

# Package ‘vmr’

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**Type** Package

**Encoding** UTF-8

**Title** Virtual Machines for R

**Version** 0.0.5

**Date** 2022-09-07

**Maintainer** Jean-François Rey <jf.rey.public@gmail.com>

**Description** Manage, provision and use Virtual Machines pre-configured for R.  
Develop, test and build package in a clean environment.  
'Vagrant' tool and a provider (such as 'Virtualbox') have to be installed.

**URL** <https://gitlab.com/rstuff/vmr>, <https://rstuff.gitlab.io/vmr>

**BugReports** <https://gitlab.com/rstuff/vmr/-/issues>

**License** GPL (>= 3)

**BuildVignettes** true

**NeedsCompilation** no

**Biarch** true

**SystemRequirements** Vagrant <<https://www.vagrantup.com>>

**Depends** utils, R (>= 3.3.0)

**Imports** jsonlite, curl

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'vagrant.R' 'vmr-methods.R'

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---

vmr-package

*Virtual Machines for R*

---

## Description

Manage, provision and use Virtual Machines pre-configured for R. Develop, test and build package in a clean environment. 'Vagrant' tool and a provider (such as 'Virtualbox') have to be installed.

## Details

Package: vmr  
Type: Package  
Version: 0.0.5  
Date: 2022-09-07  
License: GPL (>=3)

This package is a wrap of the **Vagrant** tool and more. It allows to manage, provision and use Virtual Machines pre-configured for R. It currently only uses 'Virtualbox' (>= 6.1.14) as provider. Vagrant tool have to be installed too. Used VMs come from <https://app.vagrantup.com/VMR> repository and the sources use to generate them can be found at <https://gitlab.com/rstuff/vms>. See vignettes for the documentations `browseVignette("vmr")`.

## Author(s)

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## See Also

Useful links:

- <https://gitlab.com/rstuff/vmr>
- <https://rstuff.gitlab.io/vmr>
- Report bugs at <https://gitlab.com/rstuff/vmr/-/issues>

## Examples

```
## Not run:  
library("vmr")  
  
## End(Not run)
```

---

getProviderOptions      *List provider options*

---

### Description

List a provider available options.

### Usage

```
getProviderOptions(provider = "virtualbox", details = FALSE)
```

### Arguments

provider	a provider name
details	if TRUE print options, otherwise return default options

### Details

It return a list of options name and value for a specific provider. To get the help page do ?<provider\_name>Options(), for example [[virtualboxOptions\(\)](#)].

### Value

a list of options

### Examples

```
vbOpts <- getProviderOptions(provider = "virtualbox")
print(vbOpts)
```

---

print.vmr      *Print vmr object information*

---

### Description

print information from a **vmr** object

### Usage

```
## S3 method for class 'vmr'
print(x, ...)
```

### Arguments

x	a <b>vmr</b> object
...	optional print arguments

**Value**

the **vmr** object (via invisible(x))

---

summary.vmr

*Summary vmr object information*


---

**Description**

print information from a **vmr** object

**Usage**

```
## S3 method for class 'vmr'
summary(object, ...)
```

**Arguments**

object            a **vmr** object  
 ...               optional print arguments

**Value**

the **vmr** object (via invisible(x))

---

virtualboxGitlabRunner

*Configure the guest VM to be use as a Gitlab-Runner*


---

**Description**

Configure the guest VM to be use as a GitLab Runner and return the command to run in shell to register it.

**Usage**

```
virtualboxGitlabRunner(
  vmr,
  gitlab_url,
  gt_token,
  snapshot_name = "",
  vm_name = ""
)
```

**Arguments**

vmr	a <b>vmr</b> object
gitlab_url	a GitLab URL with protocol (http or https)
gt_token	a GitLab registration token
snapshot_name	name of a snapshot to use if any
vm_name	the 'VirtualBox' VM name if not specified in 'vmr' object provider_options.

**Value**

Character command to run in shell to register it

**Examples**

```
## Not run:
cmd <- virtualboxGitLabRunner(vmr, "gitlab.com", "mytoken")
system(cmd)

## End(Not run)
```

---

virtualboxOptions      *List 'VirtualBox' options available*

---

**Description**

List available options for 'VirtualBox' provider

**Usage**

```
virtualboxOptions(details = TRUE)
```

**Arguments**

details                  if TRUE print options (default), otherwise only return default options

**Details**

Get the 'VirtualBox' default options. It return a list as follow:

```
list(
  gui = TRUE,
  name = NULL,
  nic_type = NULL,
  linked_clone = FALSE,
  check_guest_additions = TRUE,
  modifyvm = list(cpus = "2", memory = "4096")
)
```

- **gui**: if TRUE show the GUI, otherwise headless mode is activated
- **name**: the 'VirtualBox' instance name
- **nic\_type**: the NIC type for the network interface to use, by default use the default one. see [VirtualBox Networking](#)
- **linked\_clone**: if TRUE, linked clones are based on a master VM, which is generated by importing the base box only once the first time it is required. For the linked clones only differencing disk images are created where the parent disk image belongs to the master VM. (Be careful, master VM can't be remove until linked\_clone still exists)
- **check\_guest\_additions**: If TRUE (default) check if guest have guest additions installed.
- **modifyvm**: list of 'VirtualBox' properties for the guest VM (such as number of cpus, memory size,...). see ['VirtualBox' modifyvm](#)

### Value

A default list of options

```
list(
  gui = TRUE,
  name = NULL,
  nic_type = NULL,
  linked_clone = FALSE,
  check_guest_additions = TRUE,
  modifyvm = list(cpus = "2", memory = "4096")
)
```

### Examples

```
## Not run:
vb.opts <- virtualboxOptions(details = FALSE)
vb.opts$modifyvm$cpus <- "4"
vb.opts$modifyvm$memory <- "8192"
vb.opts

## End(Not run)
```

---

vnrBoxDownload

*Download a Box*

---

### Description

Download a box from a **vnr** object.

### Usage

```
vnrBoxDownload(vnr)
```

**Arguments**

vmr                    a **vmr** object

**Value**

a **vmr** object

---

vmrConfigSSH	<i>Configure ssh</i>
--------------	----------------------

---

**Description**

Configure ssh credential.

**Usage**

```
vmrConfigSSH(
  vmr,
  ssh_user = "vagrant",
  ssh_pwd = "vagrant",
  port = "",
  ssh_private_key_path = ""
)
```

**Arguments**

vmr                    a **vmr** object

ssh\_user              the ssh user (default 'vagrant')

ssh\_pwd               the ssh pwd if any (default 'vagrant')

port                   the ssh port (default empty)

ssh\_private\_key\_path  
                         path to the private ssh key to use (default empty, use insecure vagrant key)

**Details**

by default **vmr** use vagrant as user/password and insecure key for ssh connection. This behavior can be change here, by setting an another user and/or ssh keys. Calling with no arguments will disable this option. Be careful, ssh using only password may result of *vmr* functions bugs.

**Value**

an updated **vmr** object



## Examples

```
## Not run:
vmr <- vmrConfigSSH(ssh_user = "John", ssh_pwd = "d0e", port = "22")
vmr <- vmrConfigSSH(ssh_user = "John", private_key_path = "/path/to/private/key/")

## End(Not run)
```

---

vmrConnect

*Open a ssh connection to guest machine*

---

## Description

Open a ssh connection to guest machine

## Usage

```
vmrConnect(vmr)
```

## Arguments

vmr                    a **vmr** object

## Details

To open a ssh connection 'ssh' package have to be installed.

## Value

a **vmr** object

---

vmrCreate

*Create a **vmr** environment class*

---

## Description

Create a **vmr** object.

## Usage

```
vmrCreate(
  name,
  provider = "virtualbox",
  version = "latest",
  provider.options = virtualboxOptions(FALSE)
)
```

## Arguments

name	a box name
provider	the box provider (default: "virtualbox")
version	the box version (default : "latest")
provider.options	provider options (call <code>[getProviderOptions()]</code> to get values)

## Details

Create a S3 **vmr** object (a simple list). The object contains all information needed to configure and manage a **vmr** environment (a vagrant environment).

A **vmr** environment need mostly a box *name* and a *provider*. The environment is attached to the current working directory.

**vmr** object main attributs:

- **path**: working directory
- **org**: Vagrant cloud user/organization name 'VMR'
- **box**: the box name
- **version**: the box version
- **provider**: the provider
- **provider\_options**: the provider options (see `[getProviderOptions()]`)
- **vagrantName**: Vagrant environment name
- **ID** <- Vagrant environment ID
- **synced\_folder**: a list with source and destination
- **ssh\_user**: the ssh user
- **ssh\_pwd**: the ssh user password
- **ssh\_port**: the ssh port
- **ssh\_private\_key\_path**: the private ssh key path

## Value

a **vmr** object (see details)

## Examples

```
## Not run:
# List boxes available
boxes <- vmrList()
# Create a vmr object
vmr <- vmrCreate(boxes$Name[1])

# to customize the guest machine for virtualbox
virtualboxOpts <- getProviderOptions(provider = "virtualbox")
virtualboxOpts$modifyvm <- list(cpus = 4, memory = 4096)
virtualboxOpts$name <- "My VM Cool Name"
```

```
# To specify a provider and version
vnr <- vnrCreate(
  name = boxes$Name[1],
  provider = "virtualbox",
  version = boxes$Version[1],
  provider.options = virtualboxOpts
)

## End(Not run)
```

---

vnrDestroy	<i>Remove all resources created in a <b>vnr</b> environment</i>
------------	---

---

### Description

Remove all resources created by [vnrStart\(\)](#)

### Usage

```
vnrDestroy(id = "", force = FALSE)
```

### Arguments

id	a <b>vnr</b> environment id (default : "" id from the current environment)
force	if TRUE force to remove

### Details

Will by default remove all resources created from the current **vnr** environment. By specifying the *id* any environment with this *id* will be remove.

### Value

the vagrant environment id

### Examples

```
## Not run:
vnrStop()
vnrDestroy()

## End(Not run)
```

---

vmrDisconnect	<i>Disconnect ssh connection to guest machine</i>
---------------	---

---

**Description**

Close a ssh connection to the guest machine

**Usage**

```
vmrDisconnect(vmr)
```

**Arguments**

vmr                    a **vmr** object

**Details**

'ssh' package need to be installed.

**Value**

a **vmr** object

---

vmrExec	<i>Execute R methods into guest machine</i>
---------	---

---

**Description**

Run R method into guest machine.

**Usage**

```
vmrExec(cmd = c())
```

**Arguments**

cmd                    list of R command

**Details**

call Rscript -e "cmd" into the guest machine from the current **vmr** environment. Command are independents and do not keep memory of past commands.

**Value**

NULL

**Examples**

```
## Not run:
cmd <- c("Sys.info()", 'print("Hello World!")')
vnrExec(cmd)

## End(Not run)
```

---

vnrInfo	<i>Get guest machine information</i>
---------	--------------------------------------

---

**Description**

Get guest machine information. Print OS, R, R-devel and R packages information. Still in development.

**Usage**

```
vnrInfo()
```

**Value**

NULL

**Examples**

```
## Not run:
boxes <- vnrList()
vnr <- vnrCreate(boxes$Name[1])
vnr <- vnrInitEnv(vnr)
vnrStart()
vnrInfo()

## End(Not run)
```

---

vnrInitEnv	<i>Initialize the <b>vnr</b> environment</i>
------------	--

---

**Description**

Create **vnr** environment in the current directory. Set configuration into a template file name "Vagrantfile" and download the box if needed.

**Usage**

```
vnrInitEnv(vnr, force.vagrantfile = FALSE, force.download = FALSE)
```

### Arguments

`vmr` a **vmr** object  
`force.vagrantfile` if TRUE force to overwrite environment configuration (default FALSE)  
`force.download` if TRUE force to download the box, otherwise do not (default FALSE).

### Details

The **vmr** environment consist of a directory (the working directory) and a template file name *Vagrantfile*. If the box is not present in localhost it will be download.

### Value

the **vmr** object

### Examples

```
## Not run:  
boxes <- vmrList()  
vmr <- vmrCreate(boxes$Name[1])  
vmr <- vmrInitEnv(vmr)  
  
## End(Not run)
```

---

`vmrInstallPackages` *Install R packages into guest machine*

---

### Description

Install a list of R packages into the guest machine of the current **vmr** environment.

### Usage

```
vmrInstallPackages(pkgs = c())
```

### Arguments

`pkgs` list of R packages

### Value

installed packages vector

### Examples

```
## Not run:  
vmrInstallPackages(c("vmr"))  
  
## End(Not run)
```

---

vnrIsRunning	<i>Is <b>vnr</b> environment running</i>
--------------	--

---

**Description**

Check if a guest machine in a **vnr** environment is running

**Usage**

```
vnrIsRunning()
```

**Value**

TRUE if running, otherwise FALSE

**Examples**

```
## Not run:
lboxes <- vnrList()
vnr <- vnrCreate(lboxes$Name[1])
vnr <- vnrInitEnv(vnr)
vnrStart()
vnrIsRunning()
vnrStop()
vnrIsRunning()

## End(Not run)
```

---

vnrList	<i>List available boxes from VagrantCloud</i>
---------	---

---

**Description**

List of available boxes from a VagrantCloud organization account.

**Usage**

```
vnrList(org = .VagrantCloudOrganization)
```

**Arguments**

org                    Vagrant Cloud organization name (default : 'VMR')

**Details**

Default usage lists boxes preconfigured with R from **VMR organization account**.

**Value**

a data.frame with Name, Provider, Version and Description of available boxes

---

vmrListBox	<i>List all available version of a box</i>
------------	--

---

**Description**

List all versions and providers available of a box.

**Usage**

```
vmrListBox(box_name, org = .VagrantCloudOrganization)
```

**Arguments**

box_name	the box name
org	Vagrant Cloud organization name (default : 'VMR')

**Details**

List information of a box from VagrantCloud. Default usage list information of a box preconfigured with R from [VMR organization account](#).

**Value**

a data.frame with "Name", "Version", "Description", "Provider" and "Date" of the box

**Examples**

```
## Not run:  
# List Boxes  
boxes <- vmrList()  
# Box informaion  
box_info <- vmrListBox(boxes$Name[1])  
box_info  
  
## End(Not run)
```



---

vmrListSnapshot	<i>List snapshot of the guest machine</i>
-----------------	---

---

**Description**

Print all snapshot name of the guest machine

**Usage**

```
vmrListSnapshot()
```

**Value**

NULL

---

vmrLoad	<i>Load a <b>vmr</b> environment containing a Vagrant file</i>
---------	--

---

**Description**

Load a **vmr** environment containing a VagrantFile and create a **vmr** object (see [[vmrCreate\(\)](#)] for object details).

**Usage**

```
vmrLoad(dir = "./", vagrantfileName = "Vagrantfile")
```

**Arguments**

dir                   the **vmr** environment directory (default: ".")  
vagrantfileName       a Vagrantfile name (default: "Vagrantfile")

**Details**

It read a Vagrant file template with **vmr** compatible parameters. It's an experimental Vagrant file reading, some parameters may not be loaded.

**Value**

a **vmr** object

**Examples**

```
## Not run:  
# load the Vagrantfile in the current directory  
vmr <- vmrLoad(getwd())  
  
## End(Not run)
```

---

vmrLocalBoxList	<i>List downloaded boxes</i>
-----------------	------------------------------

---

**Description**

List all boxes downloaded in localhost

**Usage**

```
vmrLocalBoxList()
```

**Value**

a data.frame with boxes Name, Providers and Version

**Examples**

```
## Not run:  
localBoxes <- vmrLocalBoxList()  
print(localBoxes)  
  
## End(Not run)
```

---

vmrLocalBoxPrune	<i>Remove old installed boxes</i>
------------------	-----------------------------------

---

**Description**

Removes old versions of installed boxes.

**Usage**

```
vmrLocalBoxPrune()
```

**Value**

a data.frame of still installed boxes (Name, Povidars and Version)

## Examples

```
## Not run:  
vnrLocalBoxPrune()  
  
## End(Not run)
```

---

vnrLocalBoxRemove	<i>Remove a box from localhost</i>
-------------------	------------------------------------

---

## Description

Remove a specific box from localhost.

## Usage

```
vnrLocalBoxRemove(name, provider = "", version = "", force = FALSE)
```

## Arguments

name	the box name
provider	the box provider (default: first provider found)
version	the box version (default: version available)
force	if TRUE force to remove

## Value

execution code or message

## Examples

```
## Not run:  
lboxes <- vnrLocalBoxList()  
vnrLocalBoxRemove(lboxes$Name[[1]])  
# if multiple providers and versions  
vnrLocalBoxRemove(lboxes$Name[[1]], lboxes$Provider[[1]], lboxes$Version[[1]])  
  
## End(Not run)
```

---

vnrLocalBoxUpdate	<i>Update local box version</i>
-------------------	---------------------------------

---

**Description**

Download the latest version of the box use in the current **vnr** environment.

**Usage**

```
vnrLocalBoxUpdate()
```

**Value**

execution code or message

---

vnrMountDir	<i>Mount a host directory to guest</i>
-------------	--

---

**Description**

Mount a host directory to the guest machine.

**Usage**

```
vnrMountDir(vnr, src = "", dest = "")
```

**Arguments**

vnr	a <b>vnr</b> object
src	a host directory
dest	a destination guest directory

**Details**

If the option of mounting a directory is available in the guest provider, it will mount *src* to *destination* directory. Calling with no arguments will disable this option.

**Value**

a **vnr** object

**Examples**

```
## Not run:
boxes <- vnrList()
vnr <- vnrCreate(boxes$Name[1])
vnr <- vnrMountDir(vnr, src = getwd(), dest = "/vnr")
vnr <- vnrInitEnv(vnr)
vnrStart()

## End(Not run)
```

---

vnrPackageBuild	<i>Build a package in the guest machine</i>
-----------------	---

---

**Description**

Build a package bundle or binary into the guest machine.

**Usage**

```
vnrPackageBuild(pkg = "./", binary = FALSE)
```

**Arguments**

pkg	a package directory or a tar.gz file
binary	if TRUE build binary package otherwise FALSE

**Details**

upload the package and run devtools::build() (build available in \$HOME/vnr/package/pkg) in the current **vnr** environment.

**Value**

NULL

---

vnrPackageCheck	<i>Perform a package check on guest</i>
-----------------	---

---

**Description**

Perform a package check into the guest

**Usage**

```
vnrPackageCheck(pkg = "./")
```

**Arguments**

pkg                    a package directory or a tar.gz file

**Details**

upload the package and run devtools::check() into the guest machine. (check available in \$HOME/vnr/package/pkg).  
Checking a directory with multiple files may slower upload, prefer tar.gz file

**Value**

NULL

**Examples**

```
## Not run:
vnrPackageCheck("vnr_package.tar.gz")

## End(Not run)
```

---

vnrPackageTest	<i>Test a package into a guest machine</i>
----------------	--

---

**Description**

Test a package into a guest machine

**Usage**

```
vnrPackageTest(pkg = ".")
```

**Arguments**

pkg                    a package directory or tar.gz

**Details**

Perform a package check into the guest machine of the current **vnr** environment using devtools::test().  
(tests are available in \$HOME/vnr/package/pkg)

**Value**

NULL

---

vmrProvision	<i>Provision a <b>vmr</b> environment</i>
--------------	---

---

**Description**

Provision a **vmr** environment.

**Usage**

```
vmrProvision(cmd = c(), elts = c(), dest = "")
```

**Arguments**

cmd	list of shell commands
elts	list of files and/or directories
dest	destination of elts (default HOME/vmr)

**Details**

Upload 'elts' files and/or directories to the guest machine 'dest' from the current **vmr** environment. And finally run shell commands 'cmd' in the guest machine.

**Value**

NULL

---

vmrRemoveSnapshot	<i>remove a snapshot of the guest machine</i>
-------------------	---

---

**Description**

remove a snapshot of the guest machine

**Usage**

```
vmrRemoveSnapshot(snap_name)
```

**Arguments**

snap_name	the snapshot name
-----------	-------------------

**Value**

NULL

vmrRestoreSnapshot      *Restore a snapshot of the guest machine*

---

**Description**

Restore a snapshot of the guest machine.

**Usage**

```
vmrRestoreSnapshot(snap_name)
```

**Arguments**

snap\_name      the snapshot name

**Value**

the snapshot name

**Examples**

```
## Not run:  
vmrRestoreSnapshot("my snapshot")  
  
## End(Not run)
```

---

vmrResume      *Resume a stopped guest machine*

---

**Description**

Resume a stopped guest machine.

**Usage**

```
vmrResume()
```

**Details**

In the current **vmr** environment, start a stopped ([\[vmrSuspend\(\)\]](#)) guest machine.

**Value**

NULL



---

vmrSend	<i>Send files and/or directories to guest machine</i>
---------	---

---

**Description**

Send files and/or directories to the guest machine in the current **vmr** environment. They are upload into ~/vmr/ directory.

**Usage**

```
vmrSend(elt = c())
```

**Arguments**

elt                    list of files and directories

**Value**

0 if OK, message otherwise

**Examples**

```
## Not run:  
vmrSend(c("myfile"))  
  
## End(Not run)
```

---

vmrSetVerbose	<i>Set verbose level</i>
---------------	--------------------------

---

**Description**

Set verbose level for vmr package functions

**Usage**

```
vmrSetVerbose(verbose_mode = "Normal")
```

**Arguments**

verbose\_mode    "None", "Normal" or "Full"

## Details

Three verbose mode is available:

- "None" : print nothings
- "Normal" : print essential
- "Full" : print all

## Value

invisible verbose value

---

vmrStart	<i>Start a <b>vmr</b> environment</i>
----------	---------------------------------------

---

## Description

Start a guest virtual machine using the current **vmr** environment (directory and Vagrantfile template)

## Usage

```
vmrStart()
```

## Value

the vmr environment unique id

## Examples

```
## Not run:  
lboxes <- vmrList()  
vmr <- vmrCreate(lboxes$Name[1])  
vmr <- vmrInitEnv(vmr)  
vmrStart()  
vmrStop()  
  
## End(Not run)
```

---

vnrStatus	<i>Get the state of the guest machine</i>
-----------	---

---

**Description**

Print guest machine state in the current **vnr** environment.

**Usage**

```
vnrStatus()
```

**Value**

a data.frame with Name, Provider and state

---

vnrStop	<i>Stop a <b>vnr</b> environment</i>
---------	--------------------------------------

---

**Description**

Stop a guest virtual machine in the current **vnr** environment.

**Usage**

```
vnrStop(force = FALSE)
```

**Arguments**

force            if TRUE force to stop (powerOff), otherwise FALSE clean shutdown

**Value**

NULL

**Examples**

```
## Not run:  
lboxes <- vnrList()  
vnr <- vnrCreate(lboxes$Name[1])  
vnr <- vnrInitEnv(vnr)  
vnrStart()  
vnrStop()  
  
## End(Not run)
```

---

vnrSuspend	<i>Save state and stop guest machine</i>
------------	--

---

**Description**

Save the guest machine and stop it.

**Usage**

```
vnrSuspend()
```

**Details**

In the current **vnr** environment, save the state of the guest machine and stop it.

**Value**

NULL

---

vnrTakeSnapshot	<i>Take a snapshot of the guest machine</i>
-----------------	---

---

**Description**

Take a snapshot of the guest machine.

**Usage**

```
vnrTakeSnapshot(snap_name)
```

**Arguments**

snap_name	the name given to the snapshot
-----------	--------------------------------

**Value**

the snapshot name (invisible)

**Examples**

```
## Not run:  
vnrTakeSnapshot("my snapshot")  
  
## End(Not run)
```

---

vmrUpdateEnvVersion     *Update a **vmr** environment.*

---

### Description

Force to use the latest box version of the current **vmr** environment.

### Usage

```
vmrUpdateEnvVersion(vmr)
```

### Arguments

vmr                    a **vmr** object

### Details

Put **vmr** object version to latest and update the Vagrant File template. Download the new box version if needed.

### Value

a **vmr** object

### Examples

```
## Not run:
boxes <- vmrList()
vmr <- vmrCreate(boxes$Name[1], version = "oldone")
vmr <- vmrInitEnv(vmr)

# update to latest
vmr <- vmrUpdateEnvVersion(vmr)
vmrStart()

## End(Not run)
```

---

vmrUpdatePackages     *Update R packages installed*

---

### Description

Updates R packages installed in the guest machine.

### Usage

```
vmrUpdatePackages()
```

**Details**

Will perform a `update.packages()` in the guest machine of the current **vmr** environment.

**Examples**

```
## Not run:  
lboxes <- vmrList()  
vmr <- vmrCreate(lboxes$Name[1])  
vmr <- vmrInitEnv(vmr)  
vmrStart()  
vmrUpdatePackages()  
  
## End(Not run)
```

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