
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

Create Cluster

Name:

Hosts | VNets | Datastores

Search:

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

« 1 »

You selected the following hosts: host01 host02

Create

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. The background shows the Sunstone dashboard with a sidebar menu on the left containing items like Dashboard, System, Users, Groups, ACLs, Virtual Resources, Infrastructure, Marketplace, and OneFlow. The dialog 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:** A checked checkbox with a help icon.
- Username:** A text input field containing 'web-dev-admin'.
- Password:** A text input field with masked characters (dots).
- 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
```

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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

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

Cancel Apply

VMs
0 / 10

CPU
0 / Default (∞)

Memory
0 / Default (∞) MB

Volatile disks
0 / Default (∞) MB

Image

ID	Running VMs

Network

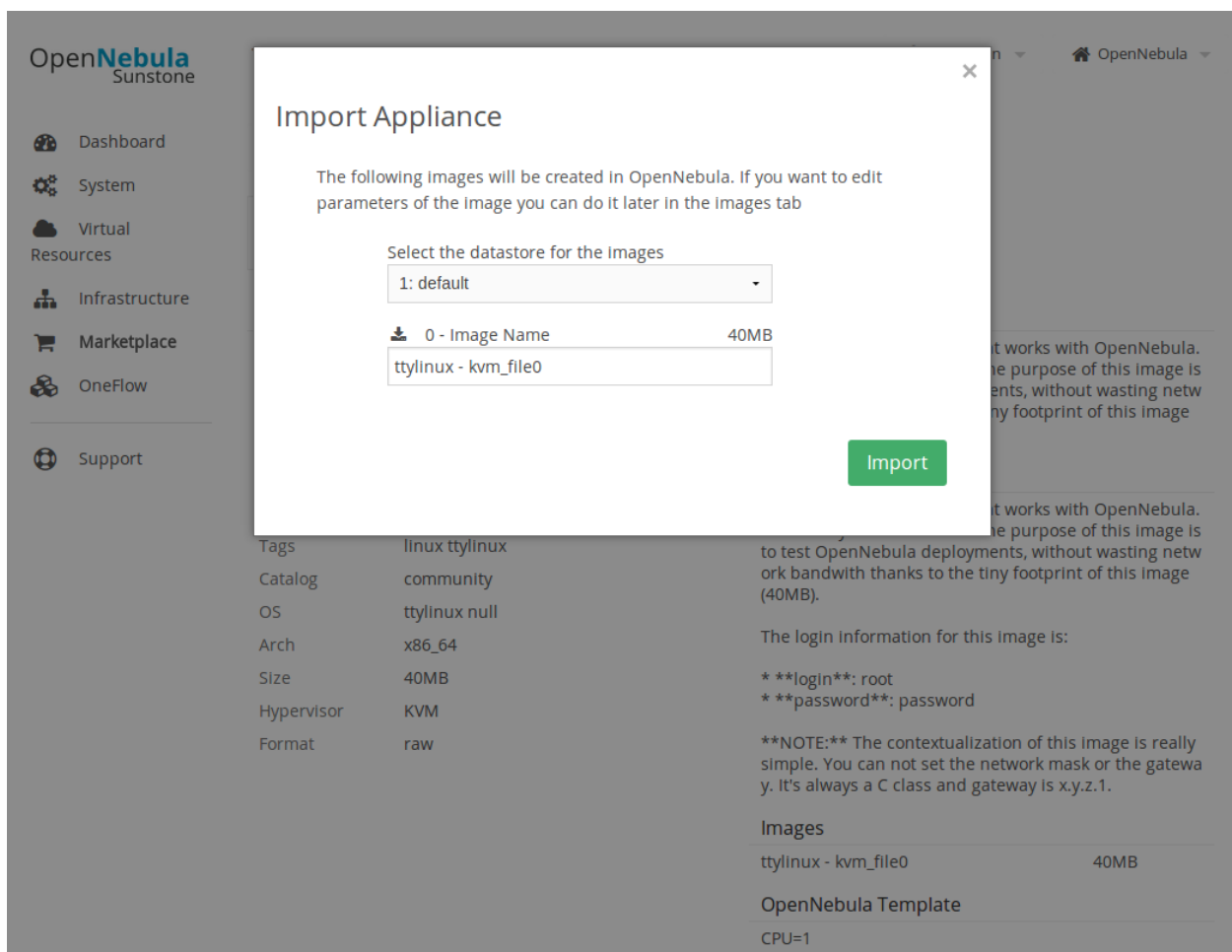
ID	Leases

Datastore

ID	Images	Size

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 `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 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 page title is 'Template 3'. The user is logged in as 'oneadmin'. 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 are 'Info' and 'Template' tabs. The 'Info' tab is active, showing 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 section:

Ownership	
Owner	oneadmin edit
Group	oneadmin edit

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 `tylinux` VM Template. This Service Template also needs to be shared with other users, changing the `OTHER USE` permission.

Create Service Template

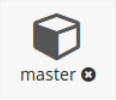

Name [?]
test

Description [?]

▼ Network Configuration

▼ Advanced Service Parameters

Roles

  [+ Add another role](#)

Role Name [?]
slave

VM template [?]
4: ttylinux

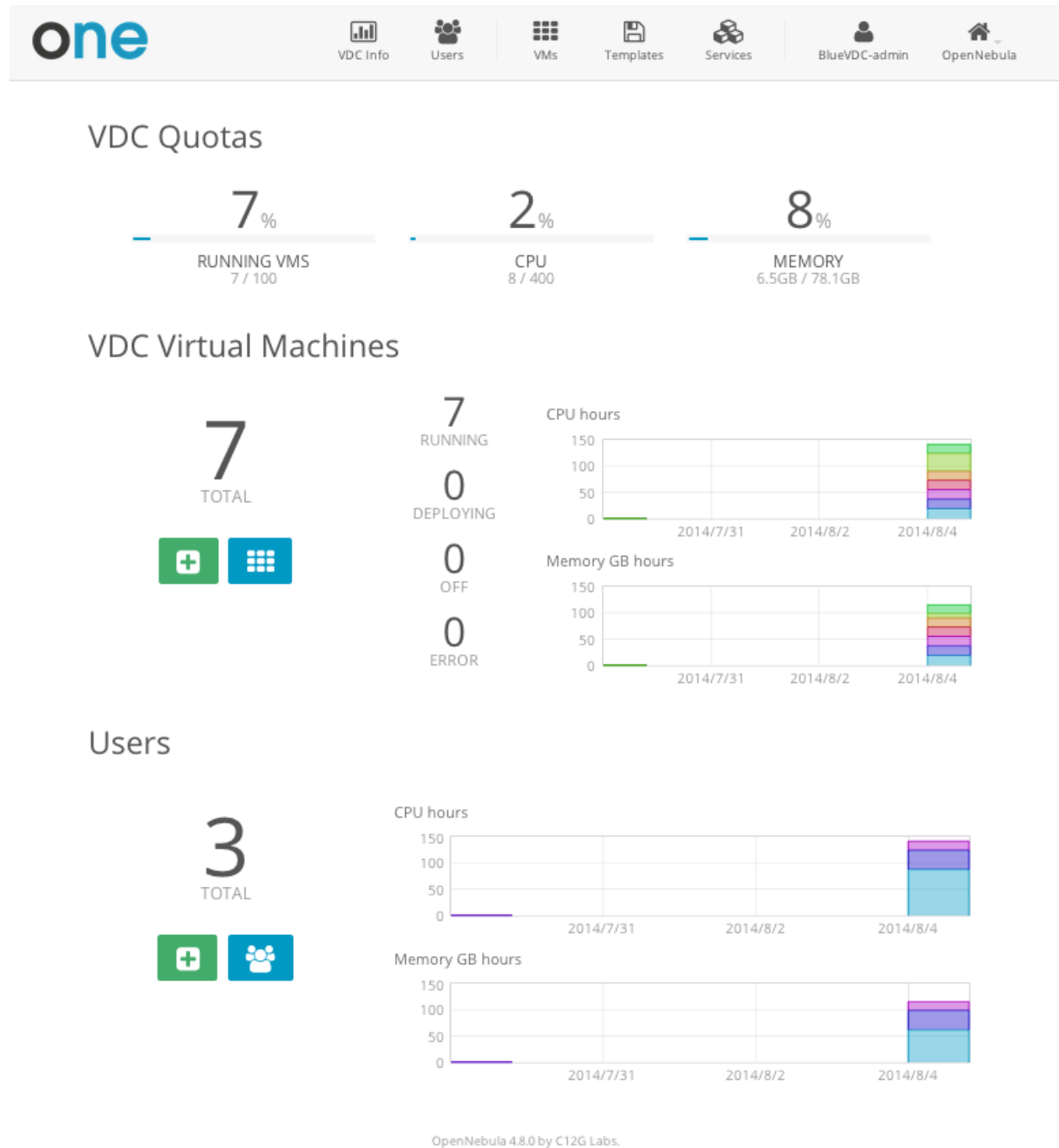
VMs [?]
3

Parent roles

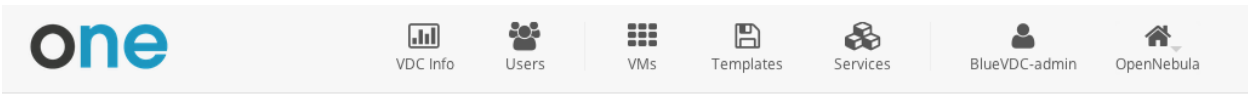
master

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 the 'one' logo and icons for 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, a lock, and a trash can.

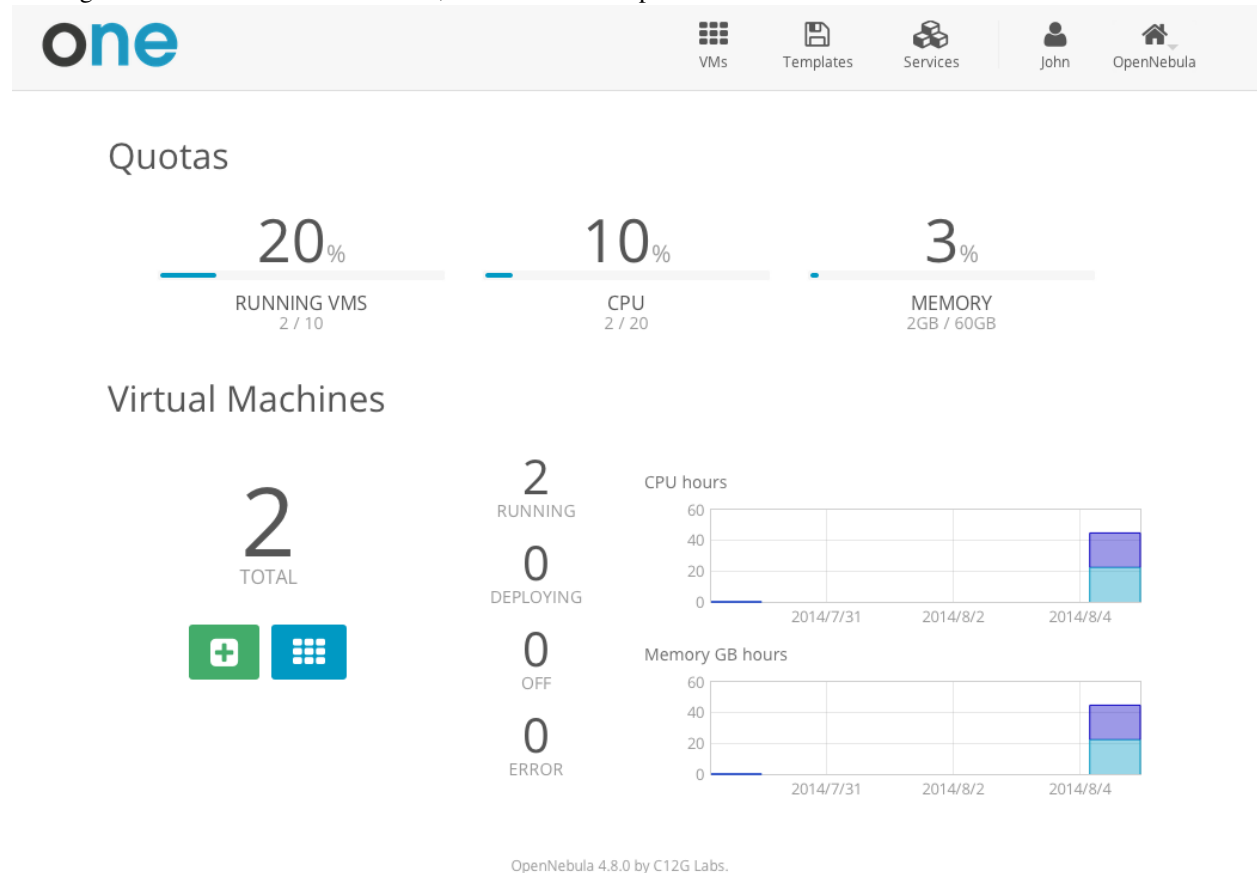
Although the cloud administrator is the only one that can create new base Images and Templates, the group admin can customize existing Templates, and share them with the rest of the group users.

The screenshot shows the OpenNebula interface for the 'Virtual Machines' section, specifically for a VM named 'Mail Server'. The top navigation bar is identical to the previous screenshot. The main content area shows a 'Mail Server' VM with a play button and a trash can 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.

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

Virtual Machines Apache Server

Refresh Back Power Delete

RUNNING

- x1 - 1GB
- ttylinux - kvm_file0
- 10.0.1.0
- 1 Aug
- John

CPU

150
100
50
0

15:40:15:56:16:13:16:30:16:46:17:03:17:20:17:36

MEMORY

1.4GB
976.6MB
488.3MB
0KB

15:40:15:56:16:13:16:30:16:46:17:03:17:20:17:36

NET RX

39.1KB
29.3KB
19.5KB
9.8KB
0B

15:40:15:56:16:13:16:30:16:46:17:03:17:20:17:36

NET TX

14.6KB
9.8KB
4.9KB
0B

15:40:15:56:16:13:16:30:16:46:17:03:17:20:17:36

NET DOWNLOAD SPEED

15B/s
10B/s
5B/s
0B/s

15:40:15:56:16:13:16:30:16:46:17:03:17:20:17:36

NET UPLOAD SPEED

4B/s
3B/s
2B/s
1B/s
0B/s

15:40:15:56:16:13:16:30:16:46:17:03:17:20:17:36

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 contains the 'one' logo and icons for 'VMs', 'Templates', 'Services', 'John', and 'OpenNebula'. Below this, the user's name 'John' is shown with refresh and share icons. The 'Accounting' tab is selected, showing a 'Get Accounting' button and two stacked bar charts. The first chart, 'CPU hours', and the second chart, 'Memory GB hours', both show data for three days: 2014/8/3, 2014/8/4, and 2014/8/5. The y-axis for both charts ranges from 0 to 40. The data shows a significant increase in usage on 2014/8/5 compared to the previous days.

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 settings menu is open, containing three tabs: 'Settings' (selected), 'Accounting', and 'Quotas'. Under the 'Settings' tab, there are four interactive 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.