

# Disaster Recovery management with

**REAR**

[www.relax-and-recover.org](http://www.relax-and-recover.org)



&



**DRLM**

DISASTER RECOVERY LINUX MANAGER

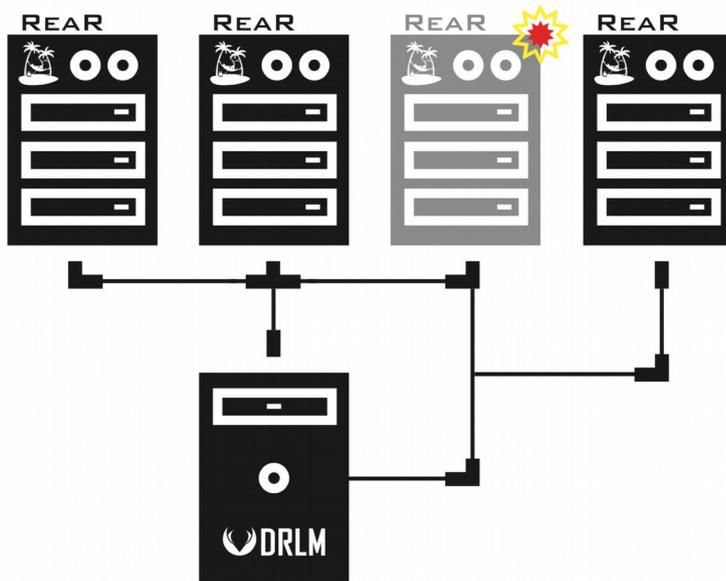
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DRLM Workshop



**Didac Oliveira**

DRLM Chief Architect & Core Developer



- What is DRLM?
- DRLM features
- DRLM Project history
- How to contribute?
- DRLM roadmap



# What is DRLM?

GNU/Linux Disaster Recovery

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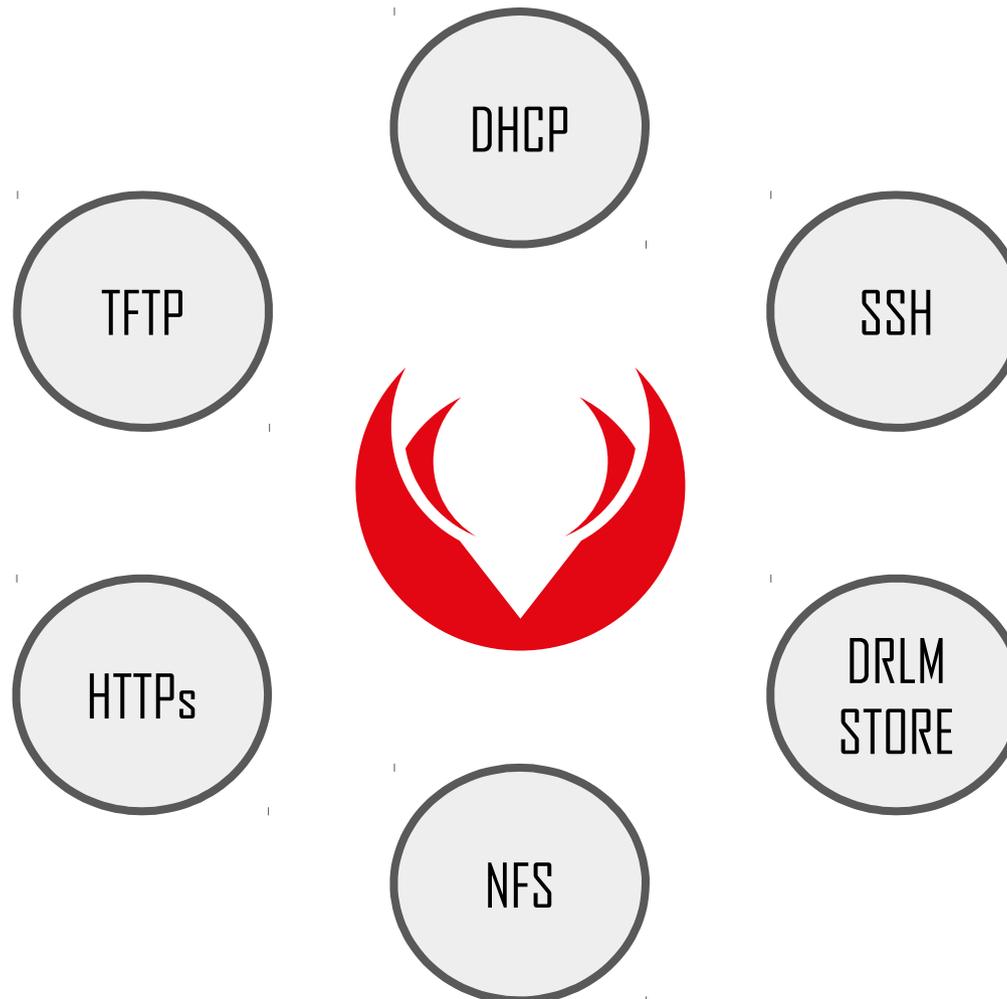


See appendix A for more detailed info.



# What is DRLM?

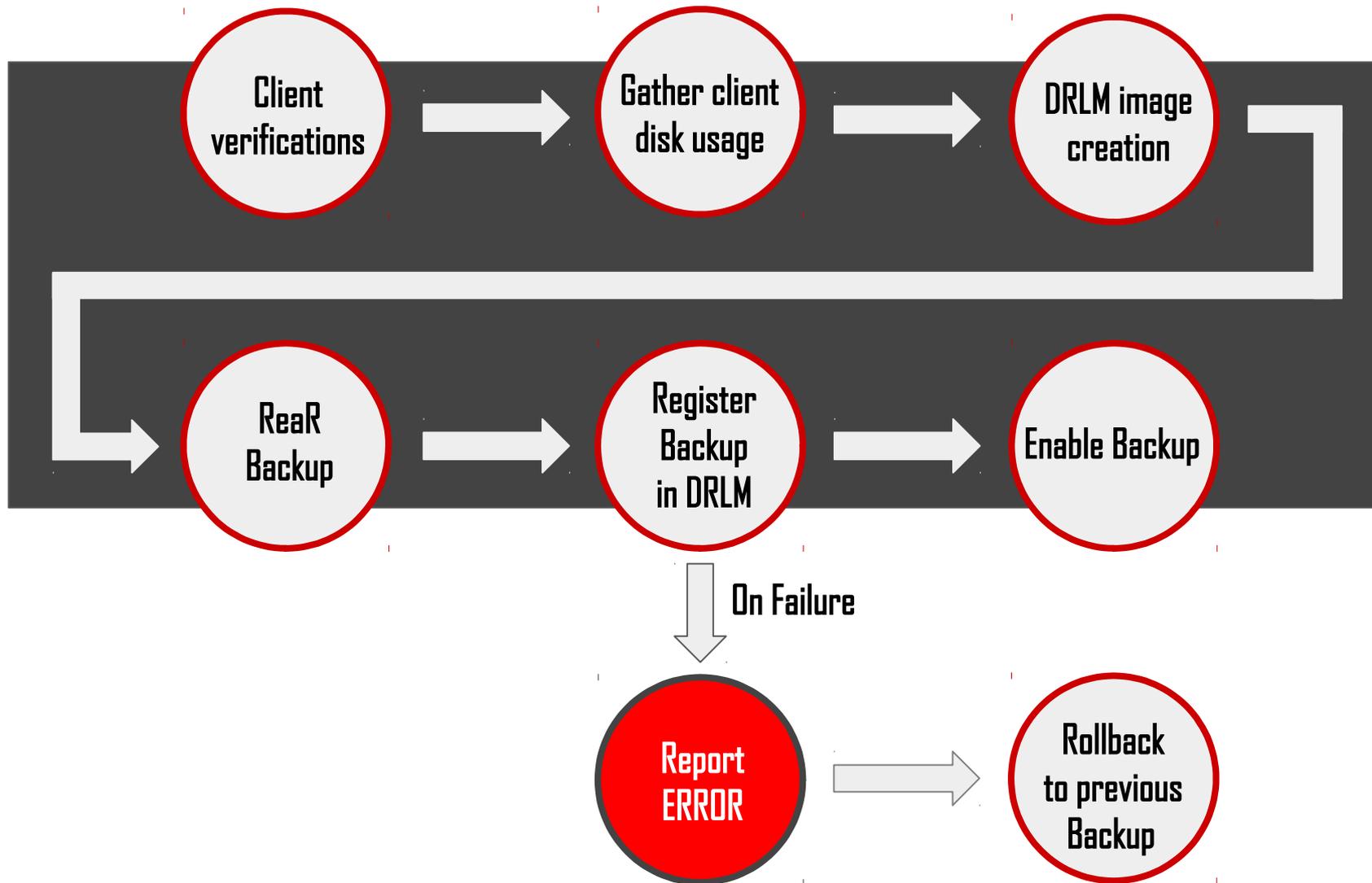
Protocols & Services





# What is DRLM?

Backup process explanation

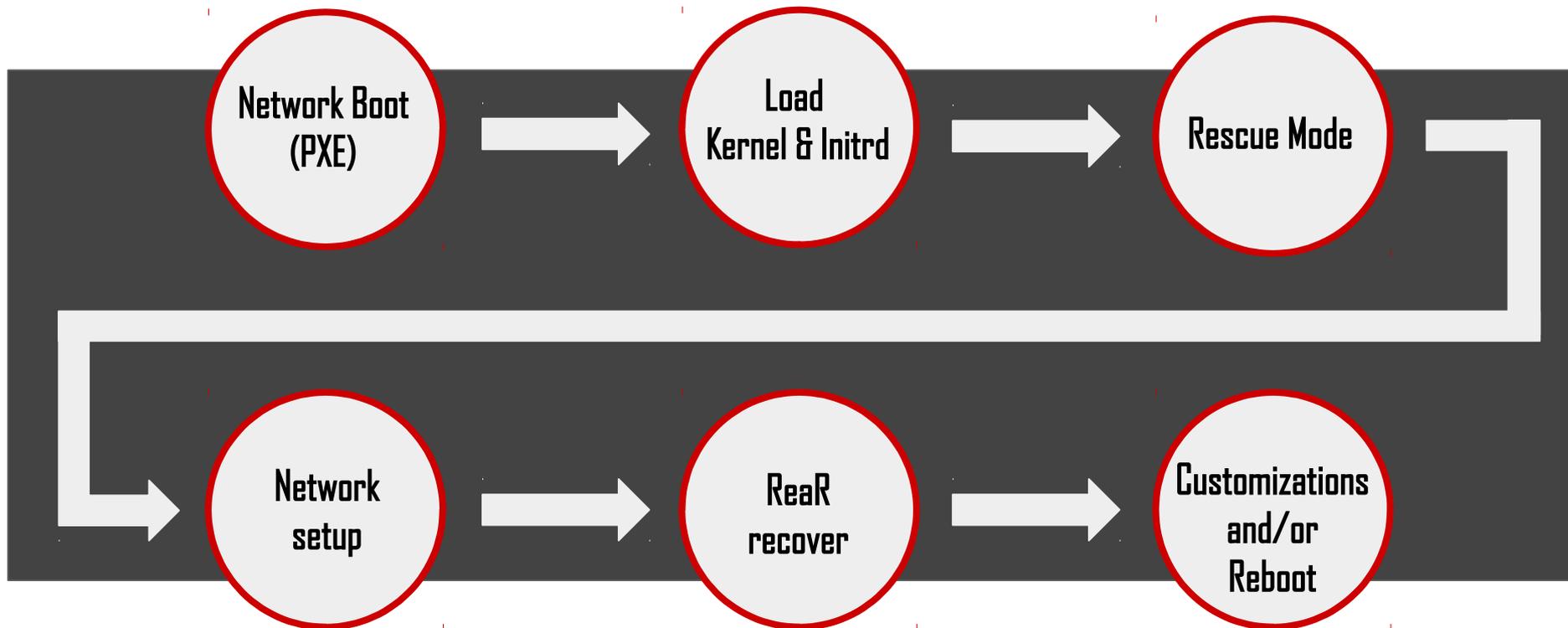




# What is DRLM?

Recovery process explanation

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# What is DRLM?

Command Line Interface (CLI)



## Network Operations:

ADD, DELETE, MODIFY & LIST

## Backup Operations:

RUN, MANAGE, DELETE,  
EXPORT, IMPORT & LIST

## Client Operations:

ADD, INSTALL, DELETE, MODIFY & LIST

## Job Scheduler Operations:

ADD, DELETE, SCHED & LIST

For more information please visit:  
<http://docs.drlm.org>



# DRLM features

Automatic error reporting

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Integration with system monitoring tools:



**ZABBIX**

**Nagios®**





# DRLM features

Unattended ReaR installation and base config



## Supported OSes:





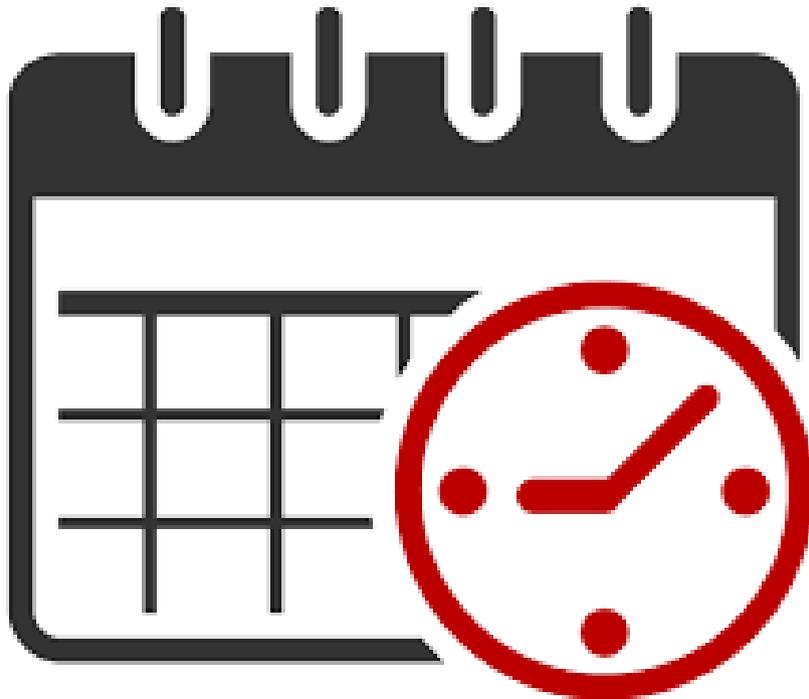
# DRLM features

Backup job scheduler

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NEW



- one-shot jobs
- job expire dates
- job repetition:
  - Minutes
  - Hours
  - Days
  - Weeks
  - Months
  - Years



# DRLM features

## Export & Import

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NEW



Export & import DR images between DRLM servers on different sites and/or locations, made easy.

See appendix B for more detailed info.



# DRLM Project history

3 years of hard work ...



**2013 AUG:** DRLM Project born

**2013 DEC:** First DRLM stable version (1.0.0)

**2014 DEC:** DRLM full integration with ReaR  
(issue #522) - ReaR 1.17

**2016 JUL:** DRLM version 2.0.0 released

**2017 JAN:** DRLM version 2.1.0 frozen

See appendix C for more detailed history.



# How to contribute?

Here are some options ...

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- Try our latest versions and give us your feedback
- Write code to improve or extend **DRLM**
- Start discussions for new feature proposals
- Report Issues to improve our code and/or documentation  
[github.com/brainudpaters/drlm](https://github.com/brainudpaters/drlm) & [github.com/brainudpaters/drlm-docs](https://github.com/brainudpaters/drlm-docs)
- Share your experience with **DRLM**

Visit <http://drlm.org/community/> for more information.



# DRLM Roadmap

Let's talk about project's future ...

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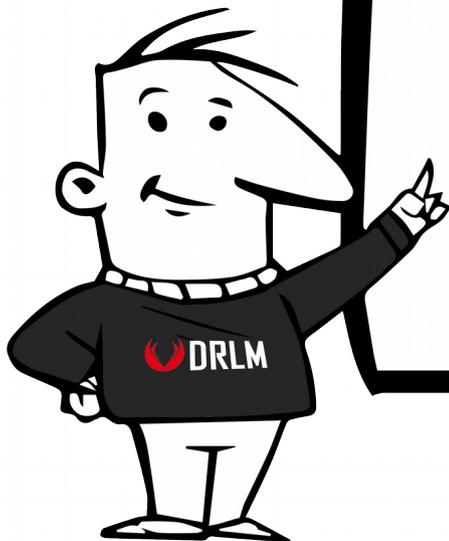


Please come to the latest talk of Backup and Disaster Recovery Developer room:

Future ideas for ReaR, DRLM, and Bareos

17:45H

An informal talk with ReaR, DRLM, and Bareos users about what they would like to get implemented in future ReaR, DRLM, and Bareos versions.





[www.drlm.org](http://www.drlm.org)

# Workshop



## Workshop preparation:

Follow the instructions in:

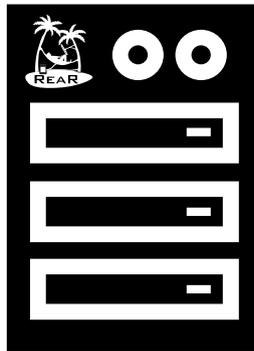
- [https://github.com/brainupdaters/fosdem17\\_workshop](https://github.com/brainupdaters/fosdem17_workshop)

## Requirements:

- Virtualbox & extension pack installed
- Vagrant installed
- Required vagrant boxes downloaded

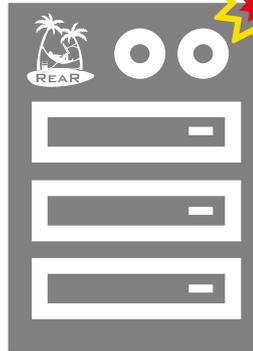


rear-centos



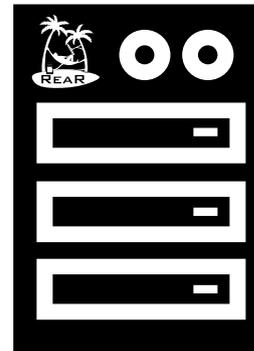
10.100.0.10

rear-suse



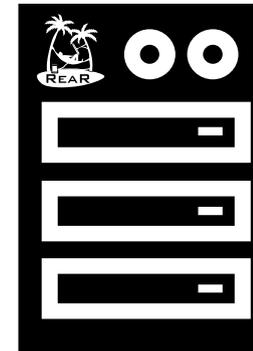
10.200.0.11

rear-ubuntu



10.200.0.12

rear-debian



10.200.0.13

drlm-ubuntu



10.100.0.50  
10.200.0.50

drlm-debian



10.100.0.60  
10.200.0.60



## DRLM install docs:

Installation instructions: <http://docs.drlm.org/en/latest/Install.html>

- RHEL & CentOS
- Debian & Ubuntu
- SLES



```
# drlm addnetwork -n vboxnet1 -i 10.100.0.0 \  
-m 255.255.255.0 -g 10.100.0.254 -s 10.100.0.50  
  
# drlm addnetwork -n vboxnet2 -i 10.200.0.0 \  
-m 255.255.255.0 -g 10.200.0.254 -s 10.200.0.50
```

First of all, we must configure the required networks to manage from DRLM, where the clients will be.

dr1m-ubuntu





```
# drlm addclient -c rear-centos -i 10.100.0.10/24 -I -U \  
  http://download.opensuse.org/repositories/Archiving:/Backup:/Rear/CentOS_7/x86_64/rear-2.00-1.el7.x86_64.rpm  
  
# drlm addclient -c rear-ubuntu -i 10.200.0.12/24 -I \  
-u vagrant  
  
# drlm addclient -c rear-debian -i 10.100.0.13/24  
# drlm instclient -c rear-debian -u vagrant
```

Adding clients can be done in one or two separated steps. Installing them at the same time that adding them to DRLM or just adding them without installation & base configuration.

drIm-ubuntu





# DRLM Workshop

Backup execution & schedule configuration

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```
# drlm addjob -c rear-centos -s 2017-02-04T11:45 \  
-e 2017-02-04T11:55 -r 5min  
  
# drlm addjob -c rear-ubuntu -s 2017-02-04T11:46 -r 5min  
  
# drlm addjob -c rear-debian -s 2017-02-04T11:47
```

Each client can have multiple backup jobs configured, with different schedules, also one-shot jobs can be planned, avoiding the need to keep open terminals or the use of nohup or screen, as well as to run extra backups that were not planned previously.

drlm-ubuntu





```
# apt-get install heirloom-mailx sendmail

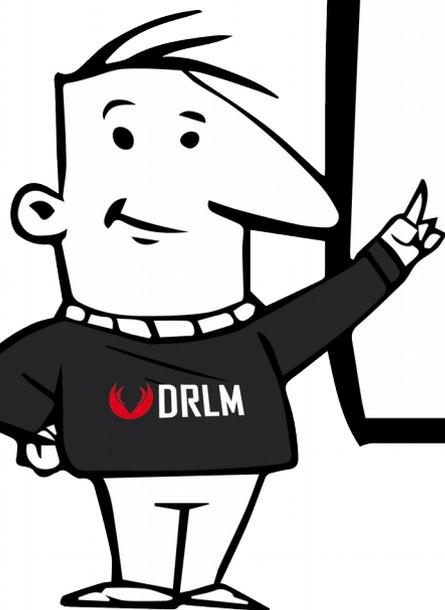
# vi /etc/drlm/local.conf
...
ERR_REPORT=yes
REPORT_TYPE=mail
MAILCMD=$(which mailx)
MAILSUBJECT="DRLM FOSDEM17 ERROR ALERT ($HOSTNAME)"
MAIL_TO="didac@brainupdaters.net"

# vi /etc/drlm/alerts/mail.cfg

set from="alerts@drlm.org(FOSDEM17 ALERTS)"
set smtp-use-starttls
set ssl-verify=ignore
set smtp-auth=login
set mtps=smtp://smtp.gmail.com:587
set smtp-auth-user=didac@brainupdaters.net
set smtp-auth-password=$(cat /root/passwd_mail)
set nss-config-dir=/etc/ssl/certs
```

Here we will configure e-mail error reporting in DRLM and force backup error to receive an alert.

drlm-ubuntu





```
# drlm listbackup -A
Backup Id      Client Name    Backup Date    Backup Status
1.20170204114504  rear-centos   2017-02-04 11:45  false
1.20170204115003  rear-centos   2017-02-04 11:50  true
2.20170204114606  rear-ubuntu   2017-02-04 11:46  false
2.20170204115105  rear-ubuntu   2017-02-04 11:51  true
3.20170204114702  rear-debian   2017-02-04 11:47  true

# drlm bkpmgr -I 1.20170204114504 -c rear-centos -e -P
# drlm bkpmgr -I 3.20170204114702 -c rear-debian -d -P
```

Each backup in DRLM can be enabled or disabled manually. In case of problems with the latest backup you can enable a previous one to recover from it. Or just to rollback to a previous state if the client was upgraded or reconfigured and you are experiencing issues since those changes were applied.

drIm-ubuntu





```
# drlm addnetwork -n vboxnet1 -i 10.100.0.0 -m 255.255.255.0 \  
-g 10.100.0.254 -s 10.100.0.60  
  
# drlm addnetwork -n vboxnet2 -i 10.200.0.0 -m 255.255.255.0 \  
-g 10.200.0.254 -s 10.200.0.60  
  
# drlm addclient -c rear-debian -i 10.100.0.13/24
```

In this example we are using the same networks in the target and source DRLM server, but they could be different, remember to adjust network config, hostnames, ... after recovering on different networks with different hostnames, ... that's all.

drIm-debian





```
# drlm listbackup -A
Backup Id      Client Name      Backup Date      Backup Status
1.20170204114504  rear-centos      2017-02-04 11:45  false
1.20170204115003  rear-centos      2017-02-04 11:50  true
2.20170204114606  rear-ubuntu      2017-02-04 11:46  false
2.20170204115105  rear-ubuntu      2017-02-04 11:51  true
3.20170204114702  rear-debian      2017-02-04 11:47  true

# drlm expbackup -I 3.20170204114702 -f /tmp/export.dr

# scp /tmp/export.dr vagrant@10.100.0.60:/tmp
```

Here we will export any available DR image to a local directory and then, send it to the destination DRLM server.

drIm-ubuntu



DRLM





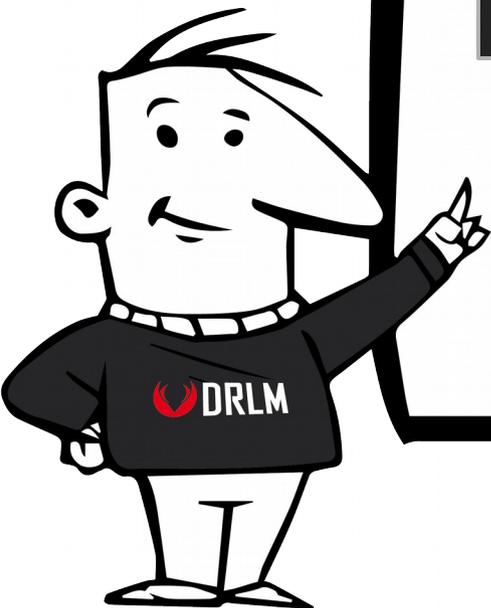
```
# drlm impbackup -c rear-debian -f /tmp/export.dr
```

```
# drlm listbackup -A
```

Backup Id	Client Name	Backup Date	Backup Status
1.20170204121505	rear-debian	2017-02-04 12:15	true

Importing DR image to destination DRLM server will enable it automatically and you could be able to start recovering from it immediately.

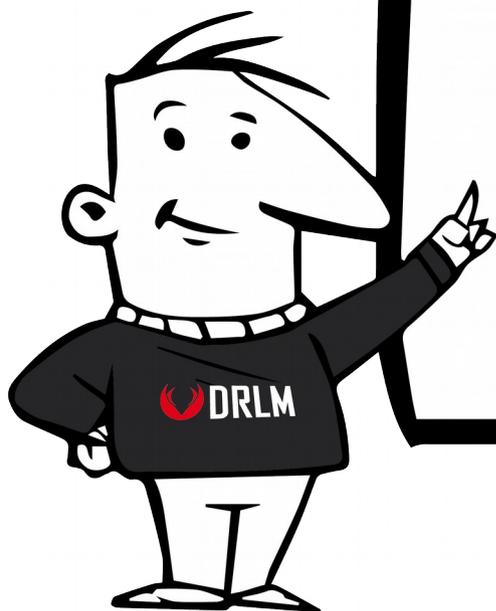
drIm-debian





1. Power off the VM to be restored.
2. Disable its NAT network device.
3. Set Boot order 1st device to Network.
4. Boot VM from network.
5. Select 1st option in **DRLM** boot menu.
6. Enter root username to the booted **ReaR** recovery.
7. Run `dhclient` & `rear recover`:

```
# rear -v recover SERVER=<server_ip> REST_OPTS=-k ID=<client_name>
```





# DRLM Best Practices

Some recommendations ...

3



- Keep `/var/lib/drlm/arch` in a separated filesystem with enough space to store all required DR images.
- Adjust kernel loop limit properly (`max_loops`) according to the number of clients to manage.
- Install **DRLM** in a dedicated server.
- Configure NTP and set correct Timezone.
- Avoid other PXE services in **DRLM** managed networks.
- Recommended 4GB of RAM minimum.



[www.drlm.org](http://www.drlm.org)

# Questions & Answers



[www.drlm.org](http://www.drlm.org)

# Appendix



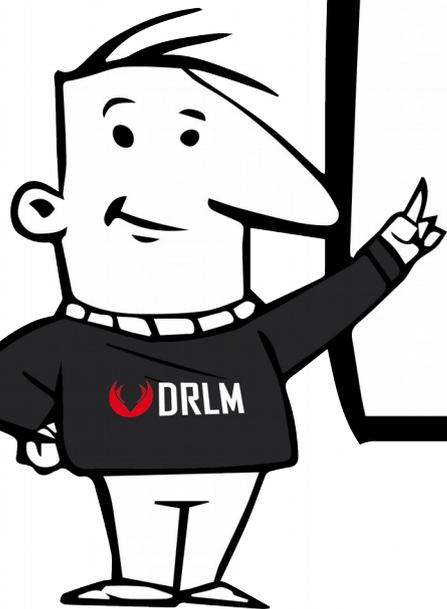
# What is DRLM?

Brief description of ReaR

A.I



ReaR is the best standalone Disaster Recovery tool for GNU/Linux. It is able to recover a single system in few minutes from scratch.





# What is DRLM?

Brief description of DRLM

A.2

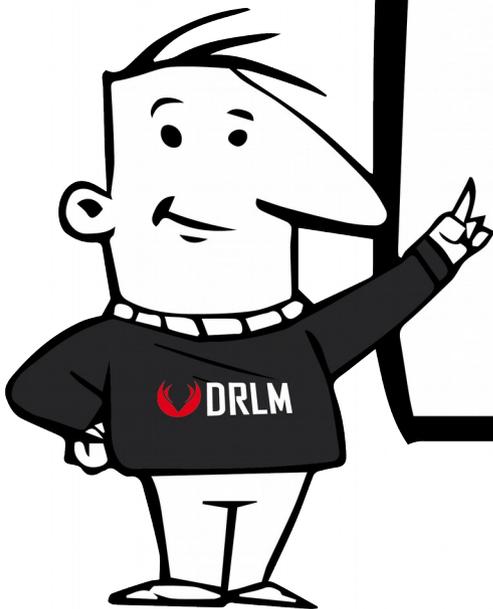


DRLM is a centralized management tool for small to large Disaster Recovery implementations using ReaR.

An easy-to-use software for Disaster Recovery management and a great tool for any GNU/Linux SysAdmin.



# DRLM





# DRLM features

Some of them ...

B.1



- **Automatic Error Reporting on backup failure**

Nagios, Zabbix, Mail & HP DVD

- **Easy GNU/Linux systems migration**

P2V, P2P, V2V & V2P

- **Whole Recovery over the network**

Multiarch Netboot support with GRUB2 (DRLM 2.0.0)

- **Unattended client installation & configuration**

instclient workflow (DRLM 2.0.0)

- **Integrated Backup Job Scheduler**

New feature! (DRLM 2.1.0)



# DRLM features

Some more ...

B.2



- **Import & Export DR images between DRLM servers**  
New feature! (DRLM 2.1.0)
- **Fully supported and tested on major Linux distros**  
RHEL, CentOS, Debian, SUSE & Ubuntu
- **Easy to Use & Setup**
- **Integrated Debugging/Troubleshooting in DRLM CLI**
- **Fully developed in BASH**
- **Open Source**



# Version 2.1.0

New features and enhancements

B.3



- Import & Export DR images between DRLM servers
- Added support for DRLM on SLES12
- Added support for DRLM on Ubuntu 16.04 LTS
- Addclient improvements:
  - New online mode
  - New install mode
- Integrated Backup Job Scheduler
- DRLM `runbackup` execution params inherited in ReaR (eg: `-vD`)
- Other minor enhancements



# Version 2.0.0

## Release Notes

B.4



- Multiarch netboot with GRUB2 – x86\_64-efi i386-efi i386-pc – (issue #2)
- New installclient workflow (issue #5)
- Added support for systemd distros – RHEL7 CentOS7 Debian8 – (issue #14)
- Use bash socket implementation instead of netcat (issue #15)
- Runbackup workflow enhancement with sparse raw images with qemu-img reducing backup time and improving management (issue #16)
- Added support for parallel backups on DRLM (issue #22)
- Added support for new DB backend sqlite3 (issue #23)
- Added support for Nagios error reporting (issue #28)
- Added support for Zabbix error reporting (issue #29)
- Added support for Mail error reporting (issue #30)
- Added timeout var for Sqlite in sqlite3-driver.sh for avoiding database locks.
- Added source of local.conf and site.conf files in drlm-stord
- Solved lots of bugs
- DRLM documentation updated to reflect version 2.0 changes



# DRLM Project history

From the beginning ...

C.1



- 2013 AUG:** DRLM Project born (aka DRLS)
- 2013 OCT:** First DRLM code publication on Github  
[github.com/brainupdaters/drlm](https://github.com/brainupdaters/drlm)
- 2013 DEC:** First DRLM stable version (1.0.0)
- 2014 DEC:** DRLM full integration with ReaR  
(issue #522) – ReaR 1.17
- 2015 JAN:** Publication of project websites  
[www.drlm.org](http://www.drlm.org) & [docs.drlm.org](http://docs.drlm.org)
- 2015 MAR:** DRLM version 1.1.1 released



# DRLM Project history

To be continued ...

C.2



- 2015 MAY:** DRLM 2.0.0 roadmap
- 2016 JAN:** DRLM present at FOSDEM'16
- 2016 JUL:** DRLM version 2.0.0 released
- 2016 AUG:** DRLM 2.1.0 roadmap
- 2017 JAN:** DRLM version 2.1.0 released
- 2017 FEB:** Here we are! again at FOSDEM'17
- 2017 MAR:** New DRLM version roadmap



# DRLM Team

Project founders & maintainers

D.1



Didac Oliveira

Pau Roura

Ruben Carbonell



## About the author

Didac Oliveira

D.2



Co-Owner & Co-Founder at Brain Updaters, S.L.L.

Co-Founder & Maintainer at DRLM Project

### *Other OpenSource contributions:*

- **Relax-and-Recover (ReaR)**  
[www.relax-and-recover.org](http://www.relax-and-recover.org)
- **Config-to-HTML (cfg2html v6.x)**  
[www.cfg2html.com](http://www.cfg2html.com)



**DRLM at Github:** [github.com/brainupdaters/drlm](https://github.com/brainupdaters/drlm)

**DRLM website:** [drlm.org](https://drlm.org)

**DRLM Docs:** [docs.drlm.org](https://docs.drlm.org)



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