Made Easy
- REQUESTRESTORE – Request restore from a human operator
- RSYNC – ReaR built-in backup using rsync via rsync or ssh protcol
- SESAM – SEP Sesam
- TSM – IBM Storage Protect / Tivoli Storage Manager / IBM Spectrum Protect
- VEEAM – Veeam Backup

Which “BACKUP_URL” Backup option to use?

- Option must be configured if using BACKUP = NETFS
  - file://
  - **nfs://**
  - tape://
  - cifs://
  - sshfs://
  - usb://

ReaR Backup and Restore Image to NFS Server

Configure to create bootable ISO image for recovery on NFS

- /etc/rear/local.conf

  OUTPUT=ISO

  OUTPUT_URL=nfs://nfs.i.skinnerlabs.com/mnt/LINUX/images

Configure to use NETFS and NFS as backup target

- Create a directory called “hostname” on NFS mount, and will keep one old copy called “hostname.old”
- Backup entire drive via tar and compress using gzip

- /etc/rear/local.conf

```
BACKUP=NETFS
NETFS_KEEP_OLD_BACKUP_COPY=y
BACKUP_URL=nfs://nfs.i.skinnerlabs.com/mnt/LINUX/images
```

Configure to exclude certain directories

- /etc/rear/local.conf

```
BACKUP_PROG_EXCLUDE=("${BACKUP_PROG_EXCLUDE[@]}" '/media' '/var/tmp' '/var/crash/*'
'/tmp' '/dev/shm')
```

Configure to support UEFI Secure Boot

- /etc/rear/local.conf

  UEFI_BOOTLOADER=/boot/efi/EFI/redhat/grubx64.efi

  SECURE_BOOT_BOOTLOADER=/boot/efi/EFI/redhat/shimx64.efi

Complete Config File

- /etc/rear/local.conf

```
OUTPUT=ISO
OUTPUT_URL=nfs://nfs.i.skinnerlabs.com/mnt/LINUX/images
BACKUP=NETFS
NETFS_KEEP_OLD_BACKUP_COPY=y
BACKUP_URL=nfs://nfs.i.skinnerlabs.com/mnt/LINUX/images
BACKUP_PROG_EXCLUDE=("${BACKUP_PROG_EXCLUDE[@]}" '/media' '/var/tmp' '/var/crash/*' '/tmp'
'/dev/shm')
UEFI_BOOTLOADER=/boot/efi/EFI/redhat/grubx64.efi
SECURE_BOOT_BOOTLOADER=/boot/efi/EFI/redhat/shimx64.efi
```

Other Config Options of Interest

- Start recovery automatically on boot from recovery image

  ISO_DEFAULT="auto_recover"

  ISO_RECOVER_MODE="unattended"

- Pass additional options to BACKUP solution

  BACKUP_OPTIONS="nfsvers=3,nolock"

Perform Backup

- Make backup only

  # rear -v mkbackuponly

Create Recovery Image

- Make rescue image only

  # rear -v mkrescue

Create Backup and Recovery Image

- Make both backup and rescue image

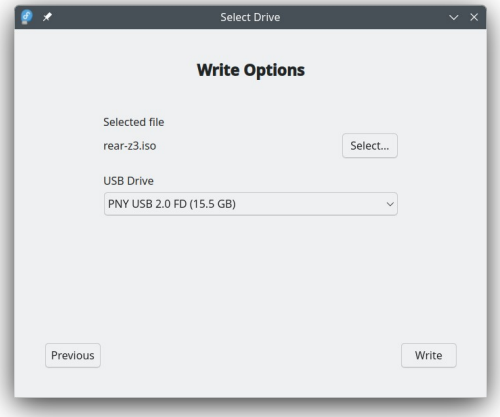
  # rear -v mkbackup

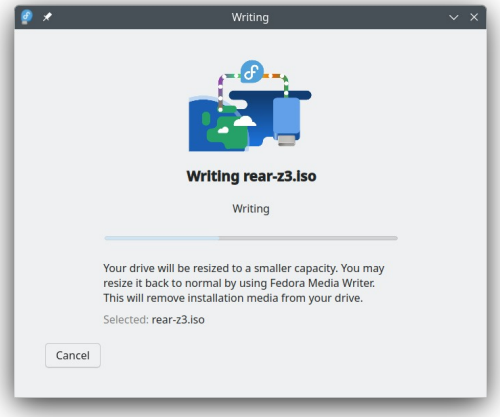
- Log files

  /var/log/rear/recover/rear-hostname.log

Create Rescue Image Bootable USB from ISO

- Use Fedora Media Writer to write Rescue Image ISO saved on NFS server to USB





Red Hat

Boot from USB and Restore

- Boot system from recovery USB
- Login as “root” – no password
- Run Restore command

  # rear recover
- Restores from pre-saved NFS location
- First Reboot
- SELINUX Relabel
- Final Reboot

ReaR Backup and Restore Image directly to attached USB

Configure to use NETFS and directly attached USB as backup target

- Prepare USB device [sdx=USB DEVICE]
- LEGACY BIOS

  # rear format /dev/sdx
- UEFI

  # rear format -- --efi /dev/sdx

- Confirm with "yes"
- USB Device will be formatted and labeled **REAR-000** by default

Configure to create bootable ISO image for USB device

- /etc/rear/local.conf

```
OUTPUT=USB
USB_DEVICE_FILESYSTEM_LABEL=REAR-000
```

Configure to create backup to USB device

- /etc/rear/local.conf

```
BACKUP=NETFS
BACKUP_URL=usb:///dev/disk/by-label/REAR-000
```

Configure to exclude certain directories

- /etc/rear/local.conf

```
BACKUP_PROG_EXCLUDE=("${BACKUP_PROG_EXCLUDE[@]}" '/media' '/var/tmp' '/var/crash/*'
'/tmp' '/dev/shm')
```

Configure to support UEFI Secure Boot

- /etc/rear/local.conf

  UEFI_BOOTLOADER=/boot/efi/EFI/redhat/grubx64.efi

  SECURE_BOOT_BOOTLOADER=/boot/efi/EFI/redhat/shimx64.efi

Complete Config File

- /etc/rear/local.conf

```
OUTPUT=USB
USB_DEVICE_FILESYSTEM_LABEL=REAR-000
BACKUP=NETFS
BACKUP_URL=usb:///dev/disk/by-label/REAR-000
BACKUP_PROG_EXCLUDE=("${BACKUP_PROG_EXCLUDE[@]}" '/media' '/var/tmp' '/var/crash/*' '/tmp'
'/dev/shm')
UEFI_BOOTLOADER=/boot/efi/EFI/redhat/grubx64.efi
SECURE_BOOT_BOOTLOADER=/boot/efi/EFI/redhat/shimx64.efi
```

Create Backup and Recovery Image

- Make both backup and rescue image

  # rear -v mkbackup

- Log files

  /var/log/rear/recover/rear-hostname.log

Boot from USB and Restore

- Boot system from recovery USB
- Login as “root” – no password
- Run Restore command

  # rear recover
- Restores from USB drive directly
- First Reboot
- SELINUX Relabel
- Final Reboot

Thank you

Red Hat is the world's leading provider of enterprise open source software solutions. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500.

linkedin.com/company/red-hat

youtube.com/user/RedHatVideos

facebook.com/redhatinc

twitter.com/RedHat

Red Hat