
vCloud Driver Documentation Documentation

Release 0.3

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V0.1 Beta (2016-07-13)

- Basic, initial version.
- **It's able to:**
 - Deploy, reboot, shutdown, reset, suspend, reboot and destroy VM's.
 - Monitor hosts and VM's.
 - Create, revert and delete VM's snapshots.
 - Change RAM and CPU values of VM.
 - Hot-attach and detach NICs to VM's (To detach NICs is necessary to reboot the VM).
 - Automatized customization of the VMs instanciated. The templates must be configured for that.
 - Import networks, hosts, templates and datastores hosted in vCloud using onevcloud script.

V0.2 Beta (2016-10-17)

- **It's able to:**
 - Manual IP addressment. Before, only POOL addressment was supported.
 - Configure vShield firewall to filter VM's ports during the instantiation and the attach/detach NIC's.

V0.3 Beta (2016-12-15)

- **It's able to:**
 - Cold Attach & detach volatile disks to VM's
 - Resize disks during the instantiation
 - Select the profile storage

TODO

- Integrate VMRC (VMware Remote Console) to OpenNebula.
- Hot Attach & detach volatile disks to VM's

CHAPTER 2

Compatibility

- This addon was tested on OpenNebula 5.x
- **OS supported:**
 - Ubuntu 14
 - Debian 8
 - CentOS 7
- **vCloud Director versions tested:**
 - 5.5 + [Info](#)
 - 8 + [Info](#)

Install vCloud Driver for OpenNebula

Step 1. Download and copy the files in their respective directories:

```
5.0/remotes/vmm/vcloud                                -> /var/lib/one/
↪remotes/vmm/
5.0/remotes/im/vcloud.d                                -> /var/lib/one/
↪remotes/im/
5.0/remotes/datastore/vcloud                           -> /var/lib/one/datastore
5.0/remotes/hooks/dv                                  -> /var/lib/one/remotes/hooks
5.0/remotes/vmm/vcloud/vcloud_driver.rb -> /usr/lib/one/ruby
```

Step 2. Change permissions and owner:

```
chown -R oneadmin:oneadmin /var/lib/one/remotes/vmm/vcloud /var/lib/one/remotes/im/
↪vcloud.d /var/lib/one/remotes/datastore/vcloud /var/lib/one/remotes/hooks/dv

chmod -R +x /var/lib/one/remotes/vmm/vcloud /var/lib/one/remotes/im/vcloud.d /var/lib/
↪one/remotes/datastore/vcloud /var/lib/one/remotes/hooks/dv
```

Step 3. Modify the `/etc/one/oned.conf` configuration file adding the following new lines

- In IM_MAD section:

```
#-----
#  VMware vCloud Director Information Driver Manager Configuration
#-----
IM_MAD = [
```

```
name      = "vcloud",
executable = "one_im_sh",
arguments = "-c -t 15 -r 0 vcloud"]
#-----
```

- In VM_MAD section:

```
#-----
#  VMware vCloud Director Virtualization Driver Manager Configuration
#-----
VM_MAD = [
    name      = "vcloud",
    executable = "one_vmm_sh",
    arguments  = "-p -t 15 -r 0 vcloud -s sh",
    type       = "xml" ]
#-----
```

- In HOOK section:

```
#-----
#  VMware vCloud Director Hook Manager Configuration
#-----
VM_HOOK = [
    name = "delete_poweroff_vms",
    on = "DONE",
    command = "dv/delete_poweroff_vms.rb",
    arguments = "$TEMPLATE" ]
#-----
VM_HOOK = [
    name      = "delete_failed_vms",
    on        = "CUSTOM",
    state     = "ACTIVE",
    lcm_state = "BOOT_FAILURE",
    command   = "dv/delete_failed_vms.rb",
    arguments = "$TEMPLATE"
]
#-----
```

- In TM_MAD section:

We need to add vcloud as a argument.This section must be like this:

```
TM_MAD = [
    executable = "one_tm",
    arguments  = "-t 15 -d dummy,lvm,shared,vcloud,fs_lvm,qcow2,ssh,vmfs,ceph,dev"
]
```

- In DS_MAD section:

We need to add vcloud as a argument.This section must be like this:

```
DATASTORE_MAD = [
    executable = "one_datastore",
    arguments  = "-t 15 -d dummy,vcloud,fs,vmfs,lvm,ceph,dev"
]
```

- Add the following lines at the end of the file in the Transfer Manager Driver Behavior Configuration section:

```
TM_MAD_CONF = [
  name = "vcloud", ln_target = "NONE", clone_target = "NONE", shared = "yes"
]

DS_MAD_CONF = [
  NAME = "vcloud", REQUIRED_ATTRS = "VCLLOUD_HOST", PERSISTENT_ONLY = "YES",
  MARKETPLACE_ACTIONS = "export"
]
```

Step 4. Restart ONE service.

```
service opennebula restart
```

Step 5. Install ruby_vcloud_sdk

As a root:

1.Install dependencies

```
apt-get install make g++ ruby-dev zlib1g-dev liblzma-dev
```

2.Download and install the gem

There are two gems, one for vCloud Director 5.5 and other for vCloud Director 8 Install the specific gem for your vCloud Director version

```
gem install ruby_vcloud[VCD_version]_sdk-[current_gem_version].gem
```

Usage vCloud Driver for OpenNebula

First Steps

The first step is import to OpenNebula the resources hosted in vCloud using the onevcloud script.

Import Hosts, Templates, Networks and Datastore using “onevcloud” script

When vCloud Driver is installed correctly, it's time to use onevcloud script to import the resources of vCloud.

```
/var/lib/one/remotes/vmm/vcloud/onevcloud [hosts | templates | networks | datastores] _  
↪--vcloud [vcloud-uri.com] --vuser [user@organization] --vpass [password] --vdc [VDC_  
↪name]
```

Hosts

```
/var/lib/one/remotes/vmm/vcloud/onevcloud hosts --vcloud [vcloud-uri.com] --vuser _  
↪[user@organization] --vpass [password] --vdc [VDC_name]
```

Host 26 OD_ASS_L_CSUC_1

oneadmin OpenNebula

Select cluster Enable Disable Offline

Info Graphs VMs Wilds Zombies

Information	
ID	26
Name	OD_ASS_L_CSUC_1
Cluster	default
State	MONITORED
IM MAD	vcloud
VM MAD	vcloud

Capacity	
Allocated Memory	1GB / 9.5TB (0%)
Allocated CPU	100 / 666600 (0%)
Real Memory	1MB / 9.5TB (0%)
Real CPU	0 / 666600 (0%)

Overcommitment	
Reserved CPU	
Reserved Memory	-

Attributes	
CPU	UNLIMITED
CPUSPEED	1500
HYPERVISOR	vcloud
IM_MAD	vcloud
MEMORY	UNLIMITED
PUBLIC_CLOUD	YES
TOTAL_WILDS	1
VCLLOUD_PASSWORD	mAEURpJwBuYEeA1dYg2MQ==
VCLLOUD_URI	vcloud-uri.com
VCLLOUD_USER	user@org
VCLLOUD_VDC	OD_ASS_L_CSUC_1
VM_MAD	vcloud

Templates

```
/var/lib/one/remotes/vmm/vcloud/onevcloud hosts --vcloud [vcloud-uri.com] --vuser_
[user@organization] --vpass [password] --vdc [VDC_name]
```

VM Templates

oneadmin OpenNebula

+ Update Instantiate Clone

Search

ID	Owner	Group	Name	Registration time
57	oneadmin	oneadmin	Plantilla Ubuntu - CSUC	12:50:58 09/09/2016
54	oneadmin	oneadmin	Plantilla Linux v19	12:39:20 01/09/2016
52	oneadmin	oneadmin	Plantilla Windows 2012R2	11:45:10 27/07/2016

10 Showing 1 to 3 of 3 entries

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Networks

For the current version, only POOL addressment is supported. OpenNebula generates MAC addresses and passes them to vCloud. For that reason, when you use the script to import networks to OpenNebula you must to choose [E]thernet type network.

```
/var/lib/one/remotes/vmm/vcloud/onevcloud networks --vcloud [vcloud-uri.com] --vuser [user@organization] --vpass [password] --vdc [VDC_name]
```

ID	Owner	Group	Name	Reservation	Cluster	Leases
9	oneadmin	oneadmin	[redacted]	No	0	0 / 20
8	oneadmin	oneadmin	[redacted]	No	0	0 / 100

Intanciate Templates

When the resources are imported correctly, we can start to instanciate templates!

ID	Owner	Group	Name	Status	Host	IPs
429	oneadmin	oneadmin	test	RUNNING	OD_ASS_L_CSUC_1	--

Name	Status	OS	Driver	Created On	VDC
one-429-test	Running	LINUX	one	09/12/2016 10:38 AM	OD_ASS_L_CSUC_1
vApp_csuc_XL	Stopped	LINUX	one	06/29/2016 3:29 PM	OD_ASS_L_CSUC_1
vApp_DEBIAN_8.5	Running	LINUX	one	09/05/2016 12:58 PM	OD_ASS_L_CSUC_1

Templates Context Variables

During the instantiation, vcloud driver takes some variables from the template to configure capabilities such as CUSTOMIZATION. If this variables are not in the template, the capabilities won't be configured correctly. Please add or modify the variables that you need.

- CUSTOMIZATION = "YES" The DEFAULT value is NO. If you want to activate customization, change the value to "YES".
- OS = "LINUX | WINDOWS | OTHER" Check this variable and modify the value for the OS of the template. This value is important because is used during the customization process.
- WHITE_TCP_PORTS = "PORT,PORT,..." If you add coma-separated TCP port numbers, during the instantiation the driver will open that ports in the vShield. Only if the network is enrouted by vShield.
- STORAGE_PROFILE = "STORAGE_PROFILE_NAME" You can select the storage profile. If you don't select anyone, the vm will be stored in the default storage profile defined in vcloud vapp template.

Users Context Variables

If you activate the customization and the template supports it, during the instaciation a user will be created. This variables must be set in the “User Settings” tab in Sunstone.

- PASS [Hash] This information will be the password for your user in LINUX OS
- PASS_WIN [Clear Text] This information will be the password for your user in WINDOWS OS
- ROOT_PASS [Clear Text] This information will be the password for the root/Administrator in LINUX/WINDOWS OS

If you add a Public SSH Key for that user, it will be added to the Linux VM during its instantiation.

Attach Disks

To attach disk you must indicate the options disk in the VM template

```
DISK = [  
  DISK_ID = "1",  
  SIZE = "51200",  
  TYPE = "fs"  
]
```

DISK_ID = Specify a id to this disk, each disk id must be different. SIZE = The disk size in MB TYPE = Indicate “fs”

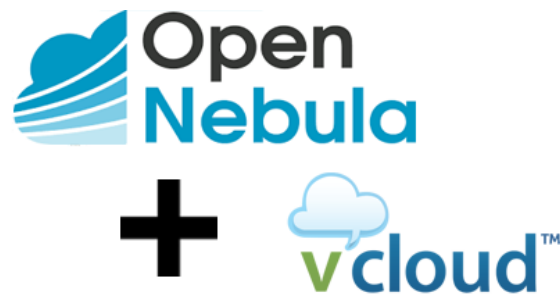
Detach Disks

The detach disk option is disabled. OpenNebula can attach disk to vCloud vApp, but can not detach disks. This option is disabled to avoid accidentally removes. If you want to enable de detach option, you can activate it uncommenting some lines in the ruby_vcloud_sdk library.

Open `/var/lib/gems/1.9.1/gems/ruby_vcloud_sdk-[last_version]/lib/ruby_vcloud_sdk/vm.rb` and go to line 254. Remove the `=begin` and `=end` clauses. Save it.

Now if you remove a disk in OpenNebula, the changes will take effect in vCloud vApp associated.

This addon gives Opennebula the possibility to manage resources in VMware vCloud Director infrastructures. It includes virtualization and monitoring drivers.



Features

This addon has the following capabilities:

- Deploy, stop, shutdown, reboot, save, suspend, resume and delete VM's in the Virtual Data Centers hosted in vCloud.
- Create, delete and revert snapshots of VM's.
- Change RAM and CPU values of VM.
- It's able to hot-attach and detach NICs to VM's.
- Attach disks to VM, only in cold. To avoid accidental disk remove, the detach disk option is disabled in OpenNebula. If you want enable this option, see Guide section.
- Resize disks during the instantiation. Only increase the size, not decrease.
- Automatized customization of the VMs instanciated.
- It's able to choose wich storage profile will be storaged the VM's disk or disks.

- Port filtering via vShield during the VM instantiation.
- Obtain monitoring information from the VDC, Datastore and VM's.
- In this development version we manage vApps with one VMs inside (A VM in OpenNebula equals a vApp with one VM in vCloud).
- Each Virtual Data Center (VDC) in vCloud is managed as a Host in OpenNebula.
- Import networks, hosts, templates and datastores hosted in vCloud using onevcloud script.

Demo

In this video you can see how to instantiate a new imported vm template

Development

To contribute bug patches or new features, you can use the github Pull Request model. It is assumed that code and documentation are contributed under the Apache License 2.0.

More info

- [How to Contribute](#)
- Support: [OpenNebula user forum](#)
- Development: [OpenNebula developers forum](#)
- Issues Tracking: [Github issues](#)

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