

{VMR} PACKAGE

MANAGE VIRTUAL MACHINES FOR/WITH R



<https://rstuff.gitlab.io/vmr/>

PRÉSENTATION

{VMR} R package allow to **manage**, **provision** and **use** a **Virtual Machine** preconfigured for **R**.

Develop, make tests and build a package in a clean environment with a choice of different providers and OS improve the quality, the productivity, the reproductibility and the share of R productions.

Here we present, the possibilities offered by {VMR} to manipulate a **VM** using **R** code.

How these VMs are built using severals pipelines over GitLab CI/CD and stored in the Vagrant cloud repository.

{VMR}

=> **R package to use Vagrant CLI tool**

- Vagrant have to be installed ($\geq 2.2.10$)
- Implement most of the commands
- Currently works for VirtualBox ($\geq 6.1.14$) provider



- `vmrList()` : List boxes (OS, R Versions, providers)
- `vmrCreate(...)` : Create a VMR environment
- `vmrInitEnv(...)` : Initialyse environment and download VM
- `vmrStart()`, `vmrSuspend()`, `vmrResume()`, `vmrStop()`

TOOLS



Vagrant is a tool for building and managing virtual machine environments in a single workflow and focus on automation.
Open Source MIT License – HashiCorp

Box ~= a Virtual Machine
Provider ~= virtualization product

VirtualBox is a virtualization tool
Open Source GPL-v2 – ORACLE

Runs on and supports multiples OS



BOXES AND VM CREATIONS



GitLab

<https://gitlab.com/rstuff/vms>

Repositories use CI/CD to create, provision and store boxes

For Windows, Linux and Mac OS



CREATE + PROVISION

STORE

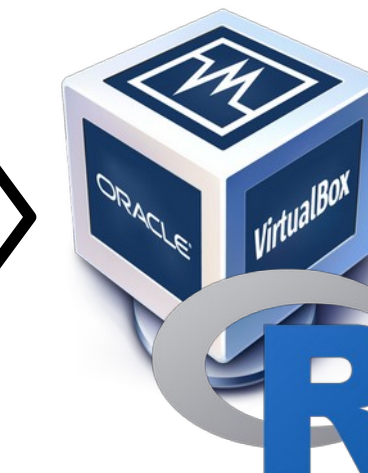


LIST

DOWNLOAD



HANDLE



VM
R version
OS



<https://app.vagrantup.com/VMR/>

WORK WITH VMR



Mount Local Directory

`vmrMountDir(vmr_env, src, dest)`

Guest informations

`vmrInfo()`

VirtualBox Options

`opt <- virtualboxOptions()`

`opt$name <- "user"`

`opt$gui <- TRUE`

`opt$modifyvm$memory <- 4096`

`opt$modifyvm$cpu <- 4`

R in the VM

`vmrExec('print("Hello User!")')`

`vmrProvision(cmd="Rscript -e mycode.R", elt="mycode.R")`

`vmrInstallPackages(pkg = c("vmr"))`

R Packages

`vmrPackageCheck()`

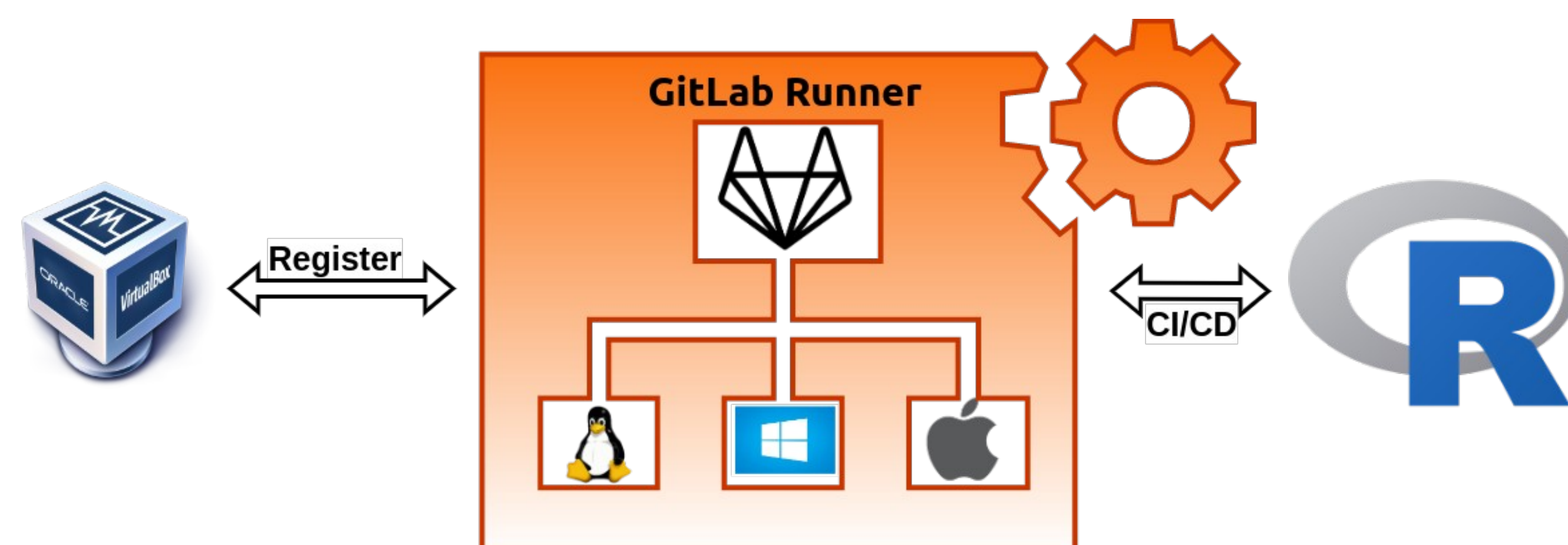
`vmrPackageTest()`

`vmrPackageBuild()`

GITLAB-RUNNER

Use a VM as a GitLab Runner for CI/CD

`VirtualboxGitlabRunner(...)` → CLI to register the VM as Runner



Automate Tests, Check and Build

PERSPECTIVES

- Add new providers : Docker, VMware, ...
- Find storage capacity for boxes
- Improve boxes provisionning
- Add new OS (Fedora, Solaris, ...)
- Improve integration for R Dev (simplify remote R, execution interactive shell, Rstudio addins)



Centre
Provence-Alpes-Côte d'Azur -
Avignon

Jean-François Rey¹

¹ BioStatistique et Processus Spatiaux (BioSP), INRAE Avignon, France

jeff.biosp.org | jean-francois.rey@inrae.fr | [@jfrey_official](https://twitter.com/jfrey_official)

Biostatistique



& Processus Spatiaux