
OpenNebula.org

OpenNebula 4.12 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.

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

The screenshot shows the 'Create Cluster' dialog in the OpenNebula Sunstone interface. The dialog has a title bar with a close button. Below the title, there is a 'Name' input field containing 'web-dev'. To the right of the name field are three tabs: 'Hosts' (selected), 'VNets', and 'Datastores'. Below the tabs is a search bar with the placeholder text 'Search'. A table lists available hosts with columns for ID, Name, Cluster, RVMS, Allocated CPU, Allocated MEM, and Status. Hosts 1 (host02) and 0 (host01) are highlighted in blue. Below the table is a pagination control showing '1' of 1 items. A summary line states 'You selected the following hosts:' followed by two buttons for 'host01' and 'host02'. A green 'Create' button is located at the bottom right of the dialog.

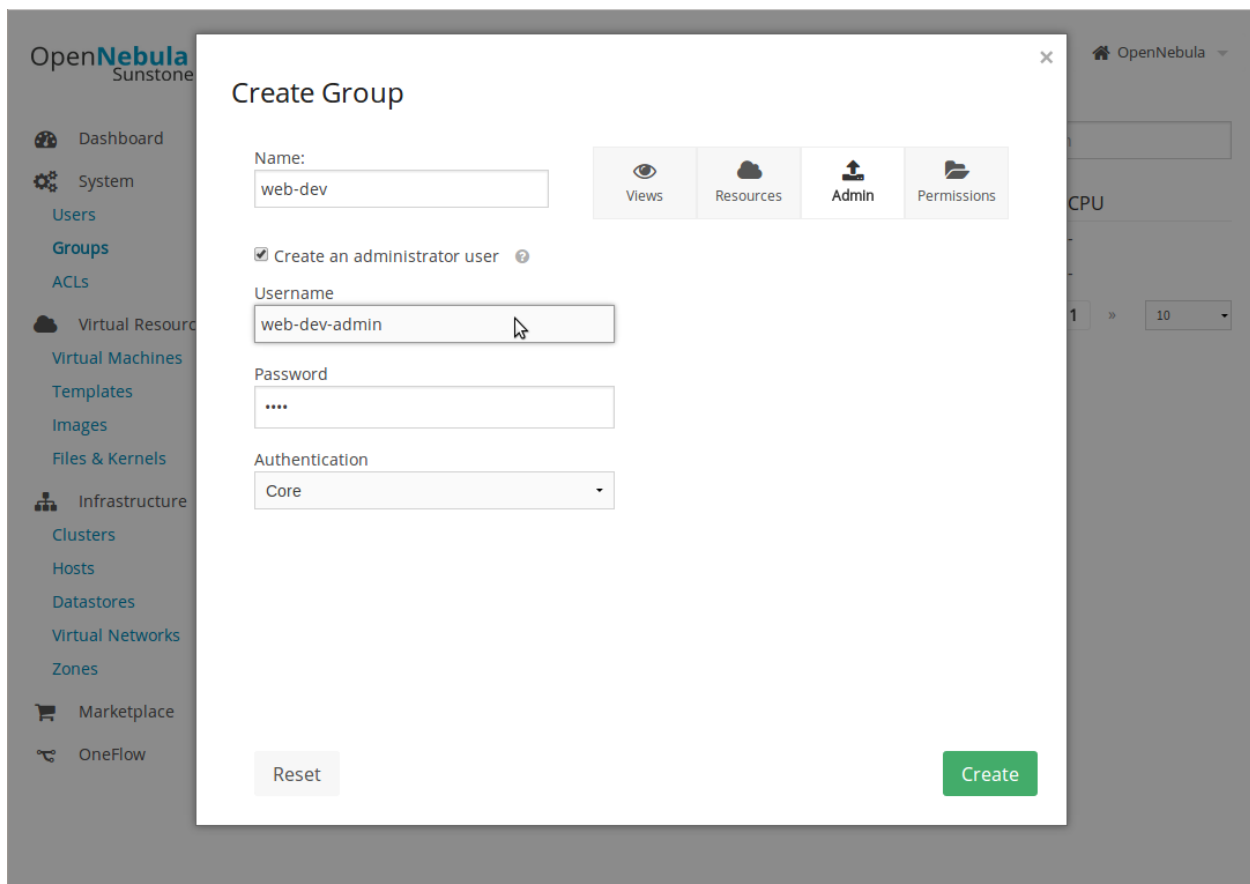
ID	Name	Cluster	RVMS	Allocated CPU	Allocated MEM	Status
3	host04	-	0	0 / 200 (0%)	0KB / 7.5GB (0%)	ON
2	host03	-	0	0 / 200 (0%)	0KB / 7.5GB (0%)	ON
1	host02	-	0	0 / 200 (0%)	0KB / 7.5GB (0%)	ON
0	host01	-	0	0 / 200 (0%)	0KB / 7.5GB (0%)	ON

CREATE A GROUP

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

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 group, or private.

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



The screenshot shows the 'Create Group' dialog box in the OpenNebula Sunstone interface. The dialog is titled 'Create Group' and has a close button (X) in the top right corner. It features a sidebar on the left with navigation options: Dashboard, System, Users, Groups (highlighted), ACLs, Virtual Resources, Virtual Machines, Templates, Images, Files & Kernels, Infrastructure, Clusters, Hosts, Datastores, Virtual Networks, Zones, Marketplace, and OneFlow. The main content area contains the following fields and options:

- Name:** A text input field containing 'web-dev'.
- Views:** A button with an eye icon.
- Resources:** A button with a cloud icon.
- Admin:** A button with an upload icon.
- Permissions:** A button with a folder icon.
- Create an administrator user** (with a help icon).
- Username:** A text input field containing 'web-dev-admin'.
- Password:** A text input field with masked characters '....'.
- Authentication:** A dropdown menu currently set to 'Core'.
- Reset:** A button at the bottom left.
- Create:** A green button at the bottom right.

CREATE THE VDC

New groups are added to the ‘default’ VDC. If you didn’t modify this VDC, it will allow the users in the new group to access all physical resources. So the first step is to remove this group from its current VDC:

```
$ onevdc delgroup default web-dev
```

The new VDC will be called ‘web-dev’. In the creation wizard, select the group and the cluster created in the previous steps.

```
$ onevdc addgroup 100 web-dev  
$ onevdc addcluster 100 0 web-dev
```

The screenshot shows the OpenNebula web interface for creating a Virtual Data Center (VDC). The page title is "Create Virtual Data Center". On the left is a navigation sidebar with options: Dashboard, System (Users, Groups, Virtual Data Centers, ACLs), Virtual Resources, Infrastructure, Marketplace, OneFlow, and Support (Not connected, Sign in). The main content area has a "Wizard" button selected and an "Advanced" button. Below are tabs for "General", "Groups", and "Resources", with "Groups" selected. A search bar is present. A table lists the groups:

ID	Name	Users	VMs	Memory	CPU
100	web-dev	0	0 / -	0KB / -	0 / -
1	users	0	0 / -	0KB / -	0 / -
0	oneadmin	2	-	-	-

At the bottom of the table, it says "You selected the following groups: web-dev". Navigation buttons "Previous" and "Next" are visible, with "1" indicating the current step.

OpenNebula

Create Virtual Data Center

Dashboard

System

Users

Groups

Virtual Data Centers

ACLs

Virtual Resources

Infrastructure

Marketplace

OneFlow

Support

Not connected

Sign in

Reset Create

Wizard Advanced

General Groups Resources

Zone OpenNebula

Clusters Hosts VNets Datastores

All

Search

ID	Name	Hosts	VNets	Datastores
100	web-dev	0	0	0

Previous 1 Next

You selected the following clusters: web-dev

OpenNebula 4.10.0 by OpenNebula Systems.

OPTIONALLY, SET QUOTAS

The cloud administrator can set *usage quotas* for the group. 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 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

Info Quotas Providers Accounting

Update Quotas

Cancel Apply

VMs 0 / 10

CPU 0 / Default (∞)

Memory 0 / Default (∞) MB

Volatile disks 0 / Default (∞) MB

Image

ID	Running VMs
+ Add a new quota	

Network

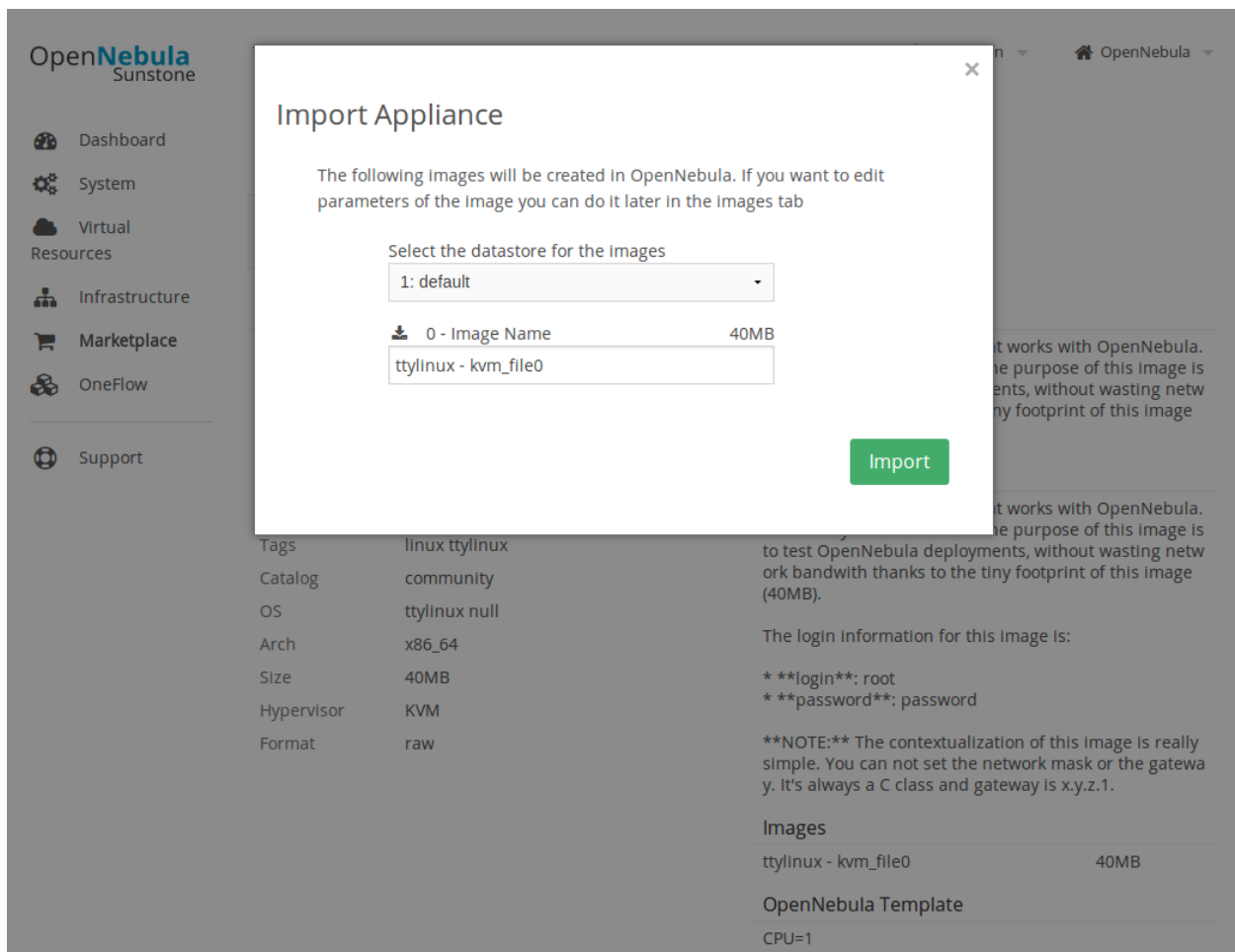
ID	Leases
+ Add a new quota	

Datastore

ID	Images	Size
+ Add a new quota		

PREPARE VIRTUAL RESOURCES FOR THE USERS

The cloud administrator has to create the *Virtual Machine Templates* and *Images* that the users will instantiate. If you don't have any working Image yet, import the ttylinux 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 group), check the OTHER USE permission for **both the Template and the Image**. Read more about assigning virtual resources to a group 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"/>

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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

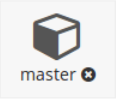

Name [?]
test

Description [?]

▼ Network Configuration

▼ Advanced Service Parameters

Roles

  [+ Add another role](#)

Role Name [?]
slave

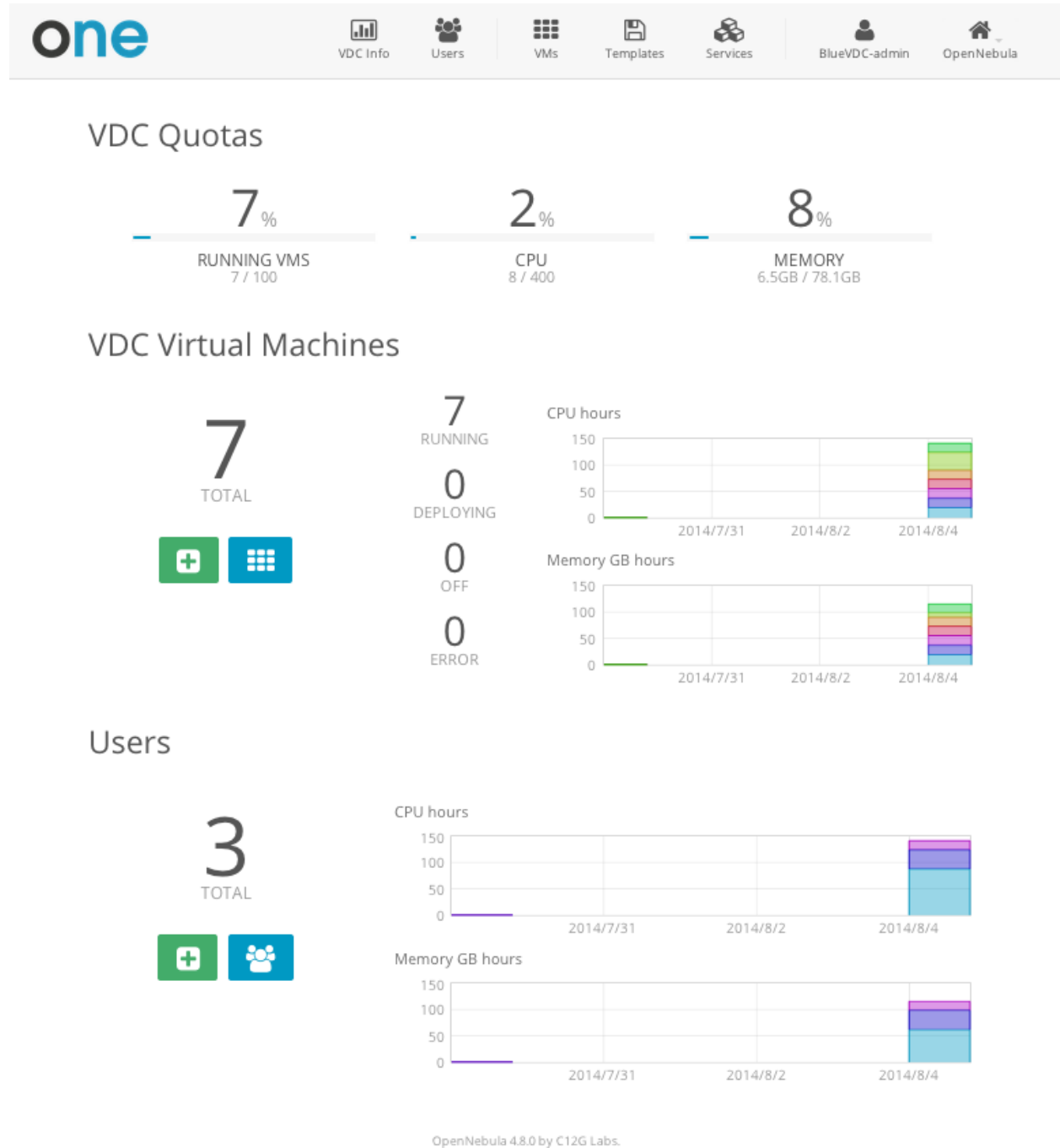
VM template [?]
4: ttylinux

VMs [?]
3

Parent roles
 master

USING THE CLOUD AS A GROUP ADMIN

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



The group admin can create new user accounts, that will belong to the same group. They can also see the current resource usage of all the group 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 group admin can manage the Services, VMs and Templates of other users in the group. 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 OpenNebula interface for the 'Users' section, specifically for user 'John'. The top navigation bar includes 'one', 'VDC Info', 'Users', 'VMs', 'Templates', 'Services', 'BlueVDC-admin', and 'OpenNebula'. The main content area displays user statistics: Running VMs (2 / 10), CPU (2 / 20), and Memory (2GB / 60GB). Below these are two bar charts: 'CPU hours' and 'Memory GB hours', both showing usage for 2014/7/31, 2014/8/2, and 2014/8/4. The 2014/8/4 bars are significantly higher than the others. A red trash icon is visible in the top right corner.

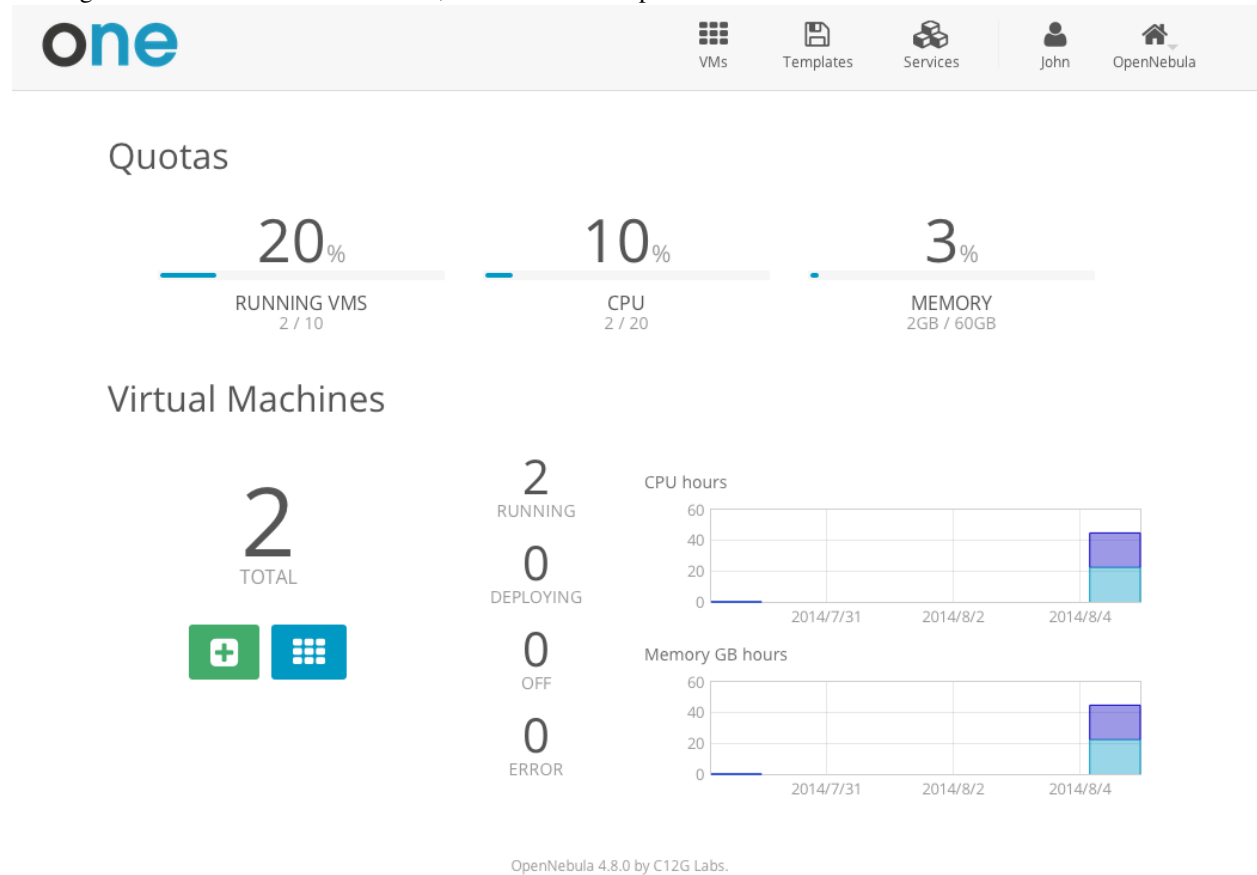
Although the cloud administrator is the only one that can create new base Images and Templates, the group admin can customize existing Templates, and share them with the rest of the group users.

The screenshot shows the OpenNebula interface for the 'Virtual Machines' section, specifically for 'Mail Server'. The top navigation bar is the same as in the previous screenshot. The main content area shows a 'Mail Server' VM with a green save icon. A dialog box is open, displaying the message: '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'. The dialog box contains a text input field labeled 'Template Name' and a green button labeled 'Save Virtual Machine to Template'.

Create a new user, and login again.

USING THE CLOUD AS A REGULAR USER

The regular users access 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.

one VMs Templates Services John OpenNebula

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.

one VMs Templates Services John OpenNebula

Services Hadoop

Refresh, Grid, Back

Power, Delete

■ RUNNING

🕒 1m ago

👤 John

Master
RUNNING 1 / 1 VMs
Grid, Refresh

Slave
RUNNING 3 / 3 VMs
Grid, Refresh

The screenshot displays the OpenNebula web interface for monitoring a virtual machine. At the top, the 'one' logo is on the left, and navigation icons for 'VMs', 'Templates', 'Services', 'John', and 'OpenNebula' are on the right. The main heading is 'Virtual Machines Apache Server'. Below the heading, there are control buttons for refresh, back, restart, power, and delete. The VM status is 'RUNNING'. A sidebar on the left lists VM details: 'x1 - 1GB', 'ttylinux - kvm_file0', IP '10.0.1.0', creation date '1 Aug', and user 'John'. The main area contains six performance graphs: CPU usage (0-150%), MEMORY usage (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 top navigation bar contains the 'one' logo and icons for 'VMs', 'Templates', 'Services', 'John', and 'OpenNebula'. Below this, the user's name 'John' is shown next to refresh and share icons. A secondary navigation bar highlights the 'Accounting' tab, with 'Settings' and 'Quotas' also visible. The main content area features a 'Get Accounting' button and two stacked bar charts. The first chart, 'CPU hours', and the second, 'Memory GB hours', both show data for three days: 2014/8/3, 2014/8/4, and 2014/8/5. The bars are stacked with light blue at the bottom and purple on top.

Date	Light Blue (hours)	Purple (hours)	Total (hours)
2014/8/3	0	0	0
2014/8/4	10	8	18
2014/8/5	25	13	38

Date	Light Blue (GB hours)	Purple (GB hours)	Total (GB hours)
2014/8/3	0	0	0
2014/8/4	10	8	18
2014/8/5	25	13	38

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

The screenshot displays the OpenNebula user interface. At the top left is the 'one' logo. To its right are navigation icons for 'VMs', 'Templates', 'Services', 'John', and 'OpenNebula'. Below the logo, the user's name 'John' is shown next to a refresh and share icon. A horizontal menu contains 'Settings', 'Accounting', and 'Quotas'. Below this menu are 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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