

---

# OpenNebula.org

## OpenNebula 4.8 Quickstart Create Your First VDC

*Release 4.8*

OpenNebula Project

August 12, 2014



## CONTENTS

<b>1</b>	<b>Step 1. Create a Cluster</b>	<b>3</b>
<b>2</b>	<b>Step 2. Create a VDC Group</b>	<b>5</b>
<b>3</b>	<b>Step 3. Optionally, Set Quotas</b>	<b>7</b>
<b>4</b>	<b>Step 4. Prepare Virtual Resources for the Users</b>	<b>9</b>
<b>5</b>	<b>Step 5. Using the Cloud as a VDC Admin</b>	<b>13</b>
<b>6</b>	<b>Step 6. Using the Cloud as a Regular User</b>	<b>17</b>



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
```

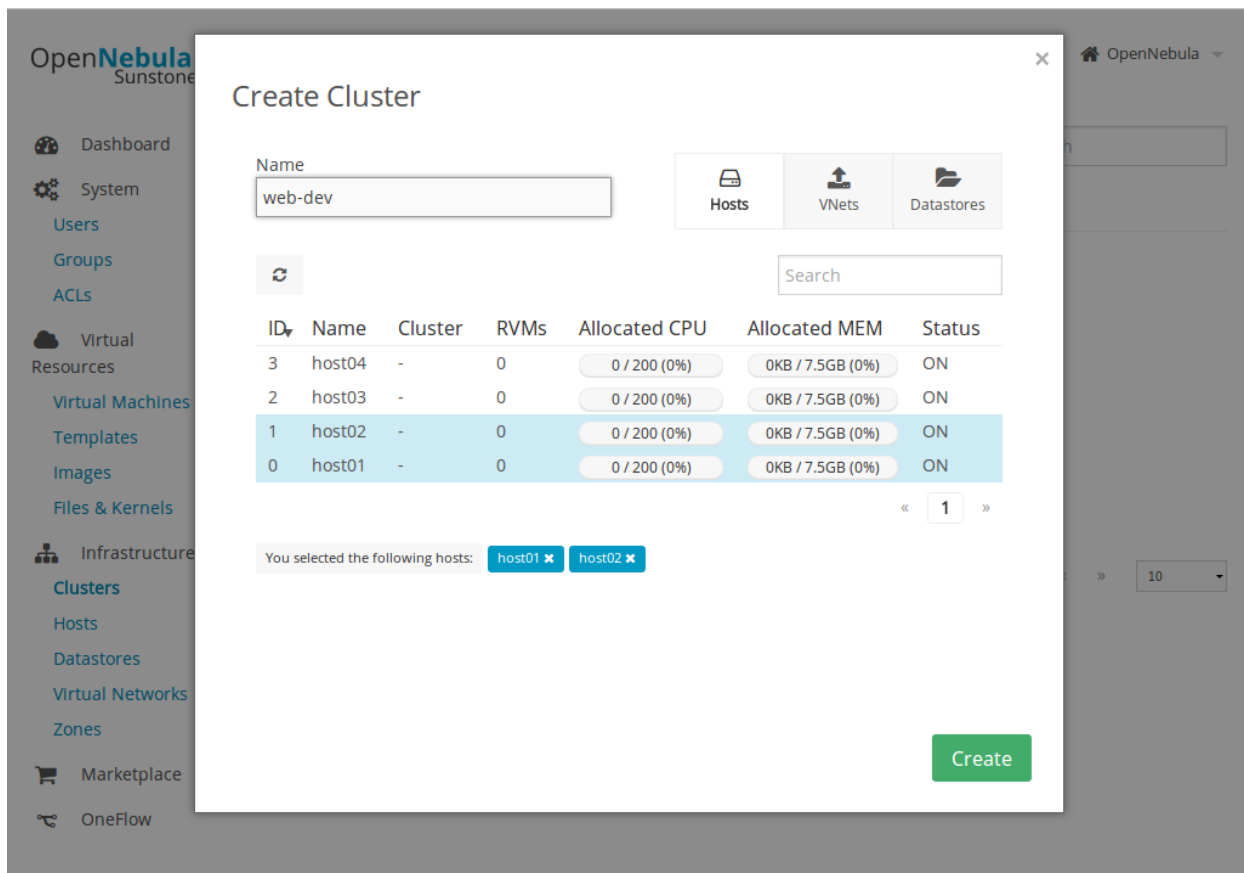
ID	NAME	CLUSTER	RVM	ALLOCATED_CPU	ALLOCATED_MEM	STAT
0	host01	web-dev	0	0 / 200 (0%)	0K / 7.5G (0%)	on
1	host02	web-dev	0	0 / 200 (0%)	0K / 7.5G (0%)	on
2	host03	-	0	0 / 200 (0%)	0K / 7.5G (0%)	on
3	host04	-	0	0 / 200 (0%)	0K / 7.5G (0%)	on

```
$ 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





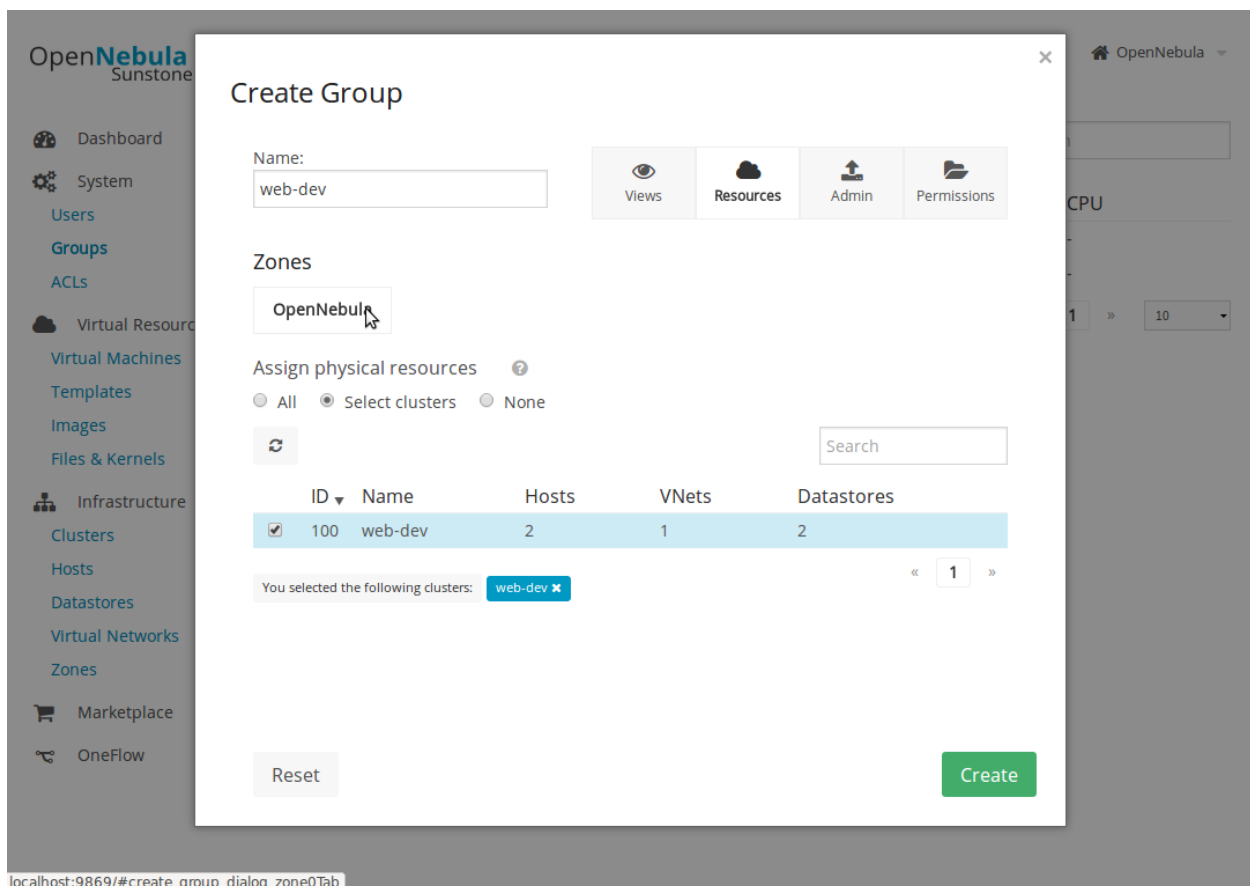
## STEP 2. CREATE A VDC GROUP

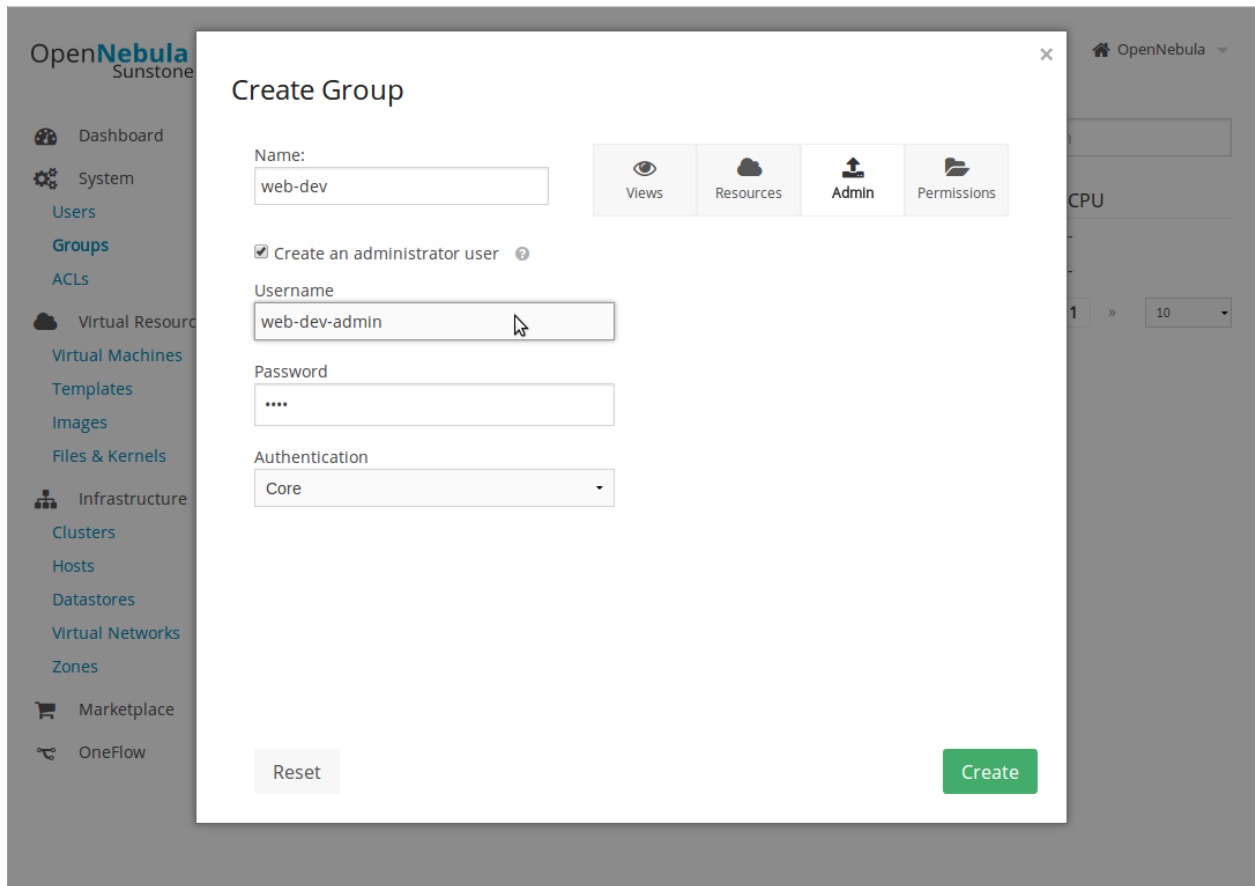
We can now create the new *group*, named also ‘web-dev’. This group, or VDC, will have a special admin user, ‘web-dev-admin’. This admin user will be able to create new users inside the VDC.

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

Cancel Apply

VMs 0 / 10

CPU 0 / Default (∞)

Memory 0 / Default (∞) MB

Volatile disks 0 / Default (∞) MB

Image

ID	Running VMs

Network

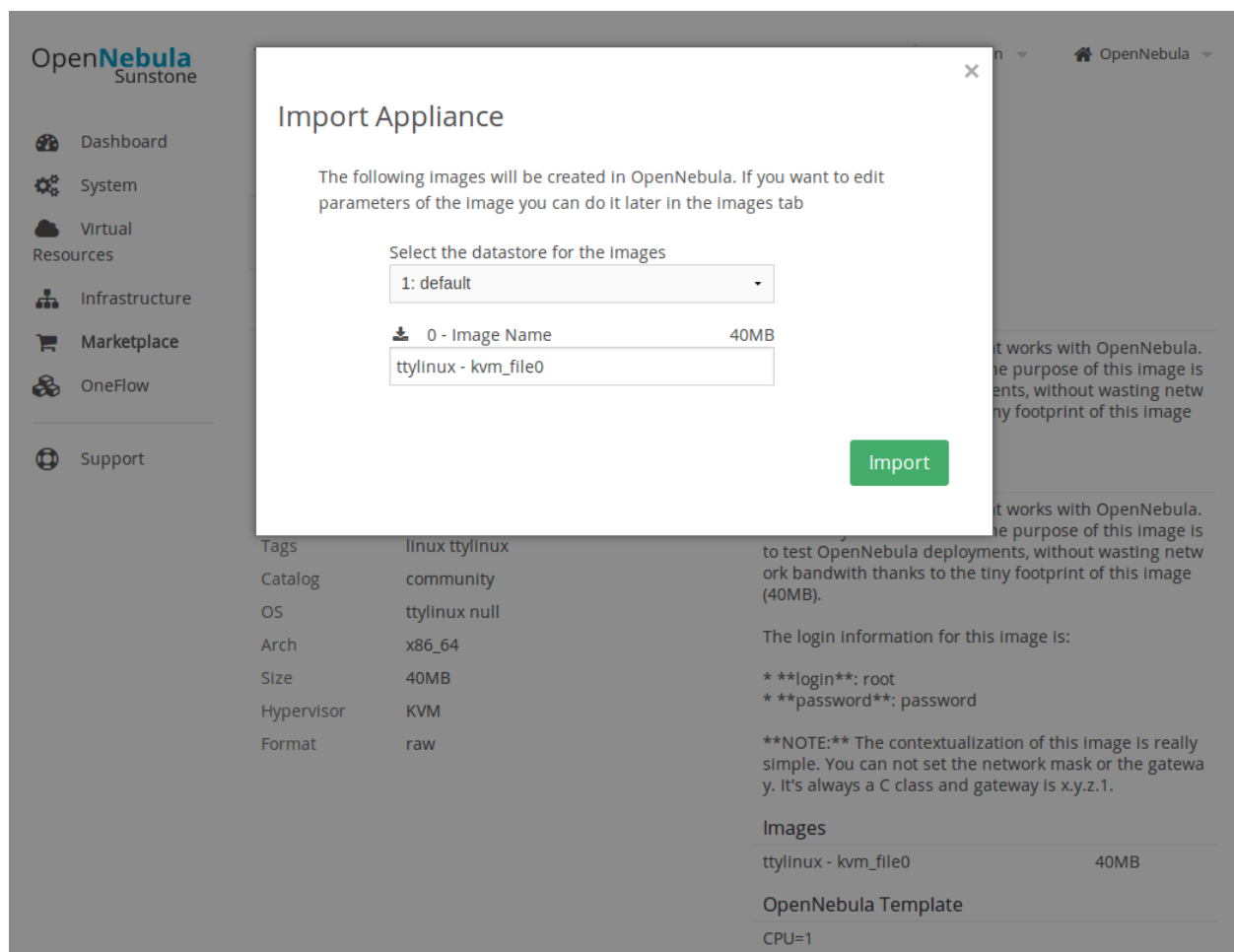
ID	Leases

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 `ttlinux` testing appliance from the *marketplace*.



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*.

OpenNebula Sunstone

Template 3

oneadmin OpenNebula

Dashboard System Users Groups ACLs Virtual Resources Virtual Machines **Templates** Images Files & Kernels Infrastructure Marketplace OneFlow Support

Update Instantiate Clone

Info Template

Information		Permissions:	Use	Manage	Admin
ID	3	Owner	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Name	Ubuntu 14.04 - KVM	Group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Register time	18:01:52 05/08/2014	Other	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ownership		Owner	oneadmin		<input type="checkbox"/>
		Group	oneadmin		<input type="checkbox"/>

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**

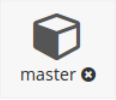

Name <sup>?</sup>  
test

Description <sup>?</sup>

▼ Network Configuration

▼ Advanced Service Parameters

**Roles**

  [+ Add another role](#)

Role Name <sup>?</sup>  
slave

VM template <sup>?</sup>  
4: ttylinux

VMs <sup>?</sup>  
3

Parent roles

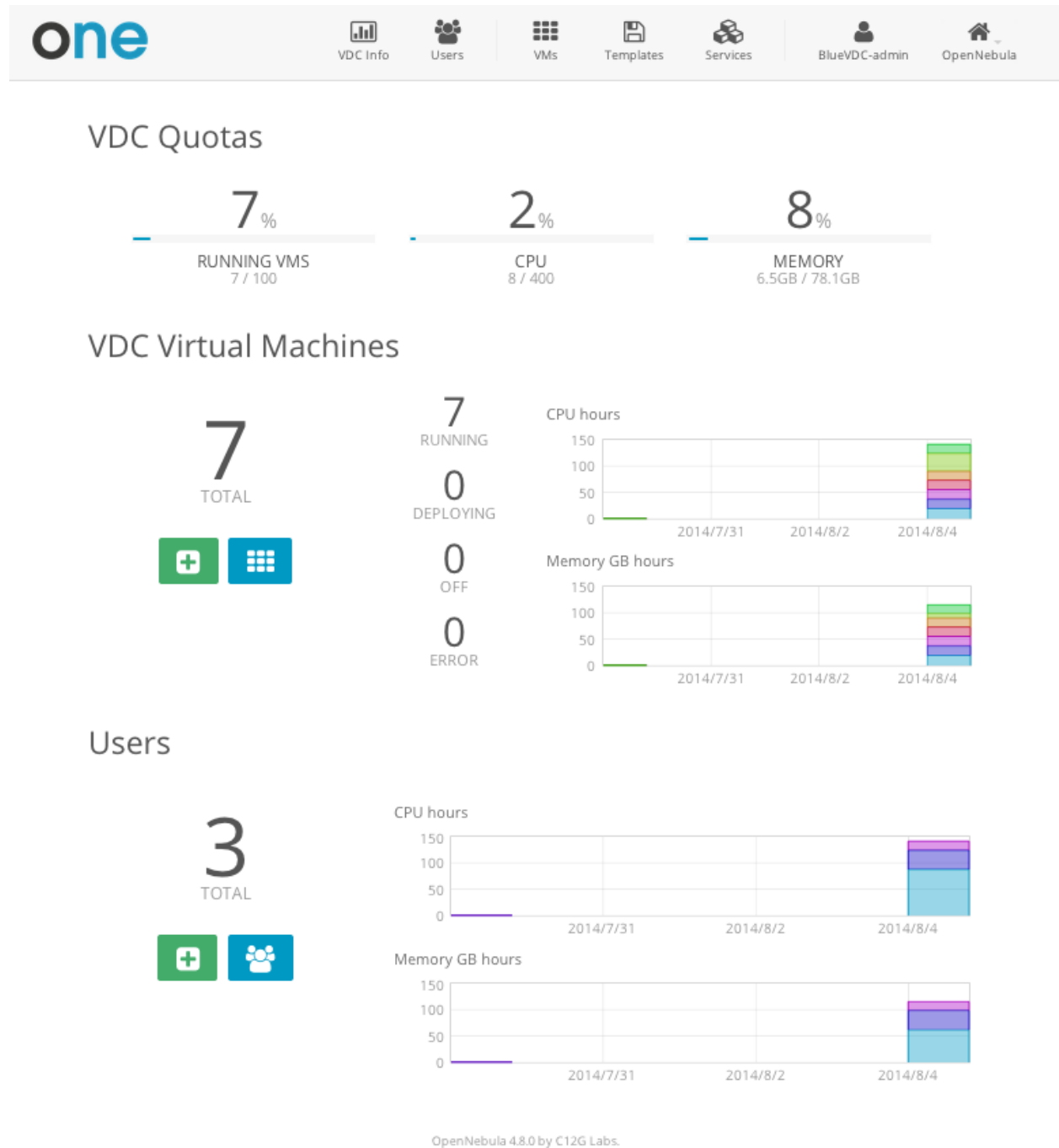
master



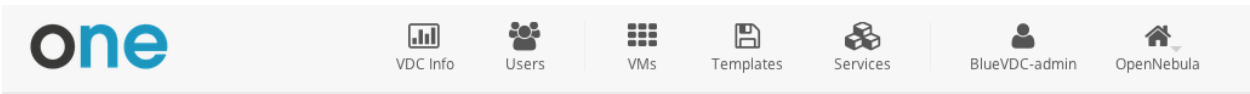


## **STEP 5. USING THE CLOUD AS A VDC ADMIN**

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	<input type="range" value="10"/>	<input type="text" value="10"/>
CPU	<input type="range" value="20"/>	<input type="text" value="20"/>
Memory (GBs)	<input type="range" value="60"/>	<input type="text" value="60"/>

**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 icons for a menu, a lock, and a delete button. The main content area displays resource usage for 'John':

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

Two bar charts are shown: 'CPU hours' and 'Memory GB hours'. Both charts show usage for three dates: 2014/7/31, 2014/8/2, and 2014/8/4. On 2014/8/4, CPU usage is approximately 18 hours and memory usage is approximately 18 GB. The x-axis for both charts is labeled with the dates 2014/7/31, 2014/8/2, and 2014/8/4.

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 save button, a play button, and a delete button. A dialog box is open in the center of the page with the following text:

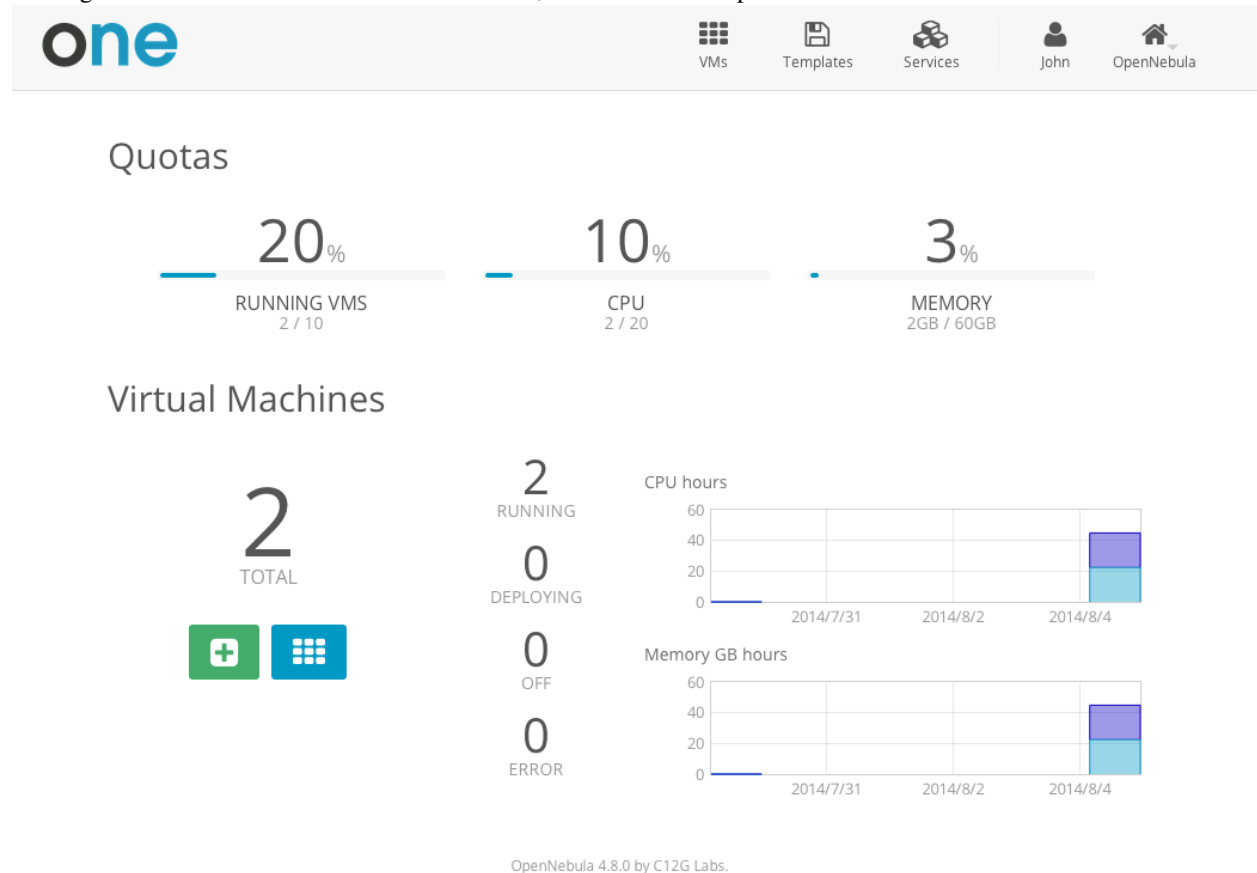
This Virtual Machine will be saved in a new Template. Only the main disk will be preserved!  
You can then create a new Virtual Machine using this Template

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.

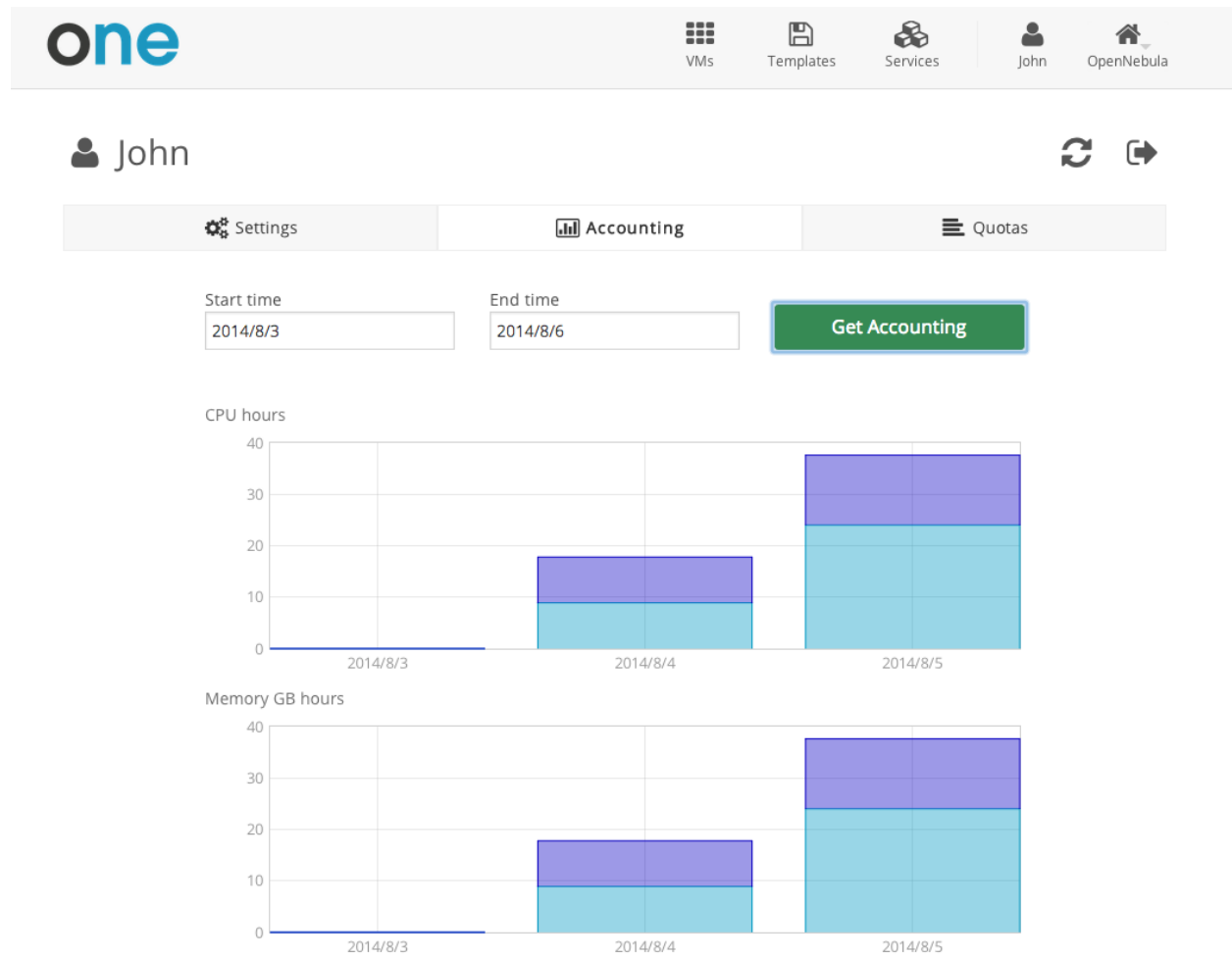
The screenshot shows the 'Create Virtual Machine' page in the OpenNebula web interface. At the top, there is a navigation bar with the 'one' logo and icons for 'VMs', 'Templates', 'Services', 'John', and 'OpenNebula'. Below the navigation bar, the main heading is 'Create Virtual Machine'. There is a text input field for 'Virtual Machine Name'. Underneath, the section 'Select a Template' features three tabs: 'System', 'VDC', and 'Saved'. A search box is located to the right of the 'Saved' tab. Three template cards are displayed: 'CentOS 6.6' (Vanilla CentOS Server 6.6), 'Ubuntu 14.04' (Ubuntu 14.04.1 (Trusty Tahr)), and 'Fedora 20' (Fedora 20 Desktop Edition). At the bottom of the template selection area, there are navigation arrows and a page number '1' out of '6'. A large green 'Create' button is centered at the bottom of the page.

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

The screenshot shows the 'Services Hadoop' page in the OpenNebula web interface. The navigation bar at the top is identical to the previous screenshot. The main heading is 'Services Hadoop'. To the right of the heading are icons for refresh, a grid, and a left arrow. Below the heading, there are icons for power and delete. On the left side, there is a status indicator 'RUNNING' with a green square, a clock icon showing '1m ago', and a user icon for 'John'. The main content area displays two service cards: 'Master' and 'Slave'. The 'Master' card shows 'RUNNING' with a progress bar and '1 / 1 VMs'. The 'Slave' card shows 'RUNNING' with a progress bar and '3 / 3 VMs'. Both cards have a grid icon and a green double-headed arrow icon.

The screenshot displays the OpenNebula web interface for a virtual machine named 'Apache Server'. At the top, there is a navigation bar with the 'one' logo and icons for 'VMs', 'Templates', 'Services', 'John', and 'OpenNebula'. Below the navigation bar, the page title is 'Virtual Machines Apache Server'. On the left side, there is a status indicator 'RUNNING' and a list of configuration details: 'x1 - 1GB', 'ttylinux - kvm\_file0', '10.0.1.0', '1 Aug', and 'John'. On the right side, there are several performance graphs: '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 graphs show various metrics over time, with the x-axis representing time from 15:40 to 2017:36.

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



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).

OpenNebula 4.8.0 by C12G Labs.