
OpenNebula.org

OpenNebula 4.14 Quickstart Create Your First VDC

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OpenNebula Project

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CONTENTS

1	Create a Cluster	3
2	Create a Group	5
3	Create the VDC	7
4	Optionally, Set Quotas	9
5	Prepare Virtual Resources for the Users	11
6	Using the Cloud as a Group Admin	15
7	Using the Cloud as a Regular User	19

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 cluster name is 'web-dev'. The 'Hosts' tab is active, showing a table of available hosts. Hosts 1 and 2 are selected. The 'Create' button is visible at the bottom right.

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

You selected the following hosts: host01 x host02 x

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. On the left side of the dialog, there are four tabs: 'Views', 'Resources', 'Admin', and 'Permissions'. The 'Admin' tab is currently selected. The form contains the following fields and options:

- Name:** A text input field containing 'web-dev'.
- 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 with 'Core' selected.

At the bottom of the dialog, there are two buttons: 'Reset' (disabled) and 'Create' (active, green).

The background shows the OpenNebula Sunstone dashboard with a sidebar menu containing items like Dashboard, System, Users, Groups, ACLs, Virtual Resources, Infrastructure, Marketplace, and OneFlow. The main content area is partially visible, showing a 'CPU' section with a '10' value.

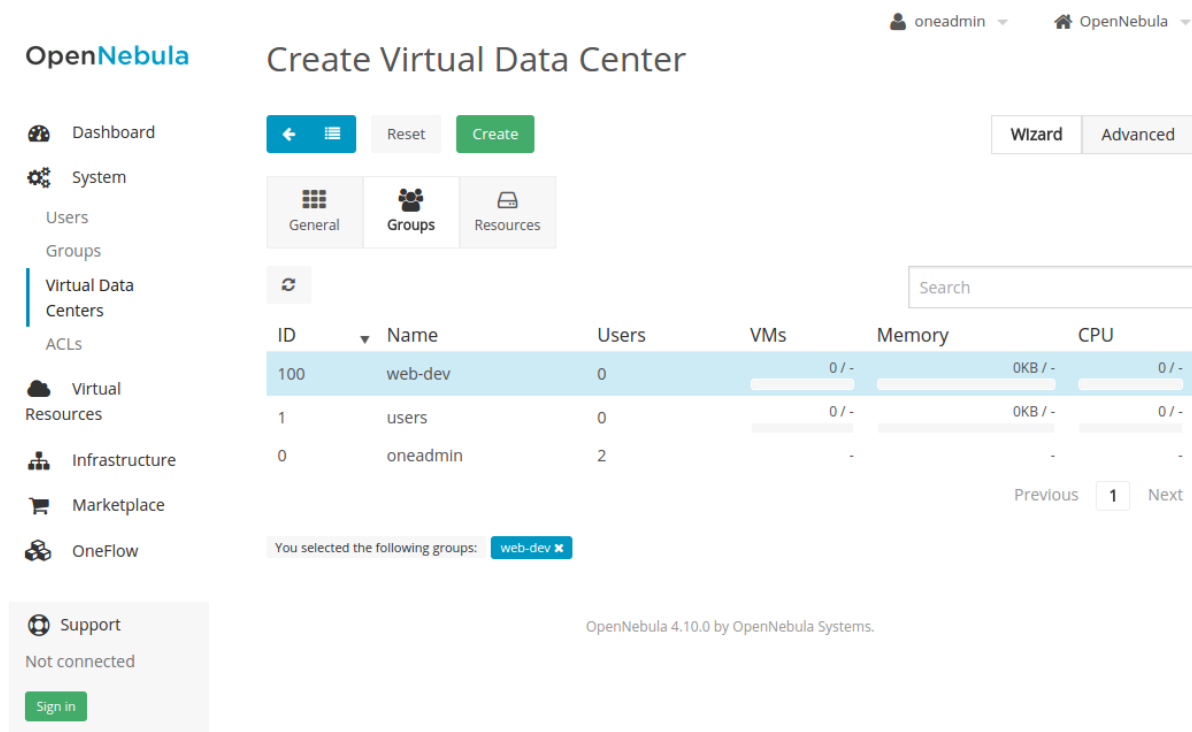
CREATE THE VDC

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
```



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

OpenNebula

Create Virtual Data Center

Dashboard

System

Users

Groups

Virtual Data Centers

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



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

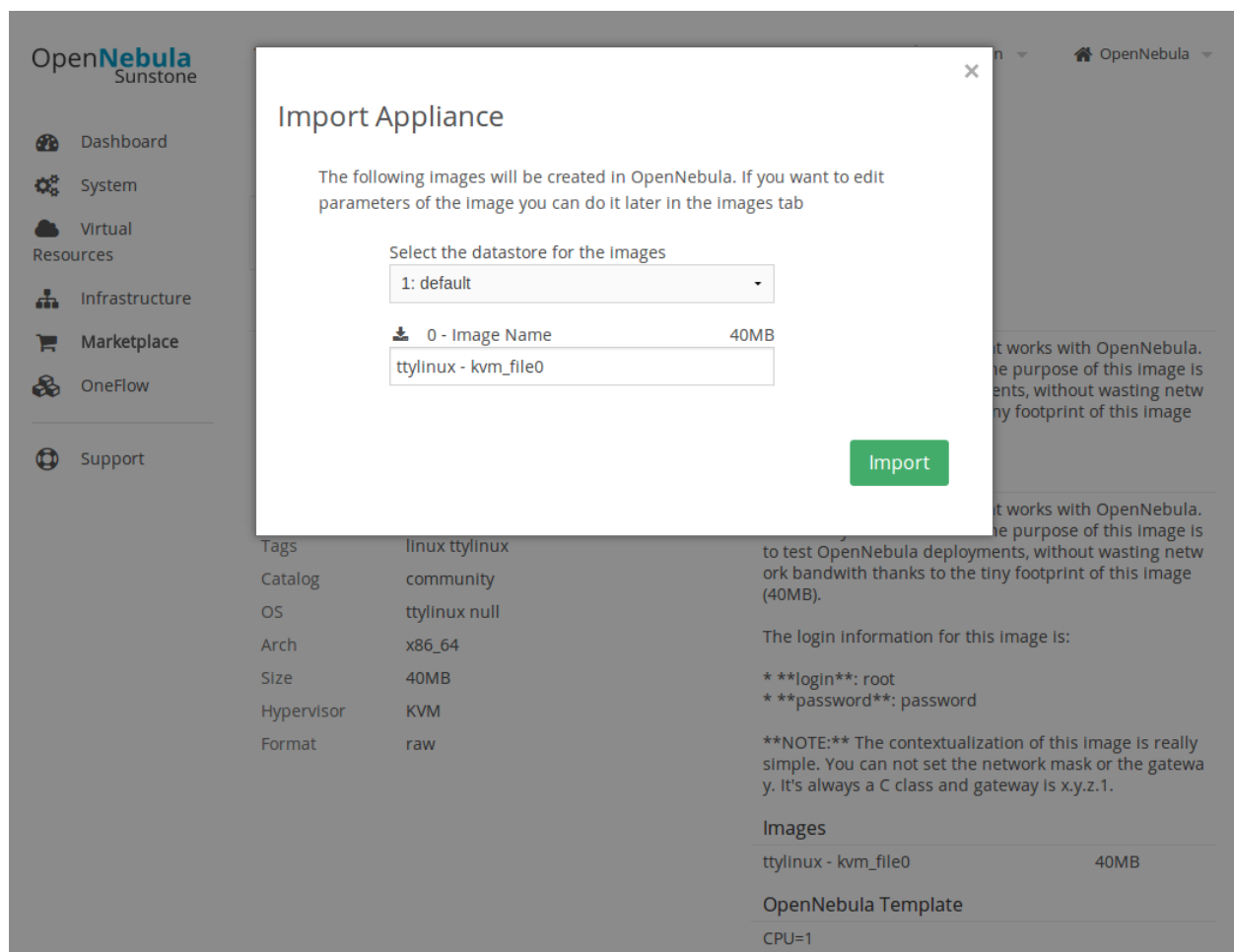
ID	Leases

Datastore

ID	Images	Size

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.

The screenshot shows the OpenNebula Sunstone interface for a VM Template. The left sidebar contains navigation links for Dashboard, System (Users, Groups, ACLs), Virtual Resources (Virtual Machines, Templates, Images, Files & Kernels), Infrastructure, Marketplace, OneFlow, and Support. The main content area shows the template details for 'Template 3'.

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		
		Group	oneadmin		

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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

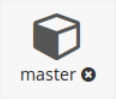

Name [?]
test

Description [?]

▼ Network Configuration

▼ Advanced Service Parameters

Roles

  [+ Add another role](#)

Role Name [?]
slave

VM template [?]
4: ttylinux

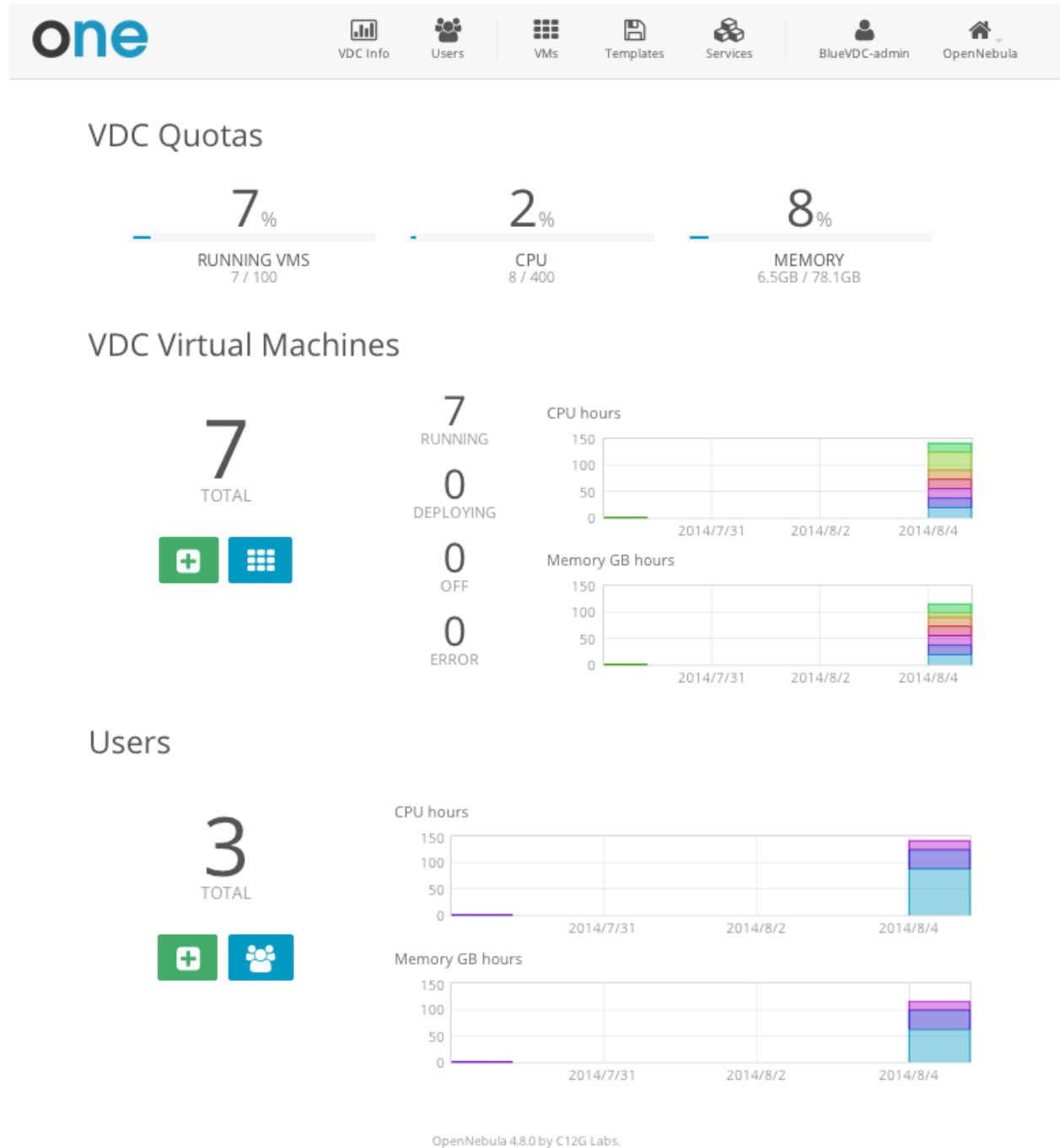
VMs [?]
3

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

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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 sidebar on the left contains icons for a menu, lock, and a red trash icon.

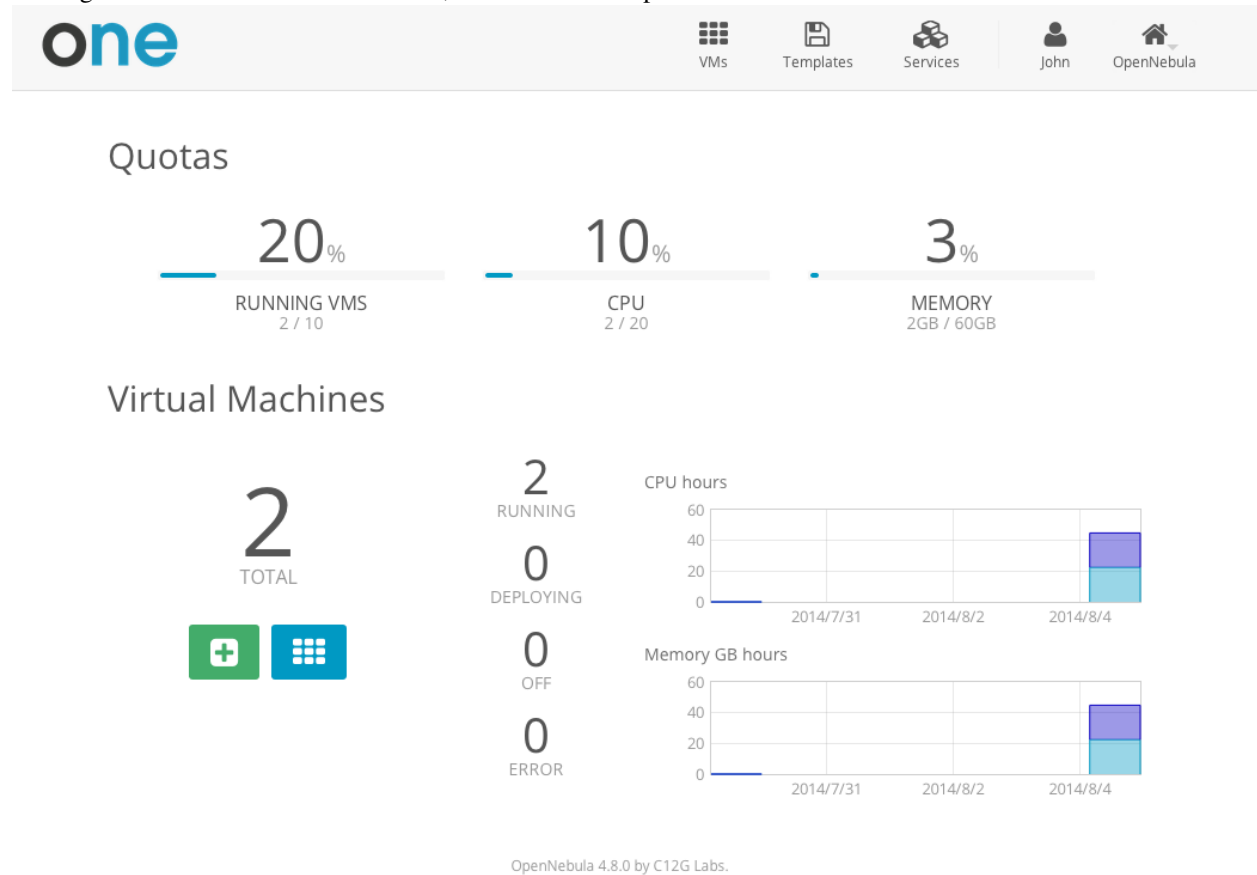
Although the cloud administrator is the only one that can create new base Images and Templates, the group admin can customize existing Templates, and share them with the rest of the group users.

The screenshot shows the OpenNebula interface for the 'Virtual Machines' section, specifically for 'Mail Server'. The top navigation bar is identical to the previous screenshot. The main content area shows a 'Mail Server' VM with a green save icon and a red trash 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'. Below the message 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.

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.

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'. A text input field labeled 'Virtual Machine Name' is present. The next section is 'Select a Template', which includes a tabbed interface with 'System', 'VDC', and 'Saved' tabs. A search box is located to the right of the tabs. 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). A pagination control at the bottom of the template list shows '1' of 6 items. 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' monitoring page in the OpenNebula web interface. The navigation bar at the top is identical to the previous screenshot. The main heading is 'Services Hadoop'. On the right side, there are icons for refresh, a grid view, and a back arrow. Below these 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' status with a progress bar and '1 / 1 VMs'. The 'Slave' card shows 'RUNNING' status with a progress bar and '3 / 3 VMs'. Both cards have a blue grid icon and a green double-headed arrow icon.

The screenshot shows the OpenNebula web interface for a virtual machine named 'Apache Server'. The interface includes a navigation bar with 'one' logo and icons for 'VMs', 'Templates', 'Services', 'John', and 'OpenNebula'. Below the navigation bar, the page title is 'Virtual Machines Apache Server'. There are several action buttons: a refresh button, a back button, a power button, and a delete button. The main content area shows the VM's status as 'RUNNING' with a green square icon. Below the status, there are several configuration details: 'x1 - 1GB', 'ttylinux - kvm_file0', '10.0.1.0', '1 Aug', and 'John'. To the right of these details are six 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). Each graph shows a line chart with a grid background and a time axis 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.

The screenshot displays the OpenNebula user interface for user 'John'. The top navigation bar includes the 'one' logo and icons for 'VMs', 'Templates', 'Services', 'John', and 'OpenNebula'. Below the navigation bar, the user's name 'John' is shown. The 'Accounting' tab is selected, displaying a 'Get Accounting' button and two bar charts: 'CPU hours' and 'Memory GB hours'. Both charts show usage for 2014/8/3, 2014/8/4, and 2014/8/5.

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 user interface. At the top left is the 'one' logo. To its right is a navigation bar with icons for 'VMs', 'Templates', 'Services', 'John', and 'OpenNebula'. Below this, the user's name 'John' is shown next to a refresh and share icon. A horizontal menu contains three tabs: 'Settings' (with a gear icon), 'Accounting' (with a bar chart icon), and 'Quotas' (with a list icon). Below the menu are four large, light-gray buttons arranged in a 2x2 grid. Each button features a cloud icon with a specific symbol inside and a text label below it: '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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