
OpenNebula.org

OpenNebula 4.10 Quickstart Create Your First VDC

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OpenNebula Project

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This guide will provide a quick example of how to partition your cloud for a VDC. In short, a VDC is a group of users with part of the physical resources assigned to them. The *Understanding OpenNebula* guide explains the OpenNebula provisioning model in detail.

STEP 1. CREATE A CLUSTER

We will first create a *cluster*, 'web-dev', where we can group *hosts*, *datastores* and *virtual networks* for the new VDC.

```
$ onehost list
```

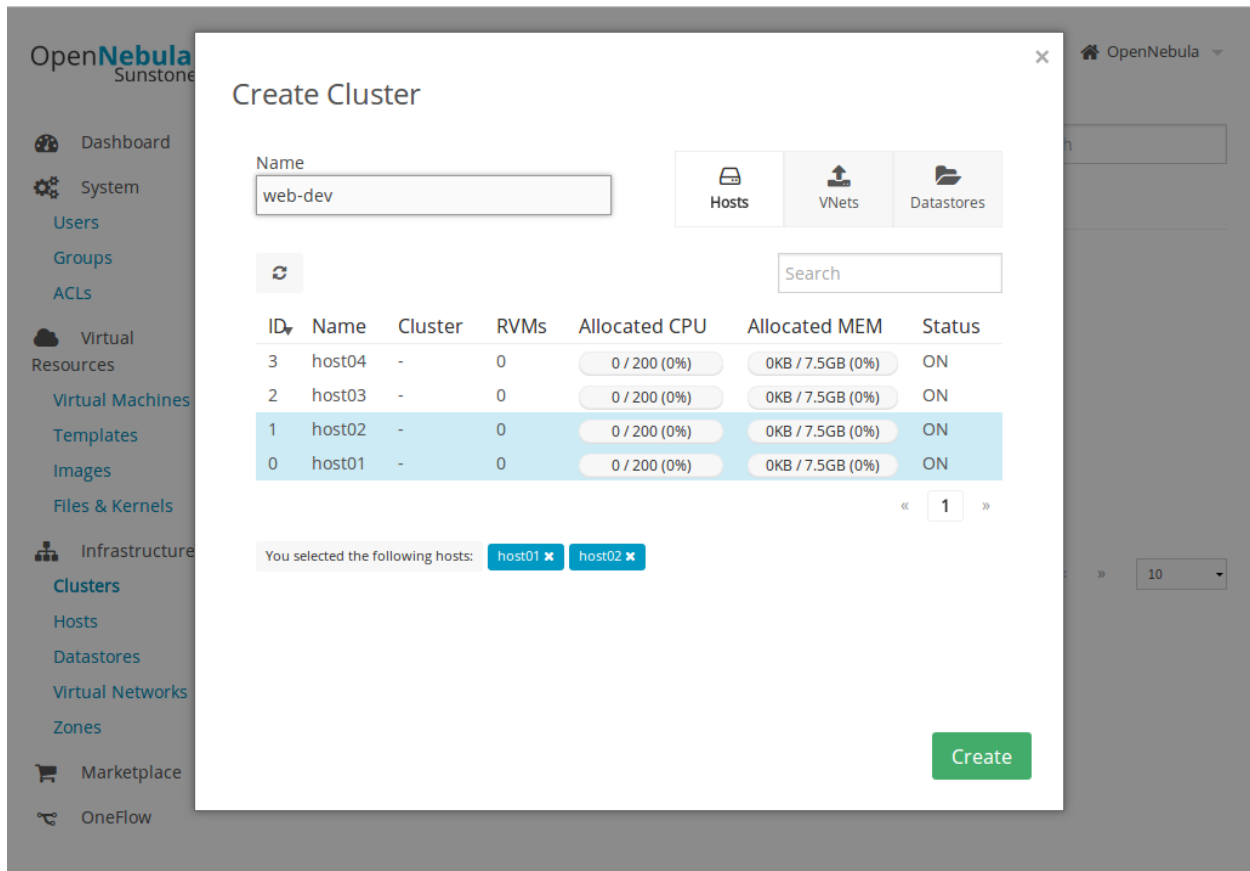
ID	NAME	CLUSTER	RVM	ALLOCATED_CPU	ALLOCATED_MEM	STAT
0	host01	web-dev	0	0 / 200 (0%)	0K / 7.5G (0%)	on
1	host02	web-dev	0	0 / 200 (0%)	0K / 7.5G (0%)	on
2	host03	-	0	0 / 200 (0%)	0K / 7.5G (0%)	on
3	host04	-	0	0 / 200 (0%)	0K / 7.5G (0%)	on

```
$ onedatastore list
```

ID	NAME	SIZE	AVAIL	CLUSTER	IMAGES	TYPE	DS	TM
0	system	113.3G	25%	web-dev	0	sys	-	shared
1	default	113.3G	25%	web-dev	1	img	fs	shared
2	files	113.3G	25%	-	0	fil	fs	ssh

```
$ onevnet list
```

ID	USER	GROUP	NAME	CLUSTER	TYPE	BRIDGE	LEASES
0	oneadmin	oneadmin	private	web-dev	R	virbr0	0



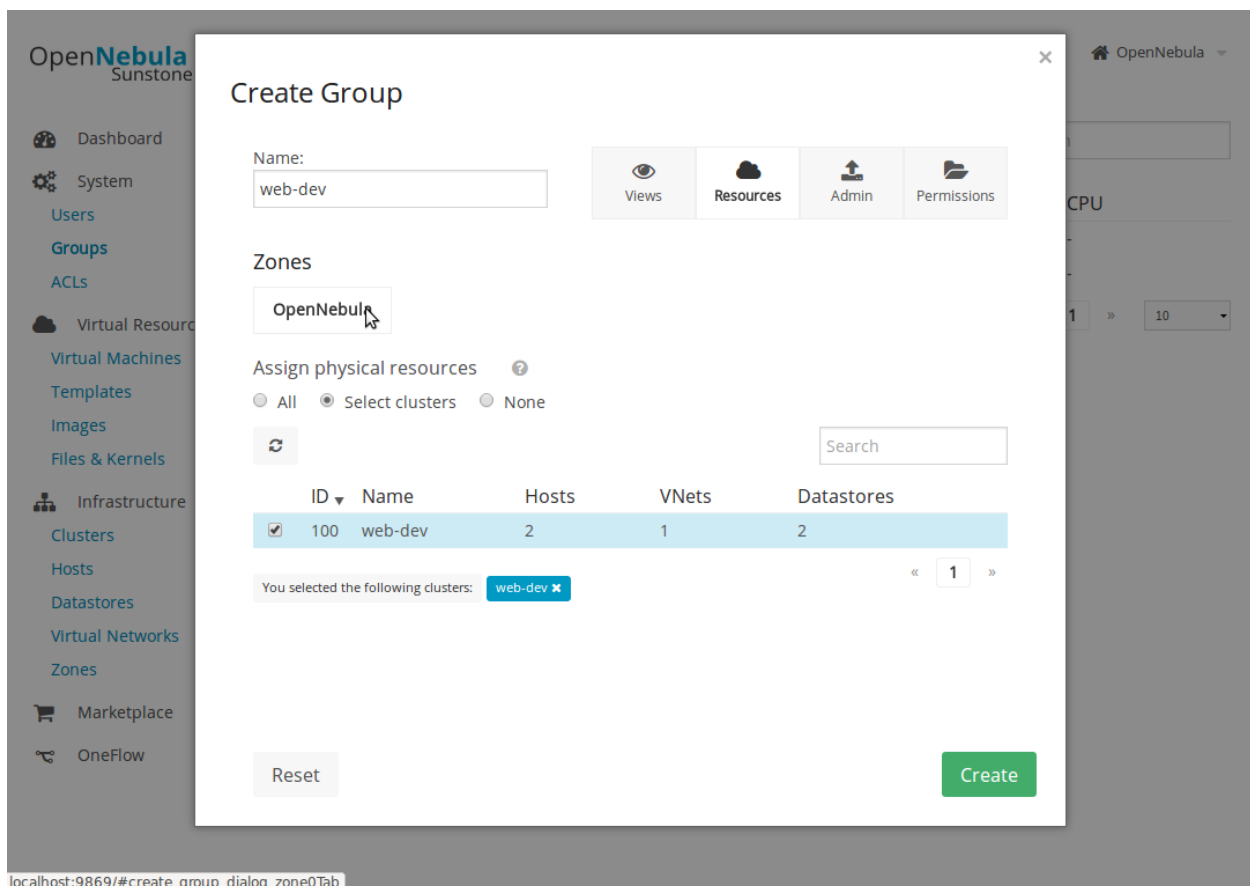
STEP 2. CREATE A VDC GROUP

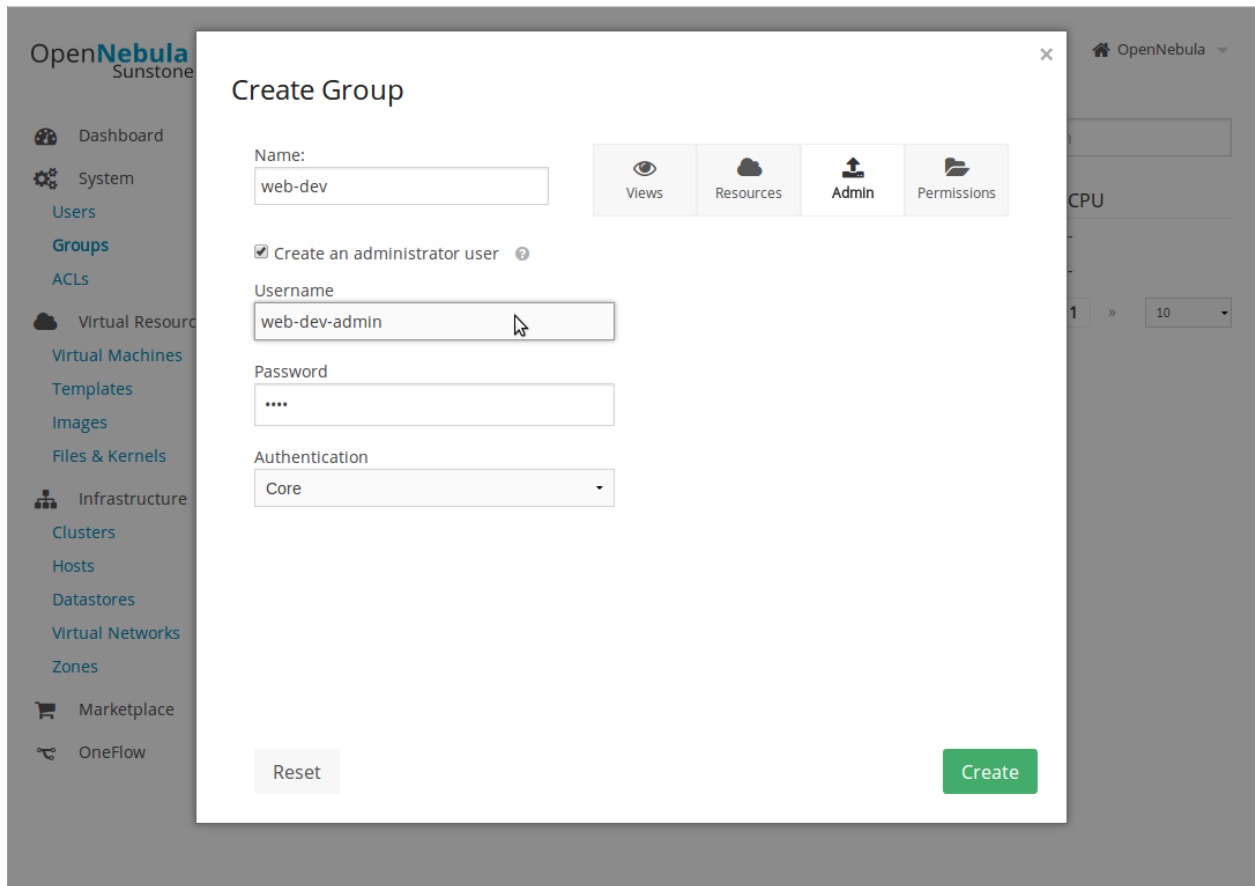
We can now create the new *group*, named also ‘web-dev’. This group, or VDC, will have a special admin user, ‘web-dev-admin’. This admin user will be able to create new users inside the VDC.

When a new group is created, you will also have the opportunity to configure different options, like the available *Sunstone views*. Another thing that can be configured is if the virtual resources will be shared for all the users of the VDC, or private.

```
$ onegroup create --name web-dev --admin_user web-dev-admin --admin_password abcd  
ID: 100
```

```
$ onegroup add_provider 100 0 web-dev
```





STEP 3. OPTIONALLY, SET QUOTAS

The cloud administrator can set *usage quotas* for the VDC. In this case, we will put a limit of 10 VMs.

```
$ onegroup show web-dev
GROUP 100 INFORMATION
ID           : 100
NAME        : web-dev

GROUP TEMPLATE
GROUP_ADMINS="web-dev-admin"
GROUP_ADMIN_VIEWS="vdcadmin"
SUNSTONE_VIEWS="cloud"

USERS
ID
2

RESOURCE PROVIDERS
ZONE CLUSTER
0      100

RESOURCE USAGE & QUOTAS

NUMBER OF VMS      MEMORY      CPU      VOLATILE_SIZE
0 / 10             0M / 0M    0.00 / 0.00    0M / 0M
```

Dashboard

System

Users

Groups

ACLs

Virtual Resources

Infrastructure

Marketplace

OneFlow

Support



Update Quotas

Info Quotas Providers Accounting

VMs 0 / 10

CPU 0 / Default (∞)

Memory 0 / Default (∞) MB

Volatile disks 0 / Default (∞) MB

Image

ID	Running VMs

Network

ID	Leases

Datastore

ID	Images	Size

STEP 4. PREPARE VIRTUAL RESOURCES FOR THE USERS

The cloud administrator has to create the *Virtual Machine Templates* and *Images* that the VDC users will instantiate. If you don't have any working Image yet, import the ttylinux testing appliance from the *marketplace*.

The screenshot shows the OpenNebula Sunstone web interface. A modal window titled "Import Appliance" is open. It contains the following text: "The following images will be created in OpenNebula. If you want to edit parameters of the image you can do it later in the Images tab". Below this, there is a dropdown menu for "Select the datastore for the Images" with "1: default" selected. A table lists the image details:

0 - Image Name	40MB
ttylinux - kvm_file0	

An "Import" button is located at the bottom right of the modal. In the background, a table displays metadata for the imported image:

Tags	linux ttylinux
Catalog	community
OS	ttylinux null
Arch	x86_64
Size	40MB
Hypervisor	KVM
Format	raw

Additional text in the background includes: "The login information for this image is: ***login**: root ***password**: password **NOTE:** The contextualization of this image is really simple. You can not set the network mask or the gateway. It's always a C class and gateway is x.y.z.1." and a section titled "Images" with a table showing "ttylinux - kvm_file0" and "40MB".

Now you need to create a VM Template that uses the new Image. Make sure you set the features mentioned in the *Cloud View guide*, specifically the logo, description, ssh key, and user inputs.

The new Template will be owned by oneadmin. To make it available to all users (including the ones of the new VDC), check the `OTHER USE` permission **for both the Template and the Image**. Read more about assigning virtual resources to a VDC in the *Managing Groups & VDC guide*.

The screenshot shows the OpenNebula Sunstone interface for a template named 'Template 3'. The interface includes a sidebar with navigation options: Dashboard, System (Users, Groups, ACLs), Virtual Resources (Virtual Machines, Templates, Images, Files & Kernels), Infrastructure, Marketplace, OneFlow, and Support. The main content area has a top bar with 'Update', 'Instantiate', 'Clone', and a user dropdown. Below this is a tabbed interface with 'Info' and 'Template' tabs. The 'Info' tab displays the following information:

Information	
ID	3
Name	Ubuntu 14.04 - KVM
Register time	18:01:52 05/08/2014

Below the information is a permissions table:

Permissions:	Use	Manage	Admin
Owner	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Below the permissions table is an ownership table:

Ownership	
Owner	oneadmin
Group	oneadmin

At the bottom of the page, it says 'OpenNebula 4.8.0 by C12G Labs.'

You can also prepare a *Service Template*. A Service is a group of interconnected Virtual Machines with deployment dependencies between them.

Create a basic Service with two roles: master (x1) and slave (x2). Check 'master' as the parent role of 'slave'. For testing purposes, both can use the `ttylinux` VM Template. This Service Template also needs to be shared with other users, changing the `OTHER USE` permission.

Create Service Template

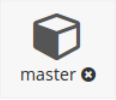

Name [?]
test

Description [?]

▼ Network Configuration

▼ Advanced Service Parameters

Roles

  [+ Add another role](#)

Role Name [?]
slave

VM template [?]
4: ttylinux

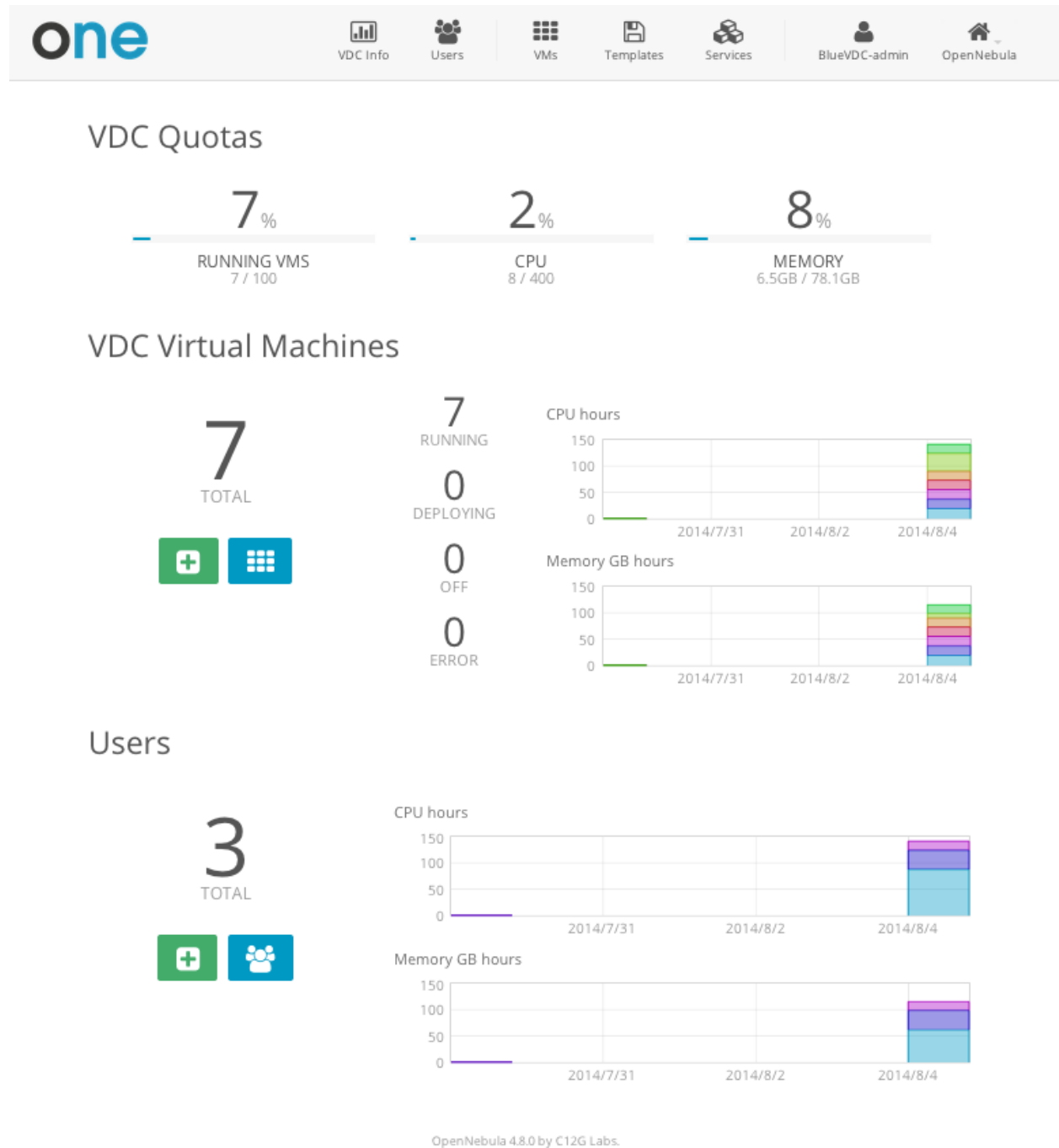
VMs [?]
3

Parent roles

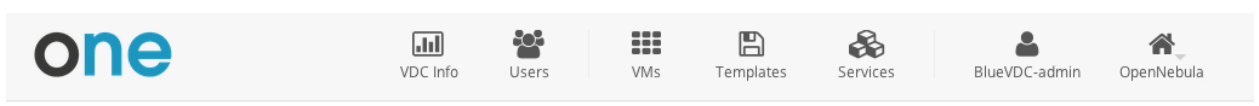
master

STEP 5. USING THE CLOUD AS A VDC ADMIN

If you login as the 'web-dev-admin', you will see a simplified interface, the *VDC admin view*. This view hides the physical infrastructure, but allows some administration tasks to be performed.



The VDC admin can create new user accounts, that will belong to the same VDC group. They can also see the current resource usage of all the VDC users, and set quota limits for each one of them.



Create User

Define Quotas

Running VMs

CPU

Memory (GBs)

Add User

OpenNebula 4.8.0 by C12G Labs.

The VDC admin can manage the Services, VMs and Templates of other users in the VDC. The resources of a specific user can be filtered in the list views for each resource type or can be listed in the detailed view of the user.

The screenshot shows the 'Users' page for user 'John'. The top navigation bar includes 'one', 'VDC Info', 'Users', 'VMs', 'Templates', 'Services', 'BlueVDC-admin', and 'OpenNebula'. The page title is 'Users John'. Below the title are several icons: a menu, a lock, a refresh button, a back button, and a delete button. The main content area displays resource usage for 'John':

- Running VMs: 2 / 10
- CPU: 2 / 20
- Memory: 2GB / 60GB

Below the usage statistics are four icons: a grid, a document, a refresh, and a chart. To the right, there are two bar charts showing resource usage over time:

- CPU hours:** A bar chart with a y-axis from 0 to 40. The x-axis shows dates: 2014/7/31, 2014/8/2, and 2014/8/4. A bar for 2014/8/4 reaches approximately 38 units.
- Memory GB hours:** A bar chart with a y-axis from 0 to 40. The x-axis shows dates: 2014/7/31, 2014/8/2, and 2014/8/4. A bar for 2014/8/4 reaches approximately 38 units.

Although the cloud administrator is the only one that can create new base Images and Templates, the VDC admin can customize existing Templates, and share them with the rest of the VDC users.

The screenshot shows the 'Virtual Machines' page for 'Mail Server'. The top navigation bar is the same as in the previous screenshot. The page title is 'Virtual Machines Mail Server'. Below the title are icons for a monitor, a document, a play button, and a delete button. A dialog box is open in the center of the page:

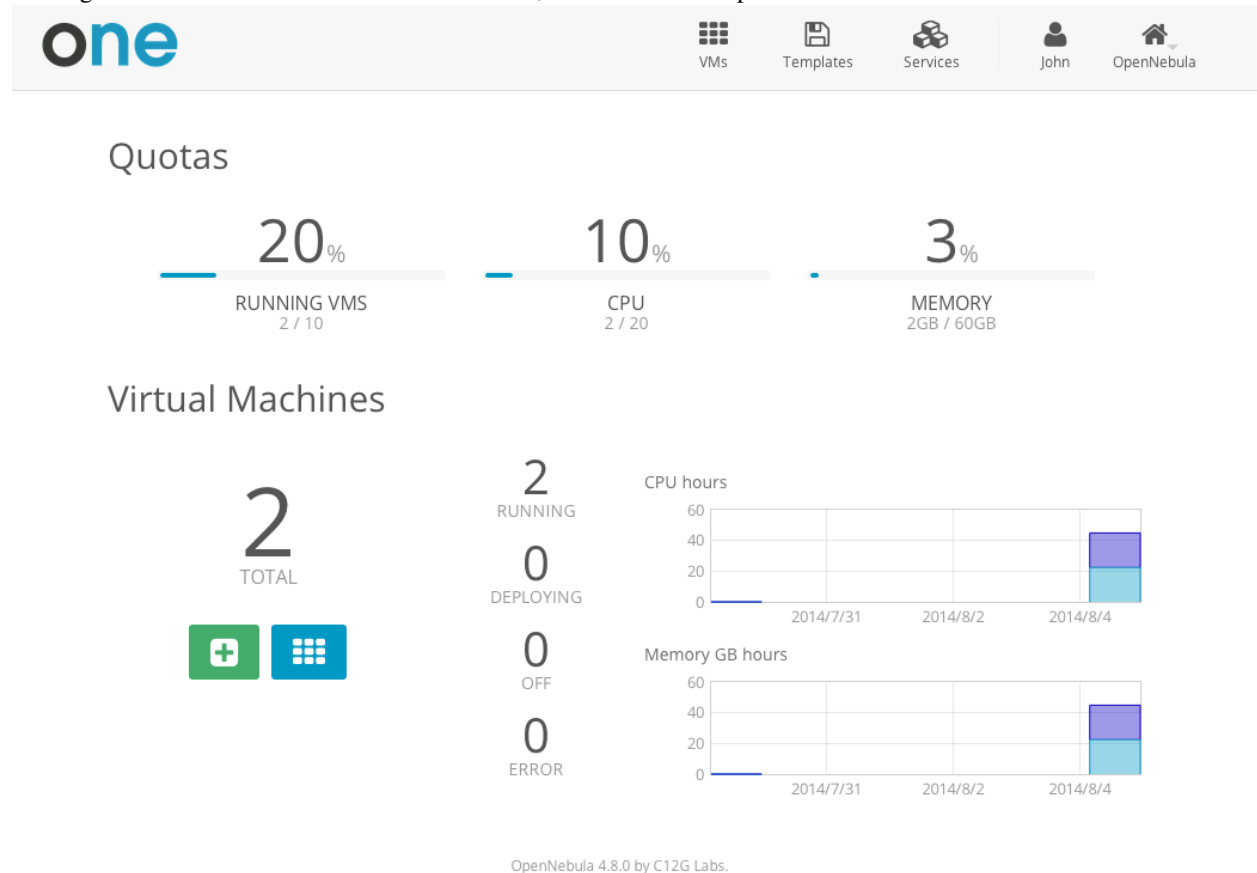
This Virtual Machine will be saved in a new Template. Only the main disk will be preserved!
You can then create a new Virtual Machine using this Template

Below the text is a text input field labeled 'Template Name' and a green button labeled 'Save Virtual Machine to Template'.

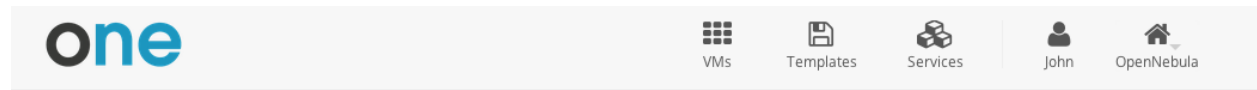
Create a new user, and login again.

STEP 6. USING THE CLOUD AS A REGULAR USER

The regular users of the VDC use the *Cloud View*, an even more simplified view of their virtual resources.



The end users can provision new VMs and Services from the templates prepared by the administrators.



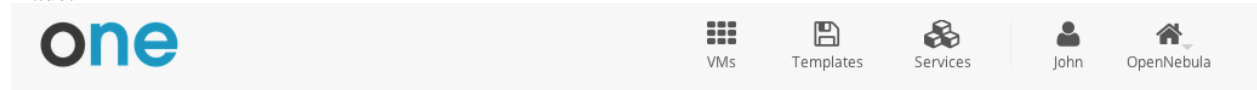
Create Virtual Machine

Select a Template

System	VDC	Saved
<input type="text" value="Search"/>		
 CentOS 6.6 Vanilla CentOS Server 6.6	 Ubuntu 14.04 Ubuntu 14.04.1 (Trusty Tahr)	 Fedora 20 Fedora 20 Desktop Edition
« 1 » 6 ▾		

Create

They can also manage their own VMs and Services: see their monitorization, shutdown them, and save the changes made.



Services Hadoop





■ RUNNING

🕒 1m ago

👤 John



Master

RUNNING 1 / 1 VMS



Slave

RUNNING 3 / 3 VMS



The screenshot displays the OpenNebula web interface for a virtual machine named 'Apache Server'. The interface includes a top navigation bar with the 'one' logo and icons for 'VMs', 'Templates', 'Services', 'John', and 'OpenNebula'. Below the navigation bar, the page title 'Virtual Machines Apache Server' is shown, along with a refresh button and a back arrow. A secondary bar contains icons for a monitor, a document, a refresh, a power button, and a delete button. The main content area features a 'RUNNING' status indicator, a list of configuration details (x1 - 1GB, ttylinux - kvm_file0, 10.0.1.0), and the user 'John'. Six performance graphs are displayed in a 3x2 grid: CPU (0-150%), MEMORY (0KB-1.4GB), NET RX (0B-39.1KB), NET TX (0B-14.6KB), NET DOWNLOAD SPEED (0B/s-15B/s), and NET UPLOAD SPEED (0B/s-4B/s).

The users can perform basic administration on their account. They can check his current usage and quotas, or generate accounting reports.

The screenshot displays the OpenNebula user interface for user 'John'. The 'Accounting' tab is selected, showing a 'Get Accounting' button and two bar charts. The 'CPU hours' chart shows usage for 2014/8/3, 2014/8/4, and 2014/8/5. The 'Memory GB hours' chart shows usage for the same dates. The y-axis for both charts ranges from 0 to 40.

Day	CPU hours	Memory GB hours
2014/8/3	0	0
2014/8/4	18	18
2014/8/5	38	38

From the user settings tab, the users can also change their password, language, and ssh key.

The screenshot displays the OpenNebula web interface. At the top left is the 'one' logo. The top navigation bar includes icons for 'VMs', 'Templates', 'Services', 'John' (user profile), and 'OpenNebula' (home). Below this, the user 'John' is identified, with refresh and share icons. A secondary navigation bar contains 'Settings', 'Accounting', and 'Quotas'. The main area features four large buttons: 'Change Language' (with a speech bubble icon), 'Change Password' (with a padlock icon), 'Change view' (with a picture icon), and 'Add SSH Key' (with a key icon).

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