
CSUI Documentation

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CloudStack-UI is a project which purpose is to provide an easy-to-use, light, and user friendly frontend interface for the Apache CloudStack virtualization management system.

Apache CloudStack is a great product which is widely used. But its frontend is developed for administrators (from our point of view), not for cloud end users. Some of the interactions are not straightforward and unnatural to an average user and require quite a long time to adapt. Other reasons to develop the UI are connected with lack of functions like virtual machine statistics & charting, sophisticated resource accounting, and application management.

That's what we are trying to add to Cloudstack-UI. The work is still in progress. But for now we have already covered lots of features that make CloudStack more good-looking and intuitive.

Project on [GitHub](#)

Join CloudStack-UI [LinkedIn Group](#)

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- *Overview*
 - *Project History*
 - *Implementation Details*
 - *Documentation*
 - *How to Contribute*

CHAPTER 1

Overview

CloudStack-UI is a project which purpose is to provide an easy-to-use, light, and user-friendly front-end interface for the Apache CloudStack virtualization management system.

Apache CloudStack is a great product which is widely used. But its front end is developed for administrators (from our point of view), not for cloud end-users. Some of the interactions are not straightforward and unnatural to an average user and require quite a long time to adapt. Other reasons to develop the UI are connected to the lack of functions like virtual machine statistics & charting, sophisticated resource accounting, and application management.

That is what we are trying to add to Cloudstack-UI. The work is still in progress. But for now we have already covered lots of features that make CloudStack more good-looking, intuitive and convenient.

Project on [GitHub](#).

Join the [CloudStack-UI LinkedIn Group](#).

1.1 Project History

This page provides some background about the project, describes what CloudStack-UI is, and why it was developed.

At [Bitworks Software](#), we have been running an ACS public cloud for 3 years (actually we still run CS 4.3 cloud in production). And we have found that average users who are familiar with Digital Ocean, Amazon AWS, and other VPS management systems feel uncomfortable with original CloudStack UI and make a lot of operational mistakes. That is why we have decided to implement a convenient and neat end-user facing UI covering regular activities, which are important for day-to-day VM management.

There are several aims we strived to achieve with the new UI:

1. The first goal is to make the UI more intuitive in terms of usability, business processes and typical use-cases.
2. As nowadays people move further from desktop PCs and go full mobile, we wanted the UI to have a support for that. Having a full control of your cloud from a smartphone, what could be better?
3. One of the major goals we want to achieve is to build a UI that is possible to support for many years. That's why we have to use only modern technologies.

4. From the technical perspective we also want the UI to support additional meta-information like descriptions, colors, groups, helpers. All of that is not supported by the native UI and it could be used to add some additional semantics to the entities that user has: like Vms, snapshots and so on.
5. The next key point that we wanted to cover with the new UI is to have some extra features beyond the functionality that CloudStack provides, e.g. DNS management, helpdesk integration, PaaS management, runtime statistics charts and monitoring.
6. And a final goal is to have a community support that could help us to improve the product and provide better user experience for the CloudStack users.

1.2 Implementation Details

Designed compatible with Apache CloudStack 4.10 and has been tested for 4.9.

Powered by Angular and Material 2.

Tested and works fine in next modern browsers:

- Google Chrome 60.0.3112.78
- Chromium 60.0.3169.0
- Mozilla Firefox 54.0.1
- Safari 5.1.7
- Internet Explorer 11.483.150630

1.3 Documentation

The documentation for the project is presented in the *CloudStack-UI User Guide* that explains to average users how to use the UI when working with CloudStack. It also includes explanations on managers' part clarifying how to manage the cloud infrastructure via CloudStack-UI.

We hope the new features we support will be useful for both end-users and administrators.

1.4 How to Contribute

CloudStack-UI is an open-source project. It is developed by an open and friendly community. Everybody is welcome to contribute and engage with the community. We are happy to accept any contribution. You can contribute to the project development in various ways:

1. Share the information about the project with other people, try to install the UI and share your opinion with us and your colleagues.
2. Propose useful features. Ideas are always welcome.
3. Deploy it somewhere and inform us about your success story and we will share it in the adopters section.
4. Fix bugs and send us the PR.
5. Implement a feature from the Roadmap or simply make something new.
6. Support and promote the development of specific functions which are important to you and may be shared.
7. Provide testing environment for other deployment schemes. Now we interested in testing the app with

- (a) KVM with RBD
- (b) Xen with NFS, Local, RBD
- (c) Other browsers and operating systems

8. Hire us for frontend or backend development of custom software development projects. Take a look at our [website](#) to know where we can be useful. Take a look at our [presentation](#) to learn more about us.

To contribute, just contact us via e-mail: info@bw-sw.com

CloudStack-UI User Guide

CloudStack-UI is created to make it easier for end-users to use cloud infrastructure - to view and use their cloud resources, including virtual machines, templates and ISOs, data volumes and snapshots, security groups, and IP addresses.

The documentation gives precise instructions on working with the interface. The UI is quite intuitive and user-friendly, but we still advise studying the documentation first to get deeper insight of the features.

Here is the documentation structure:

2.1 Start Working With CloudStack-UI

Contents

- *Start Working With CloudStack-UI*
 - *Logging In*
 - *Resource Usage*
 - *Notifications on Pending Operations*



This page is aimed to help you to make first steps at CloudStack-UI. If you have never worked with CloudStack before, you should start with installing the CloudStack platform. Follow the instruction in [the official documentation](#).

Then deploy CloudStack-UI (see the [instructions for deployment](#)).

2.1.1 Logging In

To enter the platform use your credentials provided by an administrator:

Note: Required fields are marked with asterisks (*).

- User name * - The user ID of your account.
- Password * - The password associated with the user ID.
- Domain - Specify domain when you log in. CloudStak-UI supports three ways to do it. Choose the one which is more convenient for you:
 1. Enter a domain in the field under the “Show advanced options” button .
 2. Administrator can set a domain in configurations. Domain field will be prepopulated with the specified value. It is more convenient for a user as he/she does not need to enter the domain every time at logging in. In this case the domain field can be hidden by clicking . Find more information on the feature configuration at the [configuration guide](#).
 3. Another way to log in is to enter a URL in the format `http://<ip-address>/login?domain=<domain>`. The domain will be prepopulated in the logging in form with the value that is specified in the URL. Please, note, the domain value in URL will override the domain set in the configurations by Administrator.

Push “Login” to proceed to CloudStack. You will see the first section - *Virtual Machines*.

To the left you can see the main navigation bar. It shows the user name and allows moving from section to section.

When entering the system, a user sees the *Virtual Machines* section at the second level of the menu. At the first level, the main navigation bar has two expandable sections with the following nested menu items:

- ***Virtual Machines***
 - Virtual machines
 - Storage
 - Images
 - Snapshots
 - Firewall
 - SSH keys
 - Logout
- ***Accounts***
 - Accounts
 - Activity log
 - Settings
 - Logout

Note: The Logout section is placed at both levels.

To move between levels, click  and then one of the two levels.

cloudstack

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Username *


Administrator

Password *


.....

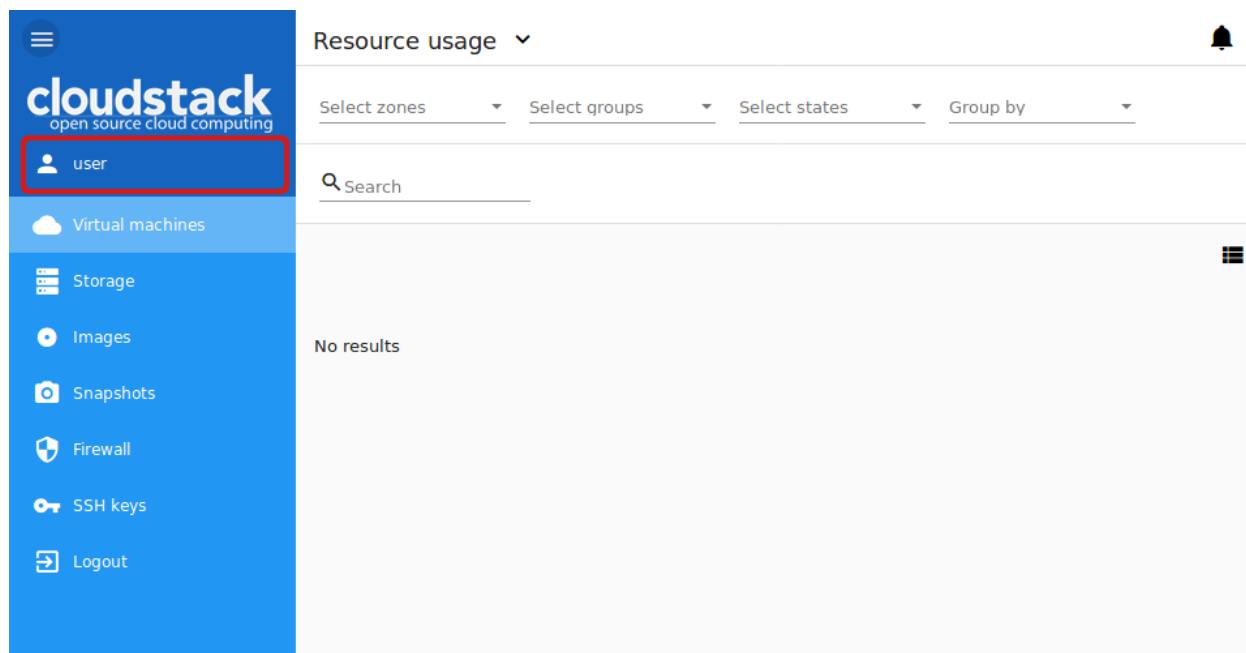
Domain

Administrator



LOGIN





2.1.2 Resource Usage

In this section you can see the resource statistics: used and free VMs, computational resources, volumes and storage space.

Unfold *Resource Usage* panel in the upper part of the screen. It provides information on the following resources:


1. Virtual machines;
2. Computational resources - CPU, RAM;
3. Volumes and snapshots;
4. Storage - primary and secondary.

You can switch between used or free resources by clicking the option you need above the resource data list.

A user can see the resource usage statistics for his/her user only.

A Domain Administrator can view resources for his/her account and for the whole domain.

2.1.3 Notifications on Pending Operations

In the upper-right corner of the screen, you can see the list of pending operations by clicking a bell button . It informs you of the latest operations in the system. You can clear the list after its reviewing by deleting every notification one by one or by clicking “CLEAR ALL” at the list bottom.

Alongside with the notification panel, the action completion confirmation additionally appears in the snackbar notification at the page bottom.

In case of errors at data loading the snackbar also notifies of them. In this case it has a refresh button that refreshes the whole app.

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Virtual machines

Accounts

Logout

Resource usage

Select accounts Select zones Select groups Select states

Group by

Search

VM Name	OS	IP	CPU	RAM	DISKS
vm-develop-1	Apple Mac OS X 10.6 (32-bit)	176.120.29.138	1x1000 MHz	1.00 GB	8.00 GB
vm-develop-16	Ubuntu 16.04 (64-bit)	176.120.28.175	1x1000 MHz	1.00 GB	8.00 GB
vm-102	CoreOS	176.120.29.78	1x1000 MHz	523.00 MB	5.00 GB
vm-381	Ubuntu 14.04 (32-bit)	176.120.29.170	1x1000 MHz	512.00 MB	22.00 GB
vm-develop-151	Apple Mac OS X 10.6 (32-bit)	176.120.29.99	1x1000 MHz	512.00 MB	9.00 GB
vm-develop-168	Apple Mac OS X 10.6 (32-bit)	176.120.29.125	3x2000 MHz	789.00 MB	8.00 GB

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user

Virtual machines

Storage

Images

Snapshots

Firewall

SSH keys

Logout

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Resource usage ^

Used Free

Virtual machines
Number 1/777 (0%)

Computational resources
CPUs 1/40 (3%)
RAM 0.5/8.0 GB (6%)

Volumes
Volumes 5/777 (1%)
Snapshots 11/60 (18%)

Storage
Primary 53/200 GB (27%)
Secondary 52.095818/400 GB (13%)

Select zones Select groups Select states Group by

Search

vm-user-155

OS: CoreOS
176.120.29.115

CPU	RAM	DISKS
1x1000 MHz	512.00 MB	5.00 GB

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Virtual machines

Storage

Images

Snapshots

Firewall

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Logout

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Resource usage v

Select accounts Select zones Select groups Select states Group by

Search

vm-user-1

OS: Apple Mac OS X 10.6 (32-bit)
176.120.29.138

CPU	RAM	DISKS
1x1000 MHz	1.00 GB	8.00 GB

vm-user-2

OS: Ubuntu 16.04 (64-bit)
176.120.28.175

CPU	RAM	DISKS
1x1000 MHz	1.00 GB	8.00 GB

vm-user-102

OS: CoreOS
176.120.29.78

CPU	RAM	DISKS
1x1000 MHz	523.00 MB	5.00 GB

vm-381

OS: Ubuntu 14.04 (32-bit)
176.120.29.170

CPU	RAM	DISKS
1x1000 MHz	512.00 MB	22.00 GB

vm-develop-151

OS: Apple Mac OS X 10.6 (32-bit)
176.120.29.99

CPU	RAM	DISKS
1x1000 MHz	512.00 MB	9.00 GB

vm-develop-168

OS: Apple Mac OS X 10.6 (32-bit)
176.120.29.125

CPU	RAM	DISKS
3x2000 MHz	789.00 MB	8.00 GB

vm-develop-170v

OS: Apple Mac OS X 10.6 (32-bit)
176.120.29.251

CPU	RAM	DISKS
3x2000 MHz	789.00 MB	8.00 GB

vm-user-10

OS: CoreOS
176.120.29.190

CPU	RAM	DISKS
1x1000 MHz	512.00 MB	5.00 GB

vm-resource-12

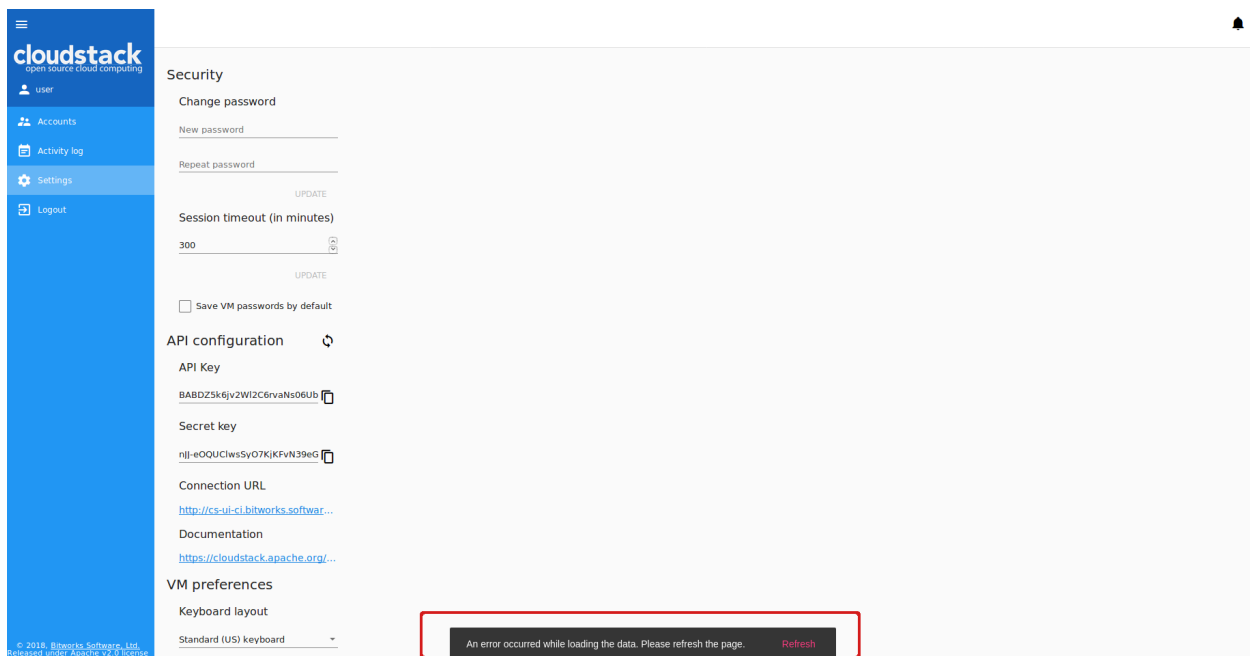
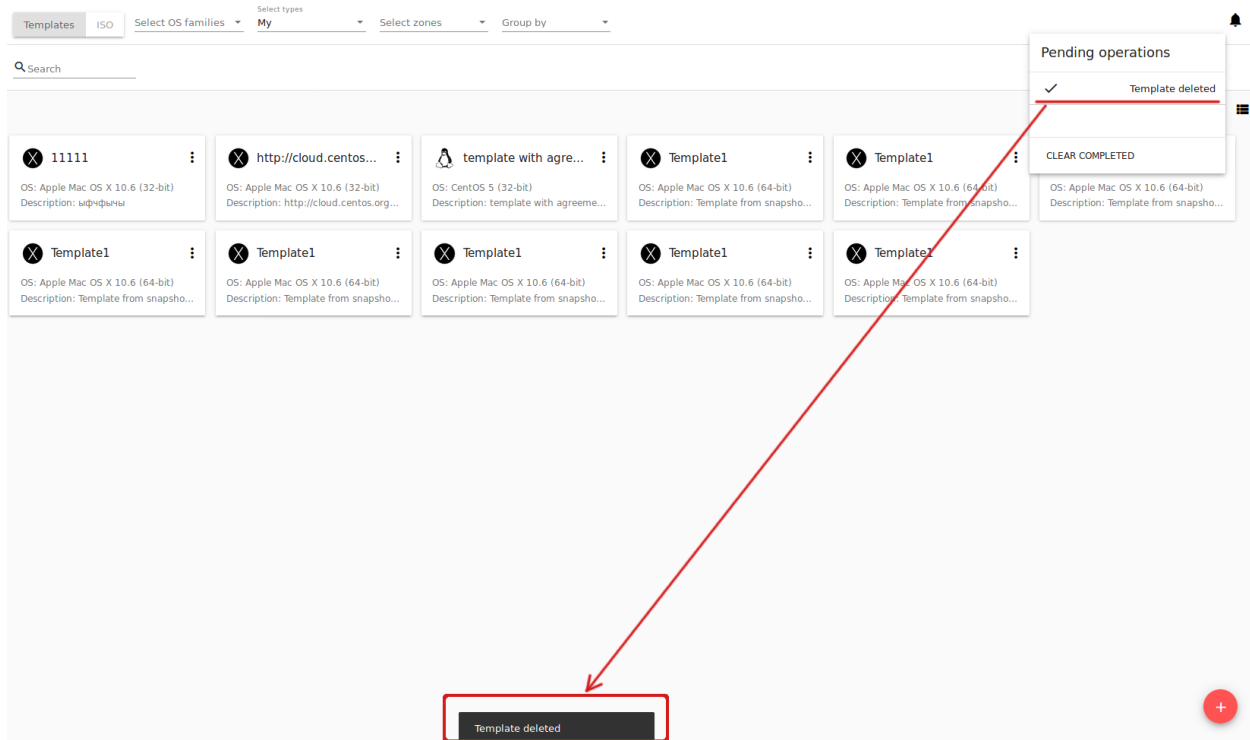
OS: Debian GNU/Linux 8 (64-bit)
176.120.29.220

CPU	RAM	DISKS
4x1200 MHz	2.00 GB	100.00 GB

Pending operations

- ✓ VM stopped
- ✓ VM started
- ✓ VM started
- ✓ VM stopped

CLEAR COMPLETED



2.2 Virtual Machines

Contents

- *Virtual Machines*
 - *Virtual Machines List*
 - * *Filtering of Virtual Machines*
 - *Create a Virtual Machine*
 - * *Possible Issues When Creating a Virtual Machine*
 - *VM Action Box*
 - *VM Details Sidebar*
 - * *Virtual Machine Tab*
 - * *Storage Tab*
 - *Volume Action Box*
 - *Snapshot Action Box*
 - * *Network Tab*
 - * *Tags Tab*
 - *Access a Virtual Machine*
 - * *VNC console*
 - * *SSH*
 - * *HTTP*

Virtual Machines is the starting section. Here and in all other views we have implemented a “one-step” approach, and we also made it work without moving from view to view. So all actions on VMs can be managed from one screen view.

In this section you can perform actions over a VM that is create, start, stop, delete it. Besides, here you can configure the machine editing its service offering parameters, group, firewall rules. Finally, you can access a VM selecting the most appropriate way. We support three options for accessing a VM: via the console, SSH or HTTP.



Below you will find the detailed information on the aforementioned options for VM management via CloudStack-UI.

2.2.1 Virtual Machines List

At this page, you can see the list of your virtual machines available to your user only.


If you are a Domain Administrator you can see the virtual machines of all users in the domain.

You can change the data representation of existing virtual machines from “card” to “list”. We have added the switch

 /  in the upper-right corner of each section. This improvement gives a user an opportunity to work with data in each specific section in a more convenient way.

A list view can be switched to a box view:

And vice versa, switch a list view to a box view:



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- Virtual machines
- Storage
- Images
- Snapshots
- Firewall
- SSH keys
- Logout

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Resource usage ^

Used Free

Virtual machines

Number 1/777 (0%)

Computational resources

CPU 1/40 (3%)

RAM 0.5/8.0 GB (6%)

Volumes

Volumes 5/777 (1%)

Snapshots 11/60 (18%)

Storage

Primary 53/200 GB (27%)

Secondary 52.095818/400 GB (13%)

Select zones Select groups Select states Group by

Search

vm-user-155

OS: CoreOS

176.120.29.115

CPU	RAM	DISKS
1x1000 MHz	512.00 MB	5.00 GB

	VM1	176.120.28.7	CPU: 1x500 MHz	RAM: 512.00 MB	DISKS: 10.00 GB	OS Ubuntu 14.04 (32-bit)	
	VM2	176.120.28.8	CPU: 1x1000 MHz	RAM: 1.00 GB	DISKS: 10.00 GB	OS Ubuntu 14.04 (32-bit)	
	VM3	176.120.28.9	CPU: 1x500 MHz	RAM: 512.00 MB	DISKS: 92.00 GB	OS Ubuntu 16.04 (64-bit)	

VM1

OS Ubuntu 14.04 (32-bit)

176.120.28.7

CPU	RAM	DISKS
1x500 MHz	512.00 MB	10.00 GB

VM2

OS Ubuntu 14.04 (32-bit)

176.120.28.8

CPU	RAM	DISKS
1x1000 MHz	1.00 GB	10.00 GB

VM3


OS Ubuntu 16.04 (64-bit)

176.120.28.9

CPU	RAM	DISKS
1x500 MHz	512.00 MB	92.00 GB

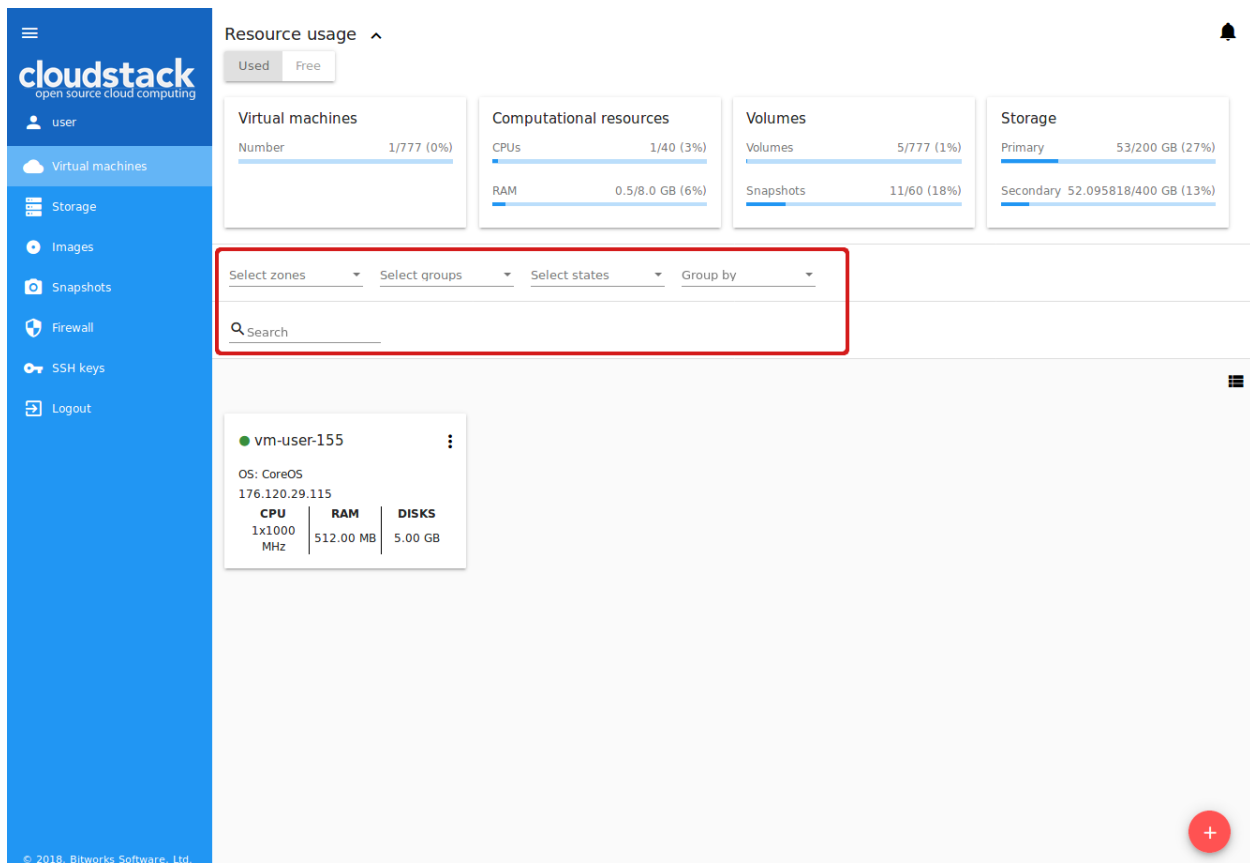
For each VM in the list you can see the following information:

- VM name and IP;
- State - shows the VM state by color spot: green for Running, red for Stopped, yellow for changing status;
- OS family;
- CPU;
- RAM;
- Disks.

To the right the Actions button  expands the list of actions available for the VM.

Filtering of Virtual Machines

The filtering and search tool will help you to find a virtual machine in the list.



The screenshot shows the CloudStack UI interface. On the left is a blue sidebar with the 'cloudstack' logo and navigation links: Virtual machines, Storage, Images, Snapshots, Firewall, SSH keys, and Logout. The main content area has a 'Resource usage' section with four cards: Virtual machines (1/777 (0%)), Computational resources (CPUs 1/40 (3%), RAM 0.5/8.0 GB (6%)), Volumes (5/777 (1%), Snapshots 11/60 (18%)), and Storage (Primary 53/200 GB (27%), Secondary 52.095818/400 GB (13%)). Below these is a filtering section with dropdown menus for 'Select zones', 'Select groups', 'Select states', and 'Group by', along with a search bar. A red box highlights this filtering section. Below the filtering section, a VM card for 'vm-user-155' is displayed, showing its OS (CoreOS), IP (176.120.29.115), and resource usage (CPU: 1x1000 MHz, RAM: 512.00 MB, DISKS: 5.00 GB). A red plus button is visible in the bottom right corner.

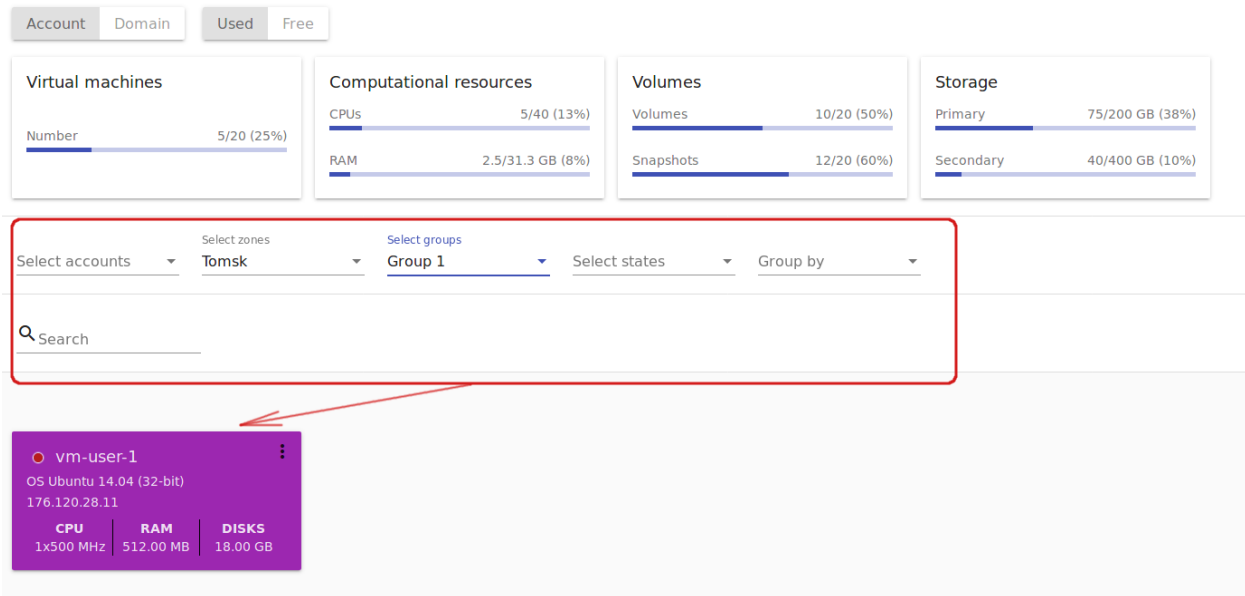
You can filter the VM list by accounts (available for Domain Administrators) and/or zones and/or groups and/or states. In the drop-down lists tick the filtering parameters and see the immediate result.

Besides, VMs can be grouped by zones and/or groups and/or colors and/or accounts. Grouping makes it easier to identify necessary VMs on the list.

Use the search tool to find a virtual machine by its name or a part of the name.

Under the *Virtual Machines* section, you can open a form to create a new virtual machine.


Resource usage ^



2.2.2 Create a Virtual Machine

Creating a new VM in CloudStack-UI is a one-step action. You can select options from one screen without additional steps.

Please, note that a virtual machine is created with a root disk so you do not need to add any volume at the VM creation step. If necessary, you can add a data disk to the VM later.

To create a new VM click the “Create” button  at the bottom-right corner.

The screenshot shows the 'New virtual machine' form with two tabs: General and Advanced. The General tab is active, showing fields for VM display name, Zone (Tomsk), Service offering (custom - 1x1000 MHz, 512 MB), Installation source, OS template (coreos-1745.7.0-5gb), and Disk size (5 GB). A red arrow points from the bottom-right corner of the form to the 'CREATE' button.

The *New virtual machine* form contains two tabs: *General* and *Advanced*.

In the *General* tab the following fields should be filled in:

Note: Required fields are marked with an asterisk (*).

1. **VM display name *** - A name of VM that will be displayed in the machine list and in any other interface place (except VM details). You can define here any VM name you wish.
2. **Zone *** - A zone of VM operation. Select a zone from the drop-down list. The list of available zones is managed by a Root Administrator. More information about zones in CloudStack can be found in the [official documentation](#).
3. **Service offerings *** - Select a set of options and resources for a VM, such as templates for creating virtual machines, disk storage, and other. In the block you can see a default service offering specified in the [configuration file](#)

Click “SELECT” in the Service Offerings block and choose any other option you wish in the modal window.

The list of available service offerings is managed by an Administrator. Service offering availability is determined by zone in the [configuration file](#). The list of service offerings can be of two types: Fixed and Custom.

Fixed service offerings are the offerings with fixed parameters. They can not be changed.

Custom service offerings are offerings with adjustable parameters. You can set the amount of CPU cores, CPU memory and Network rate as you need.

Use the switcher “Fixed/Custom” above the list to select a necessary type of offerings.

If service offering classes are determined in the configuration file (see the [configuration guide](#)), the list of service offerings is displayed as a list grouped by the determined classes. You can filter the list by classes using the filtering tool above the list. Classes provide additional semantics defining the purpose of VM.

You also can use the search tool to find an option in the list by a name or a part of the name.

Fixed Service Offerings

For fixed service offerings the parameters are provided in the table per each option. Four main parameters are provided by default. They are:

- CPU Cores;
- CPU (MHz);
- Memory (MB);
- Network Rate (Mb/s).

Click “SHOW DETAILS” to the right to expand the range of parameters. Scroll the table to right and you will see:

- Disk read rate (Mb/s);
- Disk write rate (Mb/s);
- Disk read rate (IO/s);
- Disk write rate (IO/s).

You can hide the additional parameters by clicking “HIDE DETAILS”.

Choose the option in the list and click “SELECT” below.

The settings will appear for the VM service offerings.

Custom Service Offerings

New virtual machine

General

Advanced

VM display name

VM display name *

0 / 32

Zone

Tomsk

Service offering

SELECT

Service offering: custom - 1x1000 MHz, 512 MB

Installation source

SELECT

OS template: coreos-1745.7.0-5gb

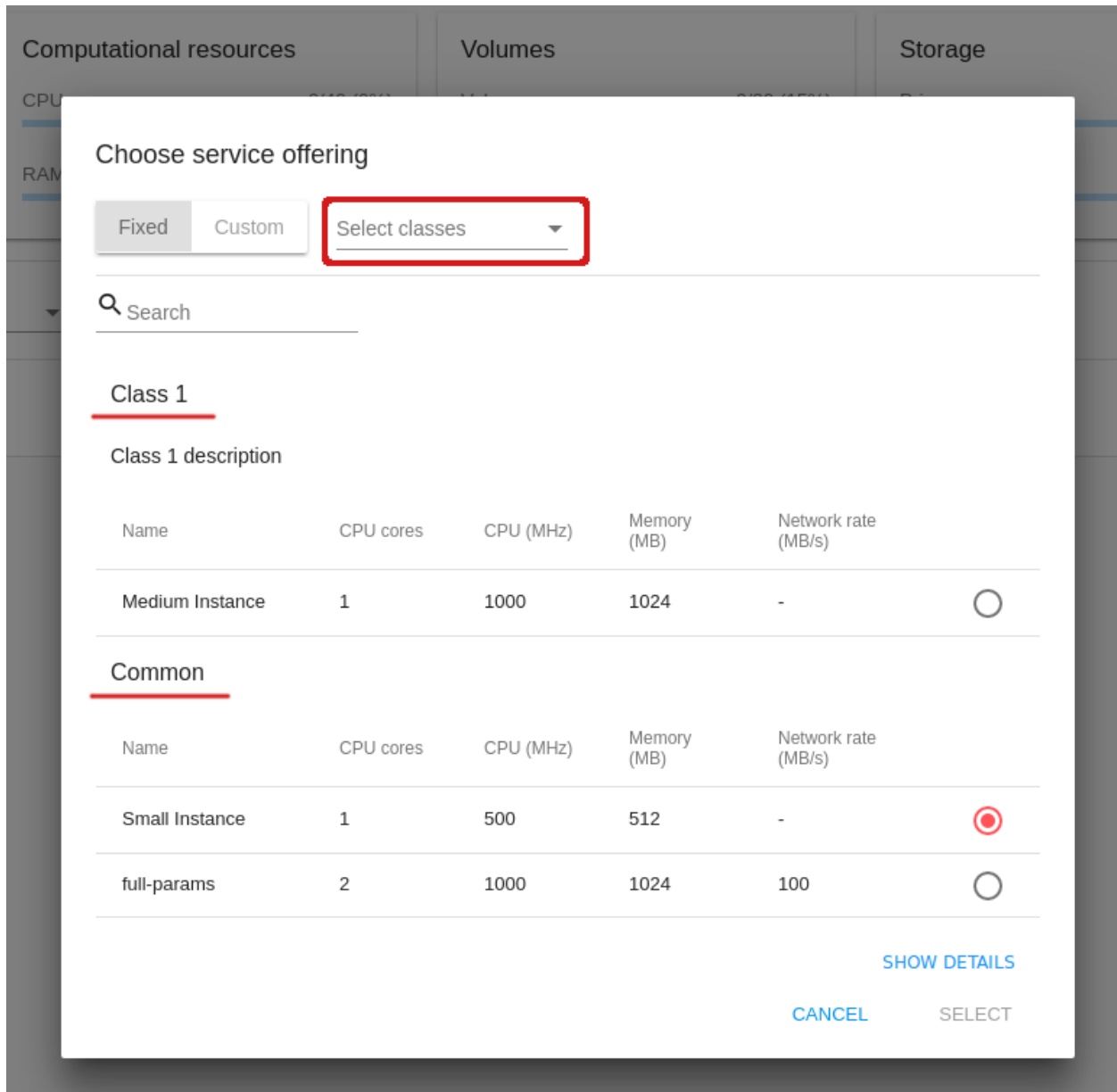
Disk size

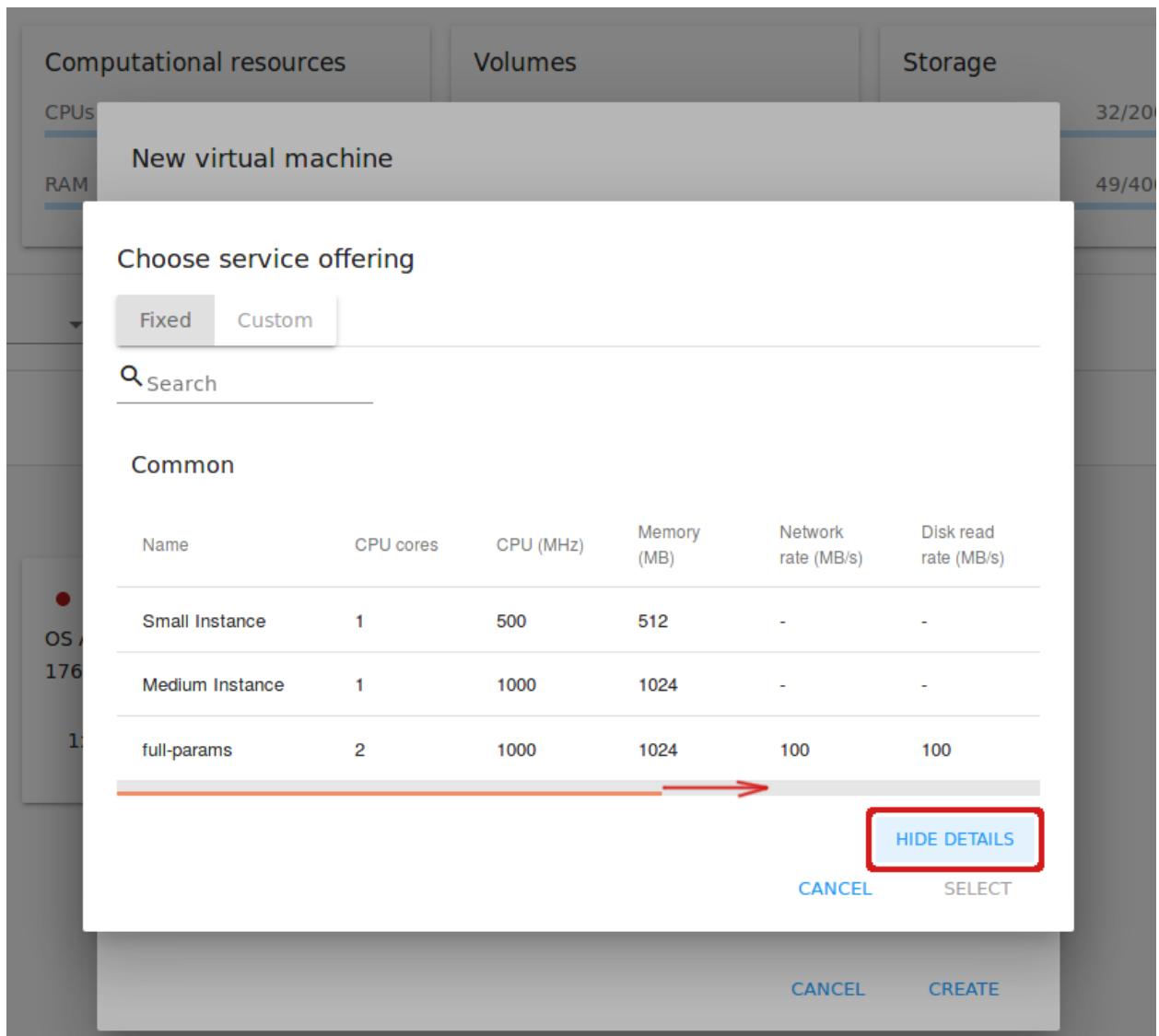
5

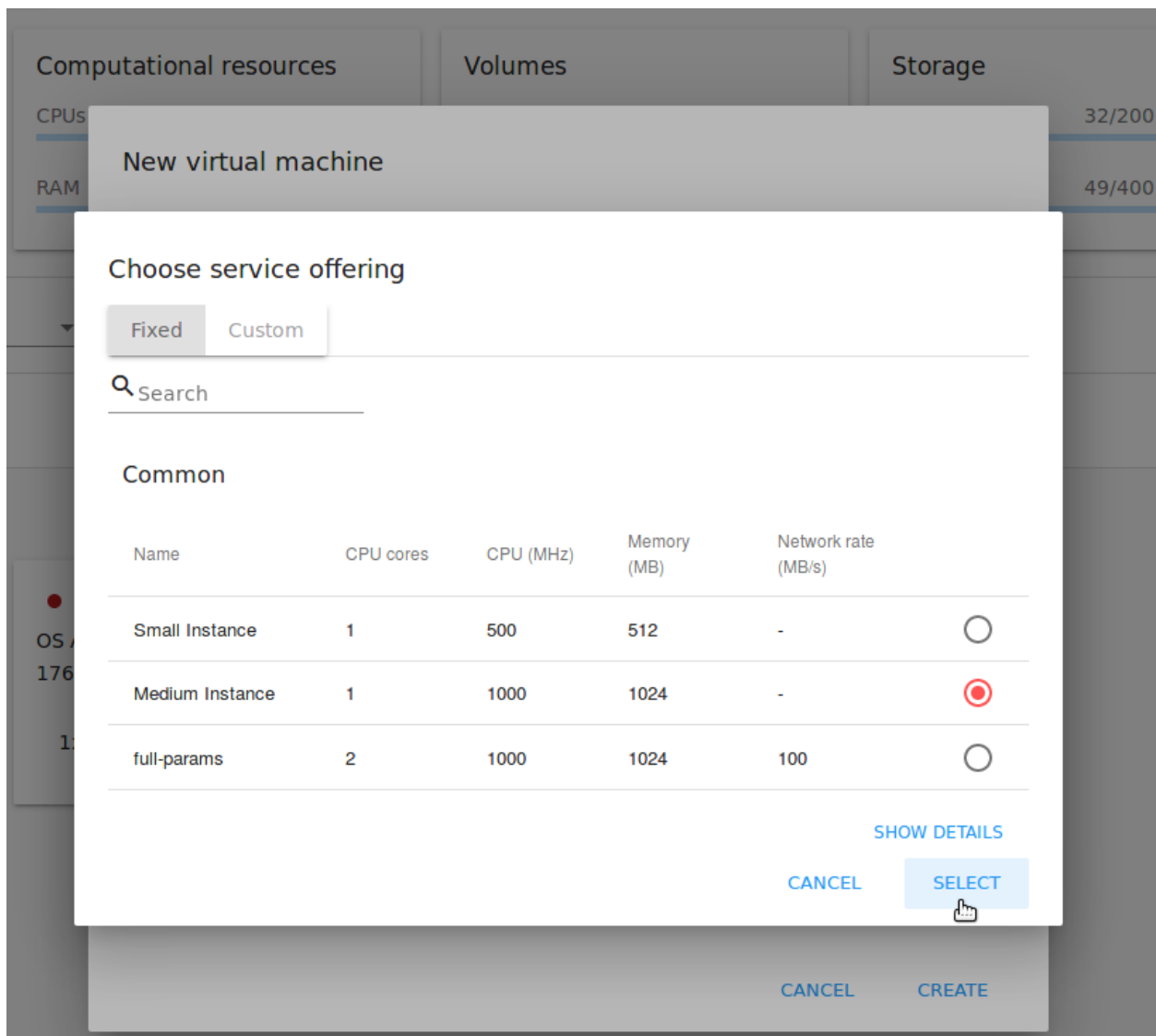
GB

CANCEL

CREATE







For custom service offerings the parameters are also provided in the table per each option. Besides, you can see more parameters by clicking “SHOW DETAILS”.

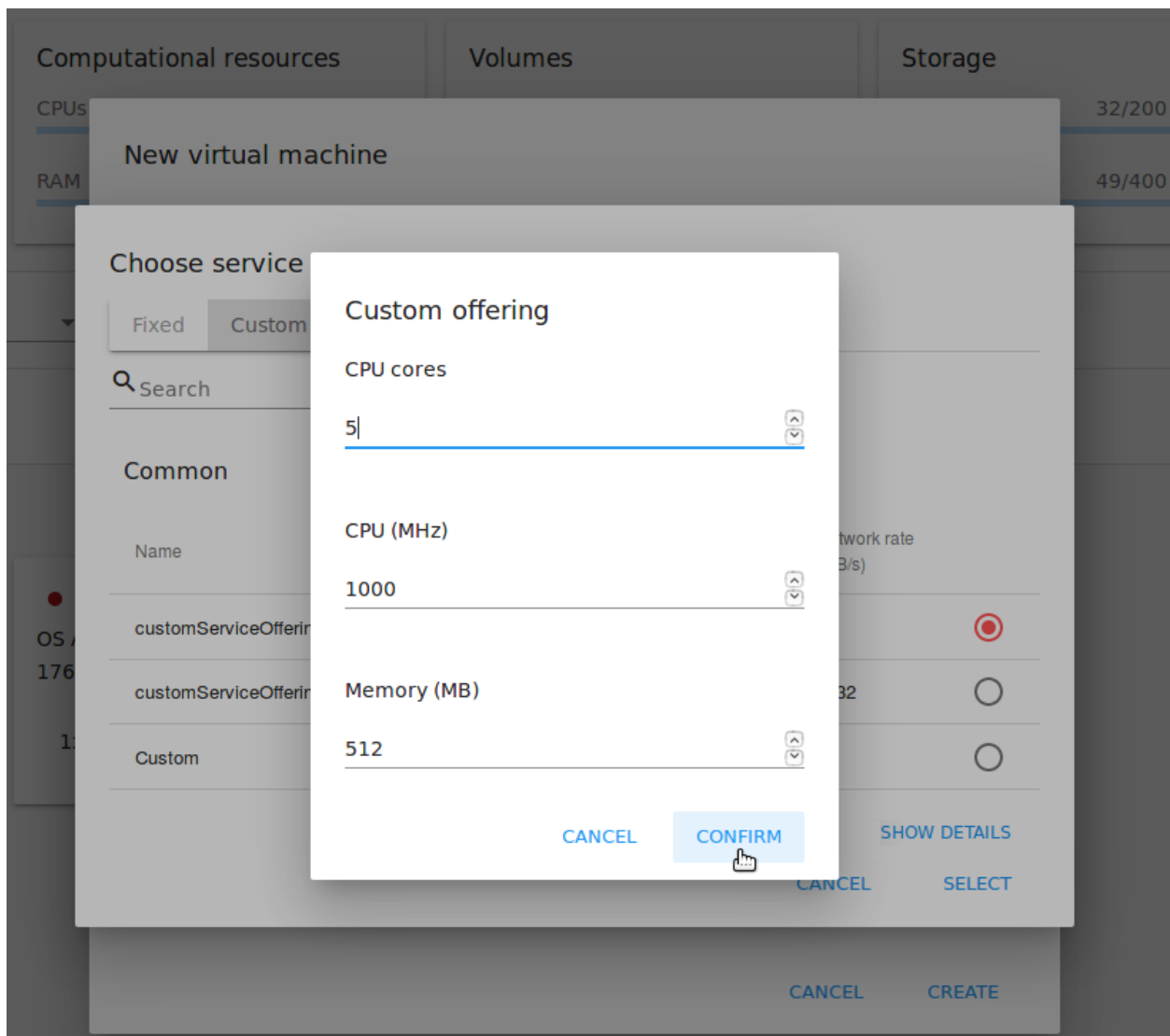
By selecting an option in the list, you open a modal window where you can set values for the following parameters:

- CPU Cores;
- CPU (MHz);
- Memory (MB).

These parameters can be predefined in the [configuration file](#) by an Administrator. The values specified there will be used as default parameters for a custom service offering.

Administrators can set limits for custom service offering parameters in the [configuration file](#). That means you cannot set values larger than the limits specified for custom service offerings.

Besides, the system checks the available account resources. And if you try to enter a value larger than the available amount of resources, the system will automatically change it to the maximum available value.



Click “CONFIRM” to set the custom service offering parameters. The modal window will close and the set values will appear in the list for the selected custom service offerings option. Click “CANCEL” to drop all the settings.

Click “SELECT” below the list to assign a selected service offering to your machine. The custom settings will appear for the VM service offerings. Custom service offering parameters are saved to account tags (see the [list of tags](#)) if they are supported for the account. This will make it easier for you to use saved custom parameters for service offerings next time at VM creation as they will be predefined in the form automatically.

Note: The system checks the amount of available account resources. In case a selected service offering does not fit the amount of available account resources, a warning message will appear saying the offering cannot be selected.

4. **Installation source** * - Select an installation source - a Template or an ISO file - that will be used to create the machine from. In the block you can see the installation source selected by default. Click “Select” to choose an installation source you wish. In a modal window you will see a list of templates/ISOs with the “Ready” status available for the selected zone as well as for user’s account or the whole domain.

The filtering tool allows finding a necessary option by selecting among templates/ISOs by OS families, types and groups, or search the source by a name or a part of its name.

Tick the source in the list and click “SELECT” to implement the selected source.

Click “CANCEL” to drop selected options. No source will be selected then.

The screenshot shows a modal window titled "Installation source". At the top, there are two tabs: "Templates" (selected) and "ISO". To the right of the tabs are two dropdown menus: "Select OS families" with the value "Linux, Windows, ..." and "Select types" with the value "My, Featured, Co...". Below these is a search bar with a magnifying glass icon and the text "Search". The main area contains a list of five items, each with an icon, a name, a description, and a radio button:

Icon	Name	Description	Radio Button
Question mark	coreos-1745.7.0-5gb	SSH key-based authentication only	<input checked="" type="radio"/>
Penguin	debian-940-np-10gb	Debian 9.4.0 64bit 10GB	<input type="radio"/>
X	Template 1	egewg	<input type="radio"/>
X	Template 123		<input type="radio"/>
Penguin	ubuntu-1404-np-10gb	NetPoint Ubuntu 14.04 Server Image	<input type="radio"/>

At the bottom right, there are two buttons: "CANCEL" and "SELECT". A hand cursor is pointing at the "SELECT" button.

The Disk size slider below the **Installation source** block allows changing the size of a root-disk of the VM. The default minimum size is determined by the account limits and shown in the number field. Move the slider or enter a number value in the field to set the root-disk size.

New virtual machine

General

Advanced

Name

vm-user-153 11 / 63

Zone

Tomsk ▼

Service offering SELECT


Service offering: custom - 1x1000 MHz, 512 MB

Installation source SELECT

OS template: coreos-1745.7.0-5gb

Disk size 5 GB

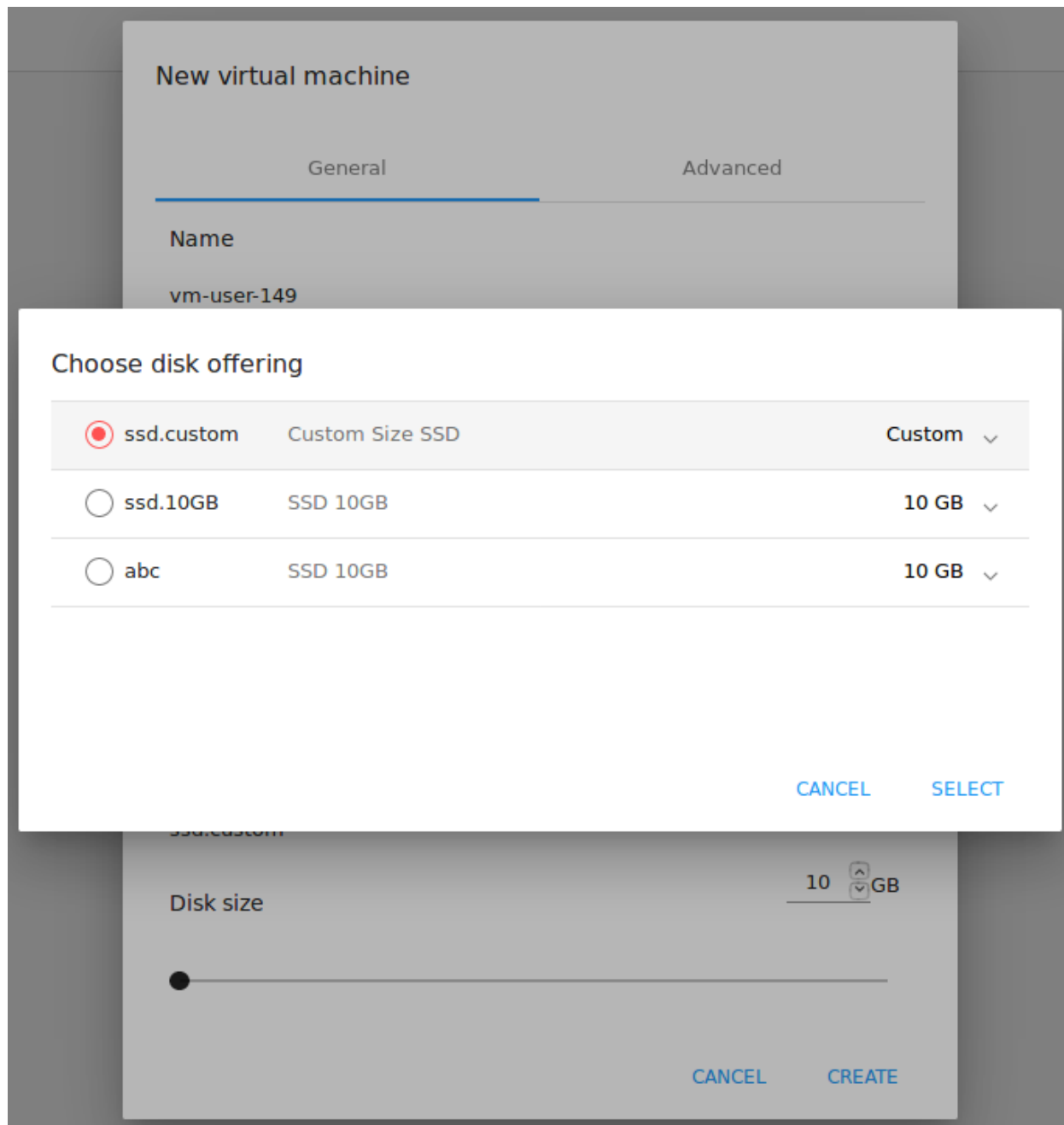
19



CANCEL

CREATE

5. **Disk offering** - Available if ISO is selected as a source. Here you can see a disk offering preselected for the machine. To choose another disk offering open a modal window by clicking “SELECT” in the disk offering section and choose a disk offering in the list of available disk offerings. The list of available options is managed by an Administrator. Disk offering availability is determined by the zone defined in the [configuration file](#).



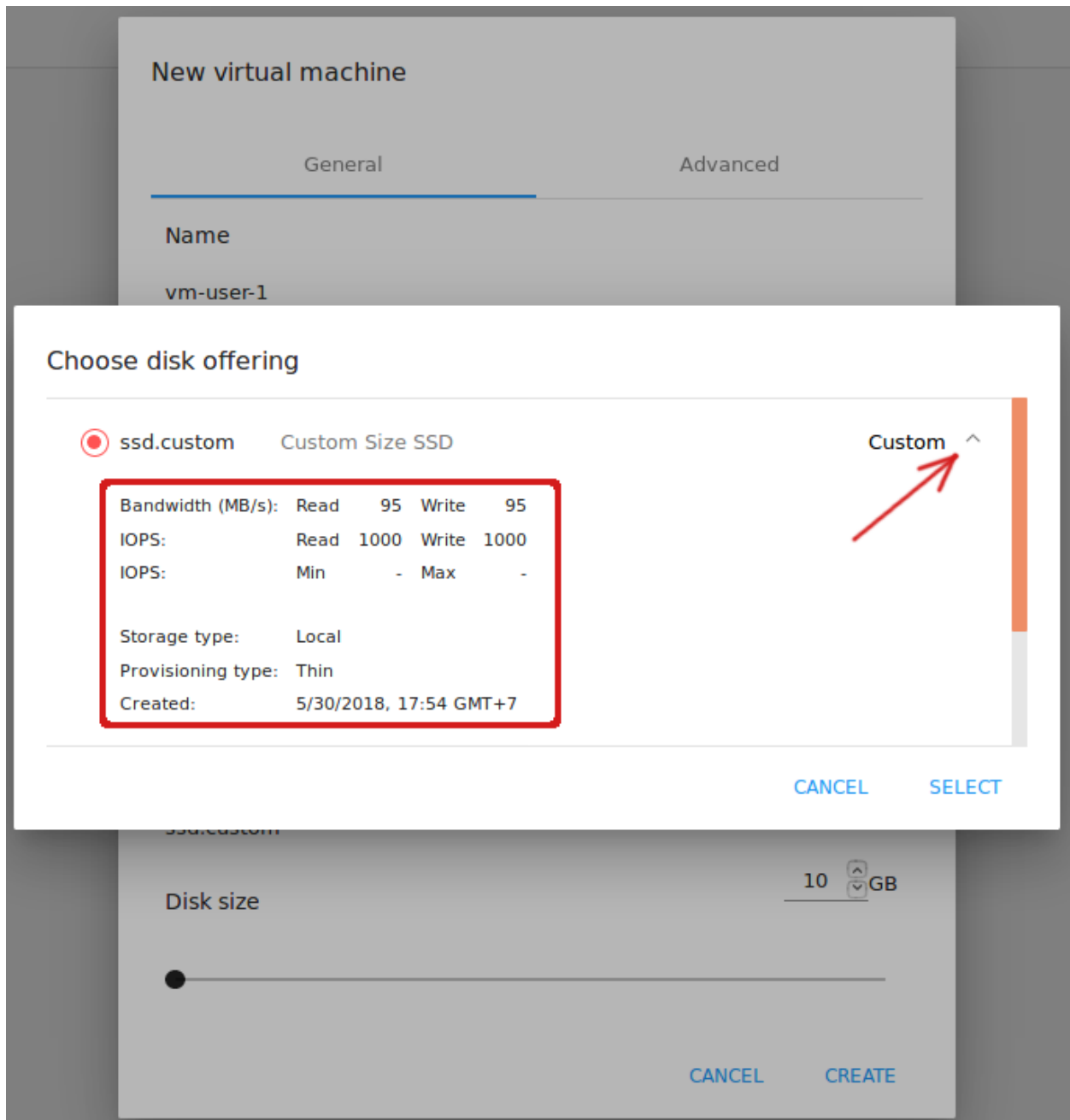
For each disk offering you can expand detailed information by clicking the arrow icon or the whole line in the list. In the appeared section you will see a range of parameters. The following parameters are shown by default:

- Bandwidth (MB/s): Read/Write rates;
- IOPS: Read/Write rates and Min/Max values;
- Storage type;

- Provisioning type;
- Creation date.

Use the scrolling tool to view them all.

More parameters can be added via the [configuration file](#) by an Administrator. Select a disk offering in the list and click “SELECT”.



If the selected disk offering has a custom disk size (it is set by Administrator), you can change the disk size. Move the slider up to the volume size you wish.

Note: If you do not have enough account resources, you will not be able to select the disk that does not fit the available

New virtual machine

General

Advanced

Name

vm-user-1 9 / 63

Zone

Tomsk ▼

Service offering SELECT

Service offering: custom - 1x1000 MHz, 512 MB

Installation source SELECT

OS template: ArchLinux 2018.06.01 64bit

Disk offering SELECT

ssd.custom

Disk size 23 GB

30

23 GB

30

CANCEL CREATE

amount of resources - an error will display.

Find more about disk offerings in the [official documentation](#).

In the *Advanced* tab you will find the following fields:

1. **VM host name** - This is a hostname for the machine. It will be shown only in the Virtual Machine tab of the VM details sidebar. The field is optional. You can enter any name you wish but it should start with a Latin letter, contain figures, Latin letters and '-' (up to 63 symbols) and be unique within the zone. If the field is left empty, the system auto-generates a name in the following form: `vm-<UID>`.
2. **Group** - Select a group from the drop-down list. Or create a new group by typing its name right in the field. If no group is assigned, a *Default group* will be displayed for this machine.
3. **Affinity group** - Select an affinity group in the list or create a new group filling in the form. By clicking "SELECT" in the block you open a form with the list of existing groups and a creation block above the list.

Create an Affinity group. To create a new affinity group you should fill in the form at the top of the dialog box:

- Name * - Enter a name for the group. The name should contain letters, figures, start with a letter and should not contain spaces. Maximum length is 63 symbols.
- Type * - Select type of the group - "anti-affinity" or "affinity".
- Description - Provide a short description. Maximum length is 63 symbols.

Click "+" to add the new group with the specified settings to the list.

Select a group. Click on a group in the list and press "SELECT".

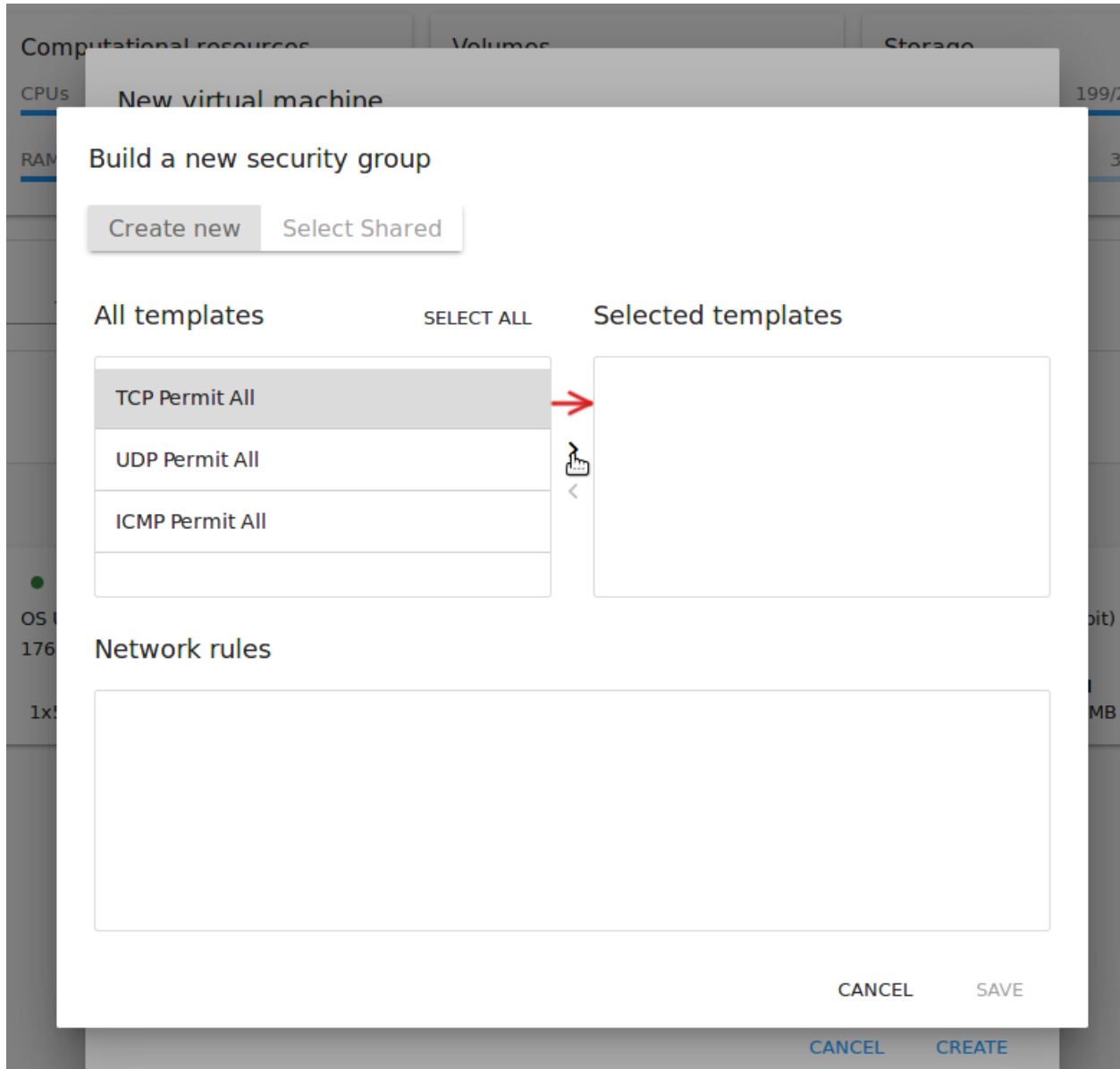
What an affinity group is you can read in the [official documentation](#).

4. **Firewall rules** - Select a security group for the machine. Click "EDIT" to specify a security group for the VM. A default security group, defined in [the configuration file](#), is shown in this field. To change it click "EDIT". In the appeared window choose between "Create new" or "Select Shared" options.

Create a new security group

A new security group can be created on the base of templates. This security group will be created as a *private* group used for this VM only.

When creating a new security group, you can see the templates in the “All templates” section of the modal window. To form your custom security group, select a template in the “All templates” list at the left and move it to the “Selected templates” list at the right by clicking the arrow icon:



Click “SELECT ALL” to move all templates from left to right at once.

Click “RESET” to drop all selected templates.

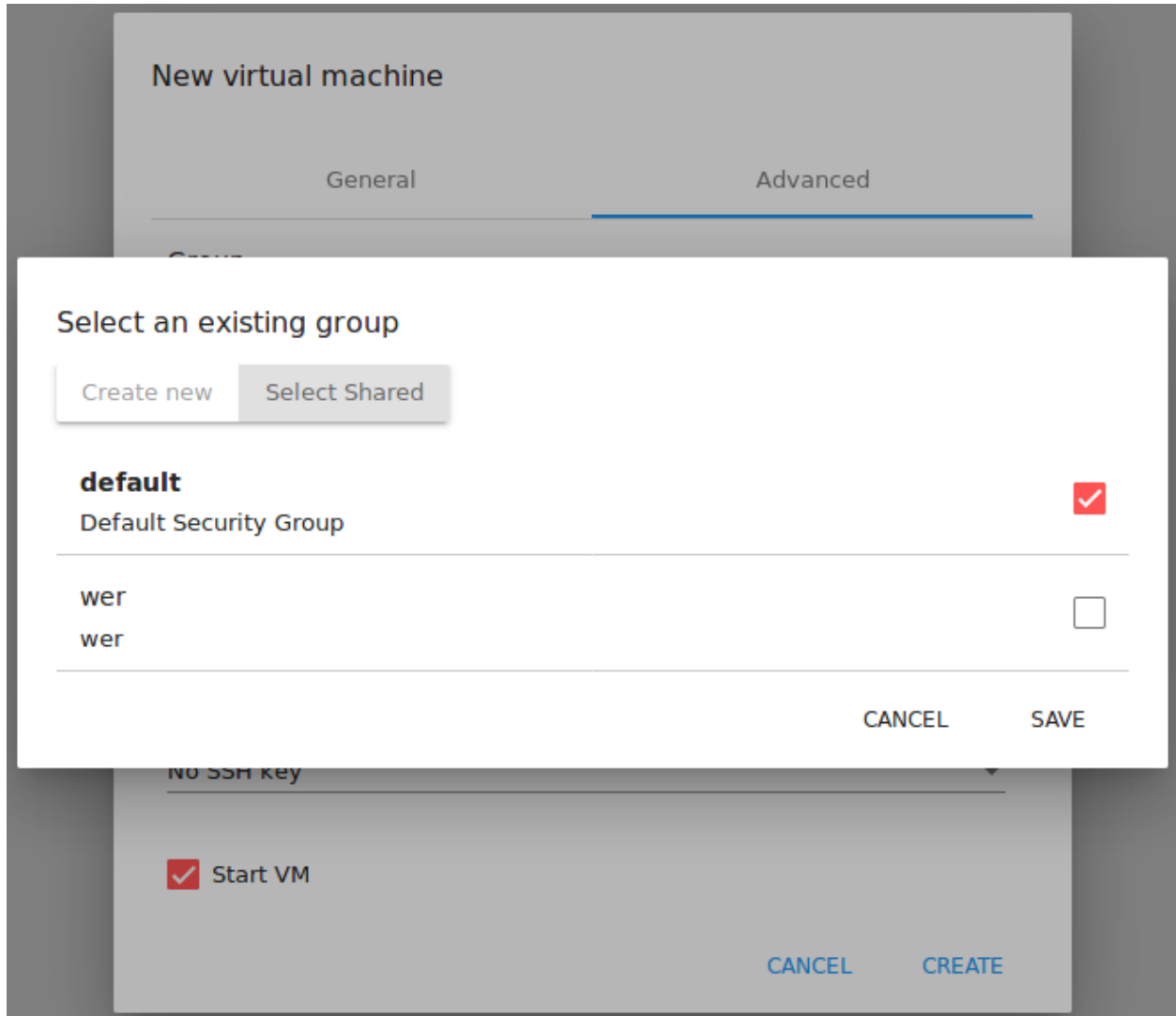
In the list below you will see the rules corresponding to the selected templates. All of them are checked as selected. Uncheck those you do not wish to add to your VM as firewall rules.

Click “SAVE” to apply the selected rules to your virtual machine.

Click “CANCEL” to drop the selected options. No rules will be assigned to the virtual machine. You will return to the “Create new virtual machine” window.

Select Shared security group

If you would like to select an existing group of firewall rules, you can click the “Select Shared” option and tick those groups in the list that you want to assign to your VM. The security groups in the *Shared* list are used by other VMs in the domain. That means you won’t be able to uncheck some rules in the group that you do not want to include into the list (like at creating VM from a template). You can assign only the whole shared security group to your VM.



You can edit a shared security group after the VM is created. In the *Network* tab of the VM details sidebar the assigned shared security group(s) can be viewed and edited. Please, find more information on security group editing in the [Network Tab](#) section.

Click “Cancel” to drop the selected options. No rules will be assigned to the virtual machine.

5. **SSH keypair** - Select an SSH keypair. The list of keys contains the SSH keys available for the account under which the VM is being created. Find more information on SSH keys in the [SSH Keys](#) section.
6. **Start VM** - Tick the box to start the VM right after its deployment. If this option is activated, the VM acquires an IP and a password (if required by the template). If it is not, the machine IP is not available till VM is started, no password is assigned to it.

Once all fields are filled in, click “Create”.

For some templates/ISOs used at VM creation you are offered to accept a “Template/ISO Terms and Conditions Agreement”. An administrator is able to specify an agreement for a template or ISO. An agreement may determine, for example, software licensing terms or restrictions on the liability of the software template vendor. A user must confirm it to continue VM installation from a chosen source.

If you are creating a virtual machine on the base of a template/ISO that requires an agreement, read the terms in the appeared window and click “I AGREE” to continue.

The screenshot shows the CloudStack UI interface. On the left, there's a sidebar with 'Resource usage' and 'Virtual machines' sections. The main area displays a grid of virtual machines with columns for Name, OS, CPU, RAM, and DISKS. A modal dialog box titled 'License' is open in the center, displaying the terms and conditions for the software. The dialog has a 'CANCEL' button and an 'I AGREE' button.

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CANCEL I AGREE

Click “CANCEL” to close the terms and move back to the creation form. Change the installation source.

After clicking “CREATE”, a dialog window will appear where you can monitor the VM creation process: security group creation, virtual machine deployment, template tags copying, etc. These procedures are fulfilled one by one. A procedure in progress is marked with a spinner in the message. In case of an error occurring at any VM creation step, a user can understand at what step it has happened.

Once the VM creation process finishes, the success message will inform you of that.

The message will show the list of all creation steps and the virtual machine information:

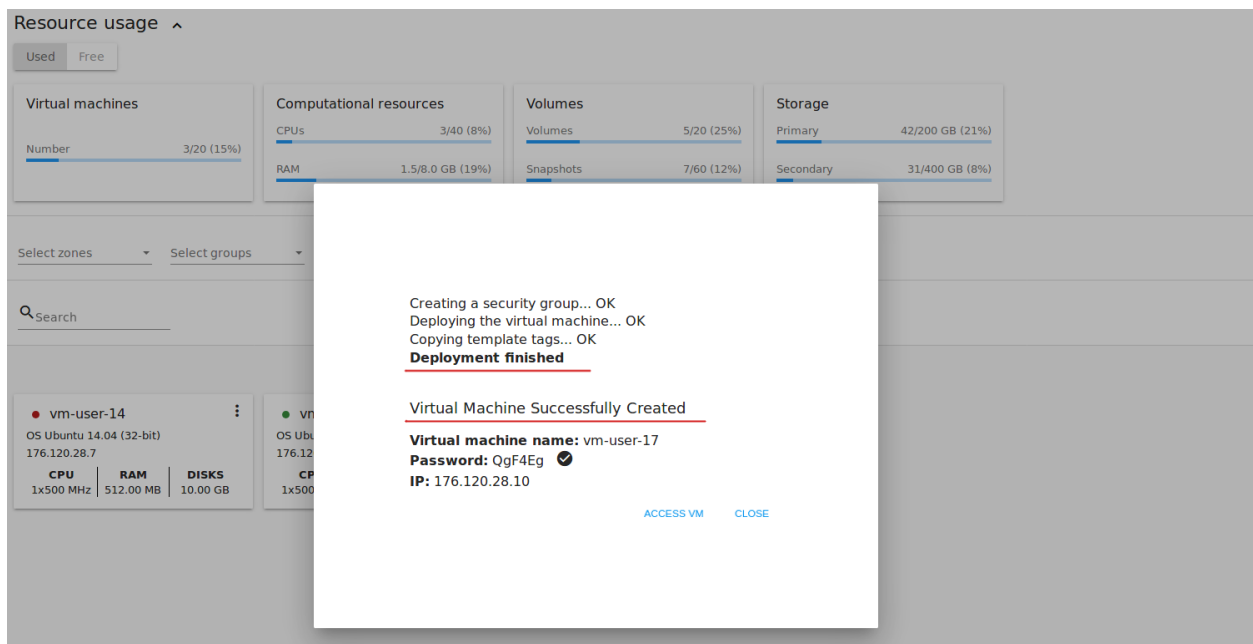
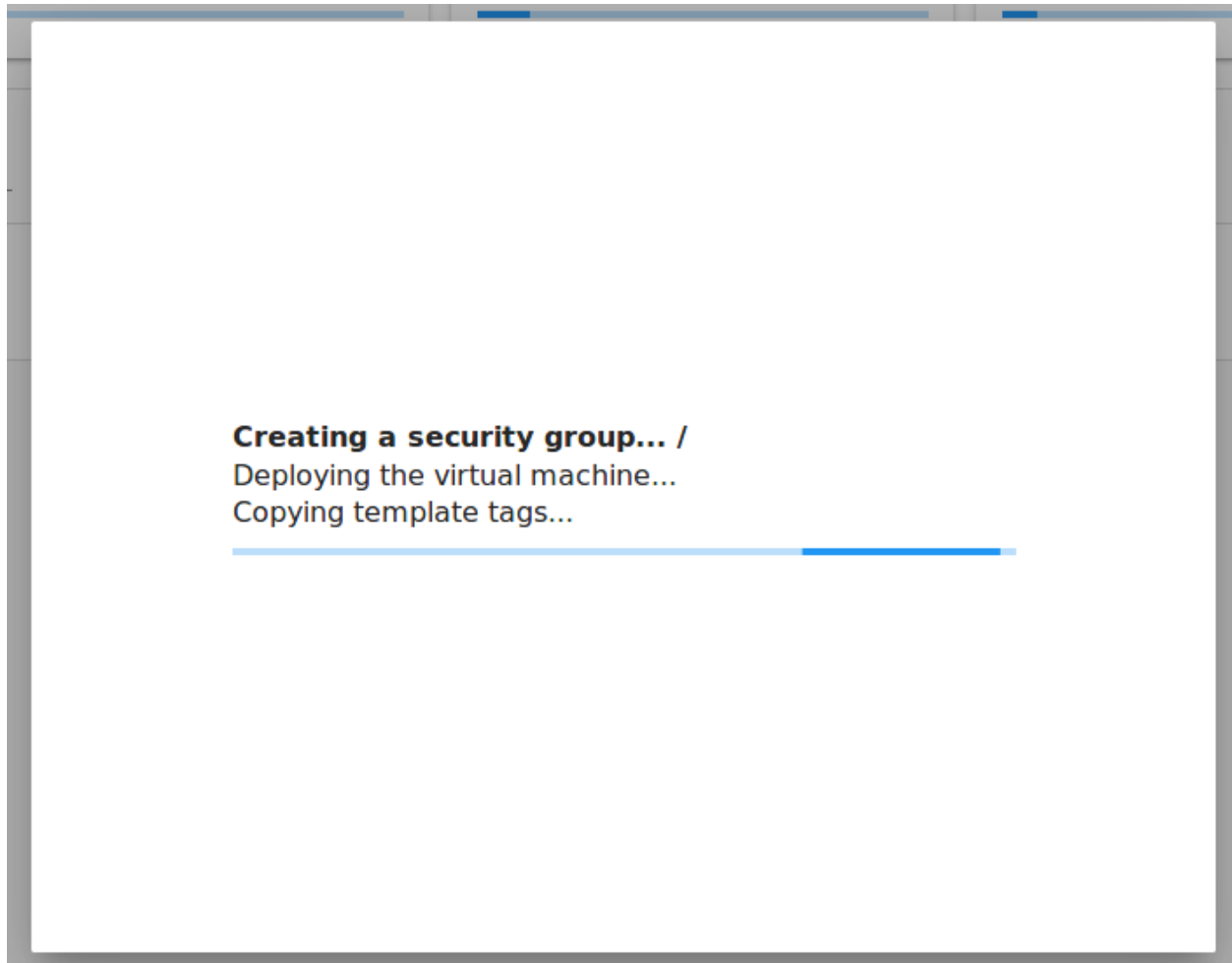
- VM name and IP (if it is available),
- VM Password - This field appears after the VM creation if a password is enabled for the template used for creating this machine. A password is autogenerated. Click “SAVE” next to it in the dialog window if you want to save it for this VM. The password will be saved to the VM tags. You can see the saved password later by clicking “Access VM” in the Actions box for this machine.

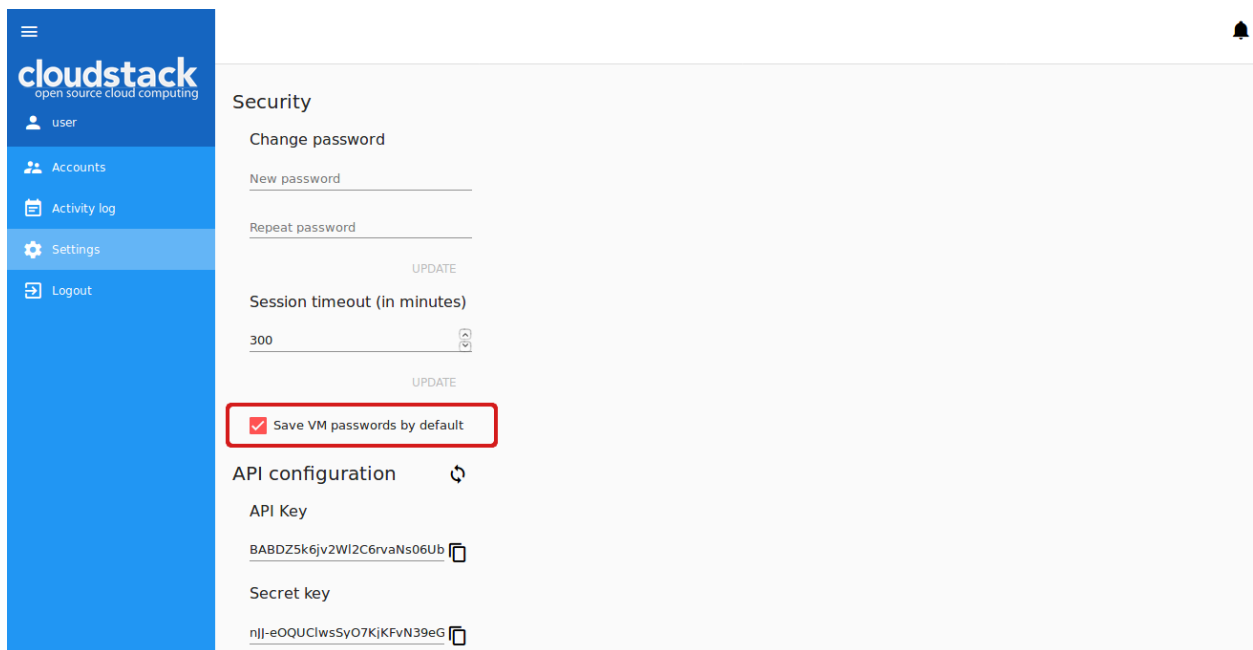
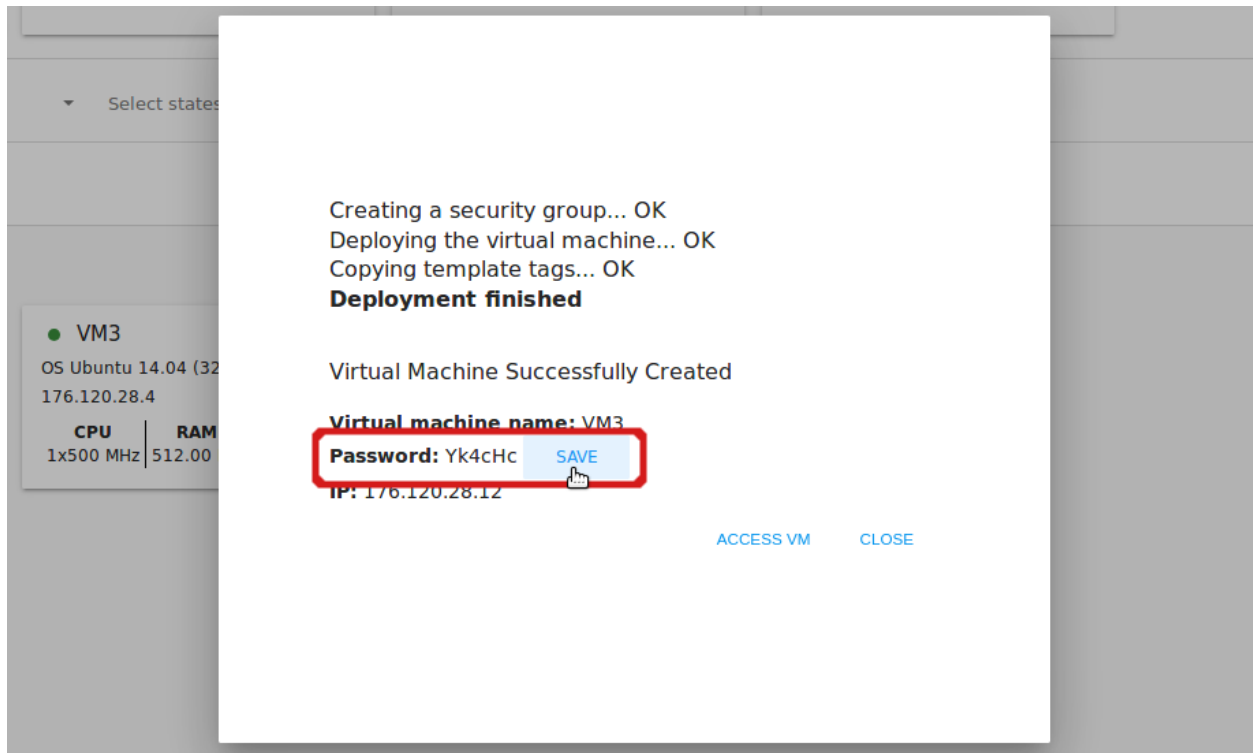
The system will ask you if you wish to save passwords to VM tags by default for the virtual machines created in the future. Click “Yes” and the “Save VM password by default” option will be activated in the account settings:

It means the password will be saved to tags automatically for all created virtual machines.

From this window, you can access the VM opening VNC console.

Close the dialog window and make sure the newly created VM is in the list of virtual machines.





Click “CANCEL” to drop the VM creation.

Possible Issues When Creating a Virtual Machine

You can face the following issues when creating a virtual machine:

- Lack of resources.

An important thing in CloudStack-UI is that the system immediately checks that a user has the amount of resources required to create a virtual machine. It does not allow launching the creation of a VM which will fail for sure because of the resource lack.


If you lack the required amount of resources, the message will appear when clicking “Create Virtual Machine”:
“Insufficient resources. You ran out of Primary storage.”

No VM creation form is available.

- VM host name you specified is not unique.

If the name specified for the virtual machine is not unique within a zone, the dialog window after VM creation will show an error. The VM will not be created. The creation form will be closed. You will have to open the VM creation form and fill it in again. You will have to specify another host name for your VM or leave it empty to let the system autogenerate a correct unique host name in the form of `vm-<UID>`.

2.2.3 VM Action Box

Once a VM instance is created, you can stop, restart, or delete it as needed. These actions are available under the “Actions” button  to the right from each virtual machine in the list.

It allows performing the following actions with the VM:

- **Start VM** - Allows a user to launch a VM,
- **Stop VM** - Allows a user to stop a running VM,
- **Reboot VM** - Allows a user to restart a VM,
- **Reinstall VM** - Allows a user to reinstall a VM,
- **Destroy VM** - Allows a user to delete a VM. After deleting the virtual machine will remain in the system. It will look faded in the list and can be recovered later.

To recover a destroyed VM (which is not expunged) open the Actions list and click “Recover”.

Click “Expunge” to completely destroy the VM. The VM will not be available for recovering anymore.

When deleting a virtual machine, if the machine has data disks attached, the system will ask you in a dialog window whether these disks should be deleted. If data disks have snapshots, you will be offered to delete the snapshots as well by activating a “Delete snapshots” option in the dialog.

Confirm your intention to delete disks (and snapshots) by clicking “Yes”. Click “No” to cancel the disk (and snapshots) deleting.

- **Reset password** - Allows a user to change the password for VM (available for started VMs only in case a VM requires a password). The VM will be rebooted if you reset the password.

After clicking “Yes” the VM will be rebooted and a new password will be autogenerated for it. You will see the new password in the dialog window.

☰

cloudstack

open source cloud computing

user

Virtual machines

Storage

Images

Snapshots

Firewall

SSH keys

Logout

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Resource usage ▾

Select accounts ▾

Select zones ▾

Select groups ▾

Select states ▾

Group by ▾

Search

vm-user-1

OS: Apple Mac OS X 10.6 (32-bit)

176.120.29.138

CPU	RAM	DISKS
1x1000 MHz	1.00 GB	8.00 GB

vm-user-2

OS: Ubuntu 16.04 (64-bit)

176.120.28.175

CPU	RAM	DISKS
1x1000 MHz	1.00 GB	8.00 GB

vm-381

OS: Ubuntu 14.04 (32-bit)

176.120.29.170

CPU	RAM	DISKS
1x1000 MHz	512.00 MB	22.00 GB

vm-develop-151

OS: Apple Mac OS X 10.6 (32-bit)

176.120.29.99

CPU	RAM	DISKS
1x1000 MHz	512.00 MB	9.00 GB

vm-develop-170v

OS: Apple Mac OS X 10.6 (32-bit)

176.120.29.251

CPU	RAM	DISKS
3x2000 MHz	789.00 MB	8.00 GB

vm-user-10

OS: CoreOS

176.120.29.190

CPU	RAM	DISKS
1x1000 MHz	512.00 MB	5.00 GB

vm-resource-12

OS: Debian GNU/Linux 8 (64-bit)

176.120.29.220

CPU	RAM	DISKS
4x1200 MHz	2.00 GB	100.00 GB

vm-user-156

OS: Apple Mac OS X 10.6 (64-bit)

176.120.29.127

CPU	RAM	DISKS
1x1000 MHz	512.00 MB	10.00 GB

vm-user-55

OS: Ubuntu 16.04 (64-bit)

176.120.29.79

CPU	RAM	DISKS
3x1500 MHz	2.93 GB	8.00 GB

Start

Stop

Reboot

Reinstall

Destroy

Reset password

Access VM

+

Search

VM1

OS Ubuntu 14.04 (32-bit)

176.120.28.7

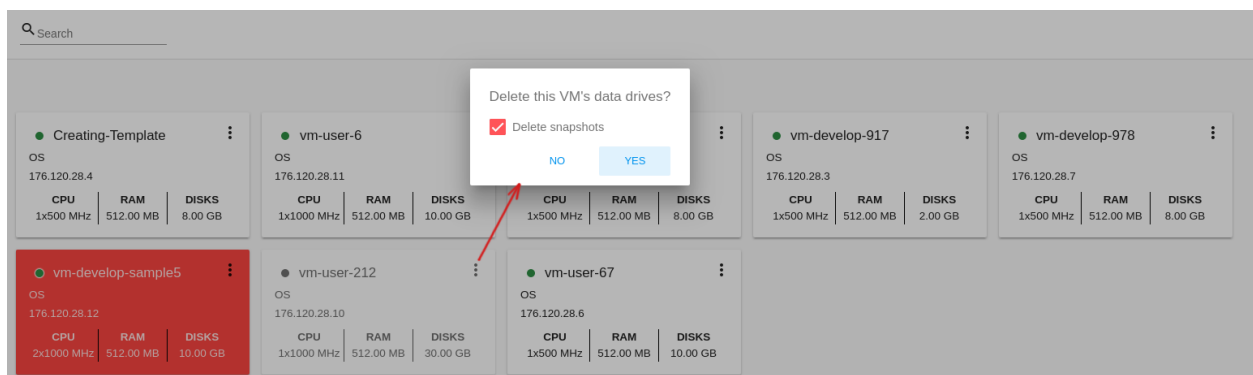
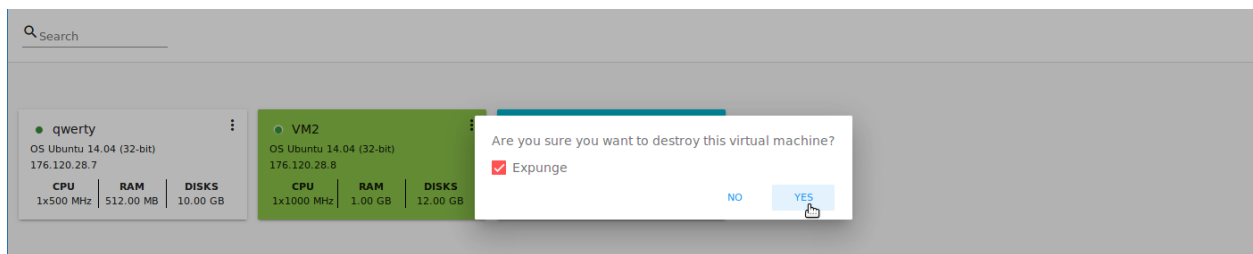
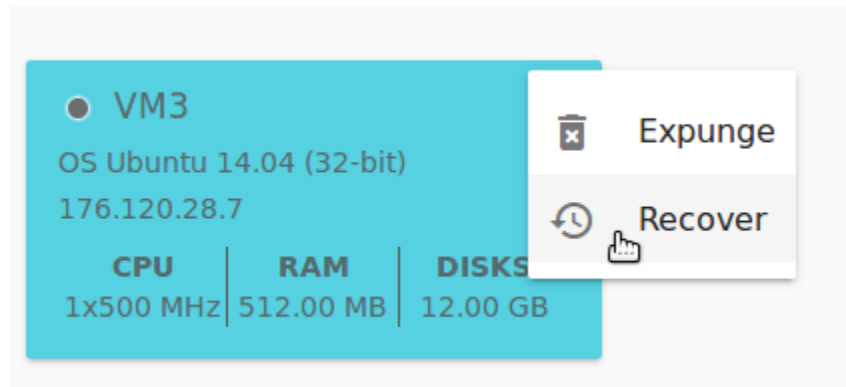
CPU	RAM	DISKS
1x500 MHz	512.00 MB	10.00 GB

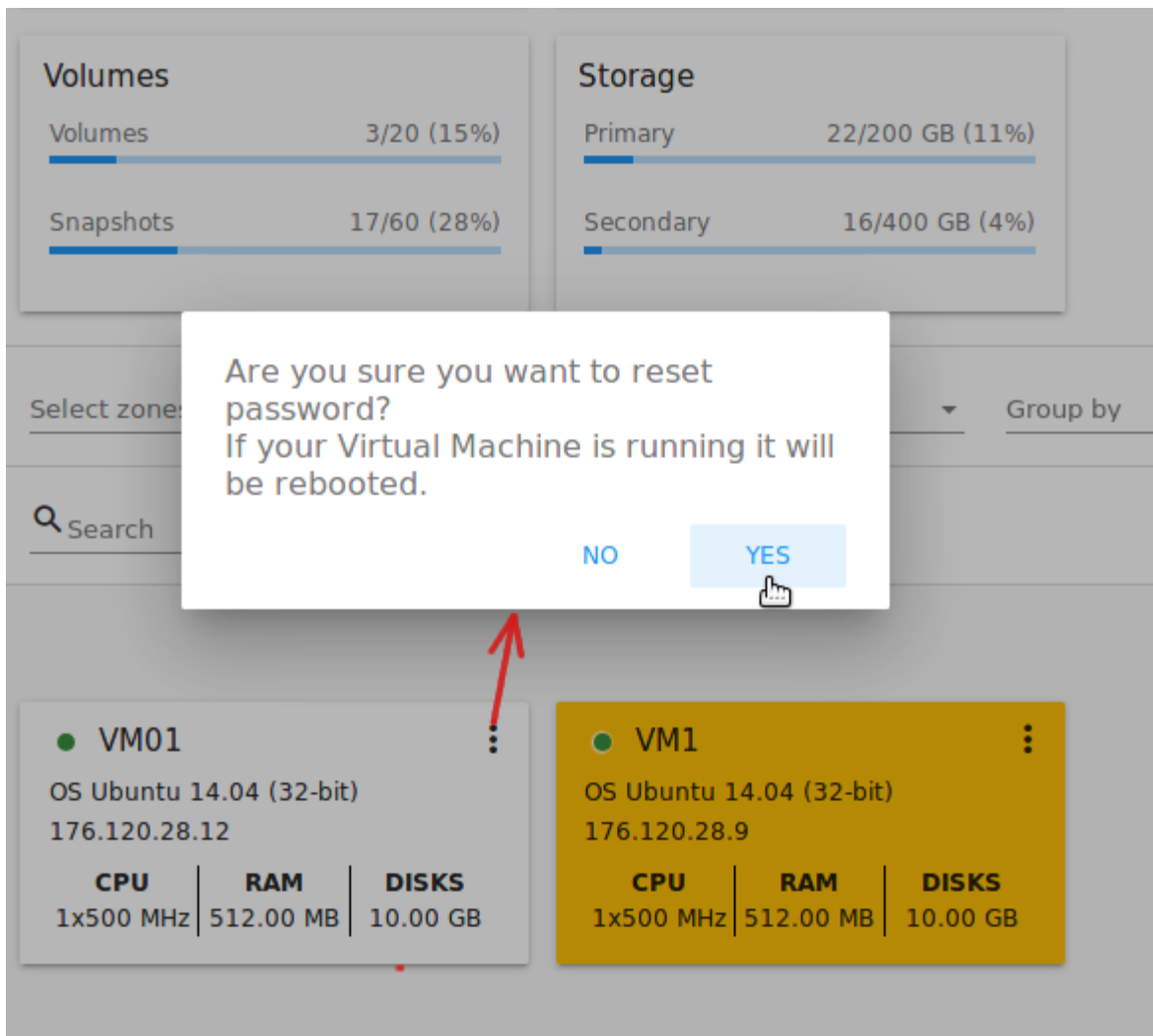
VM3

OS Ubuntu 16.04 (64-bit)

176.120.28.9

CPU	RAM	DISKS
1x500 MHz	512.00 MB	92.00 GB





The screenshot displays the CSUI interface with a modal dialog box in the center. The dialog box contains the text: "Password for VM01 has been reset to **z7MBPJ**". Below this, it shows "Password: z7MBPJ" followed by a "SAVE" button. At the bottom right of the dialog is an "OK" button with a mouse cursor icon pointing at it. The background interface is dimmed and shows two panels: "Volumes" and "Storage".

Volumes

Volumes	3/20 (15%)
Snapshots	17/60 (28%)

Storage

Primary	22/200 GB (11%)
Secondary	16/400 GB (4%)

Select zone: Search

Group by

VM01

OS Ubuntu 14.04 (32-bit)
176.120.28.12

CPU	RAM	DISKS
1x500 MHz	512.00 MB	10.00 GB

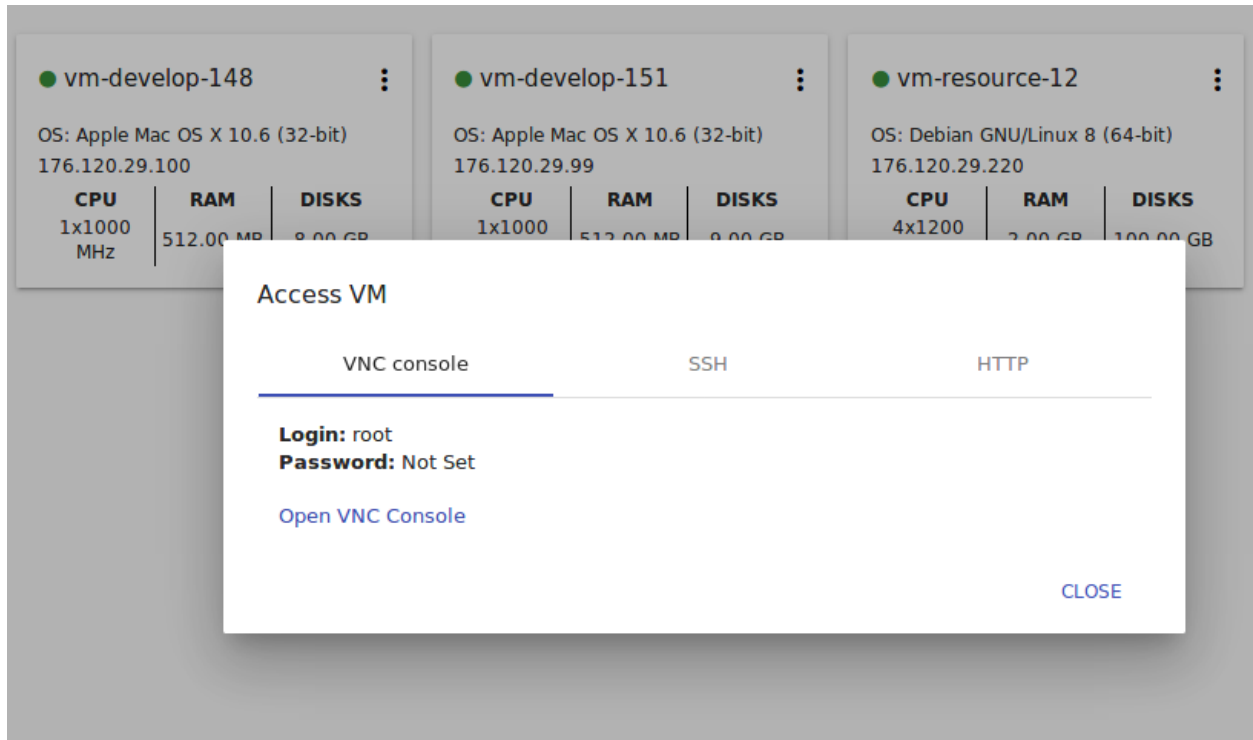
VM1

OS Ubuntu 14.04 (32-bit)
176.120.28.9

CPU	RAM	DISKS
1x500 MHz	512.00 MB	10.00 GB

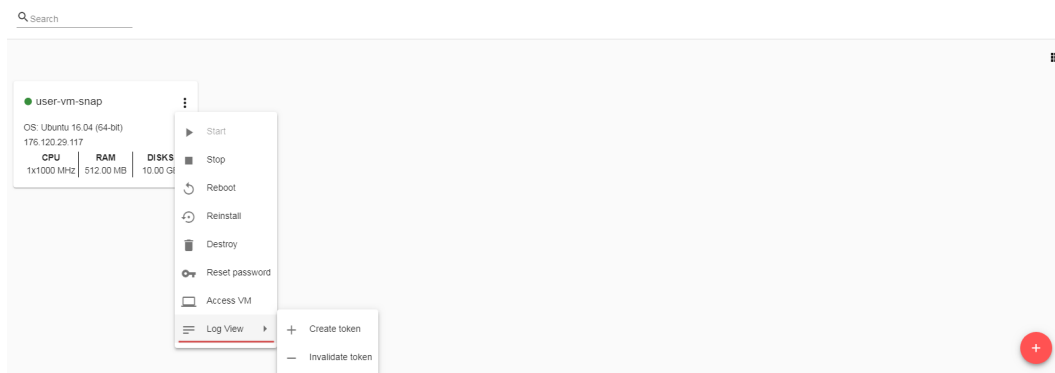
Click “Save” to save the password for this VM. It will activate the “Save VM passwords by default” option in the *Settings* section (see [Save VM passwords by default](#)). In the future the password will be saved automatically right at VM creation. Click “OK” to close the dialog window.

- **Access VM** - Opens an “Access VM” dialog window which allows to view VM name and IP, view and save a password for the VM and access the VM via the VNC console.



In the [Access a Virtual Machine](#) section you can find more information on accessing a VM.

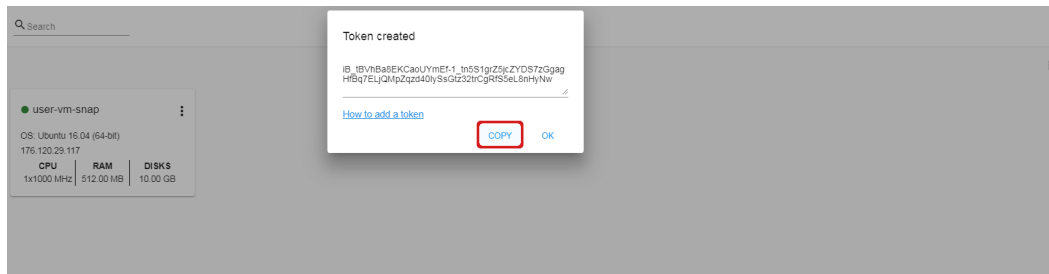
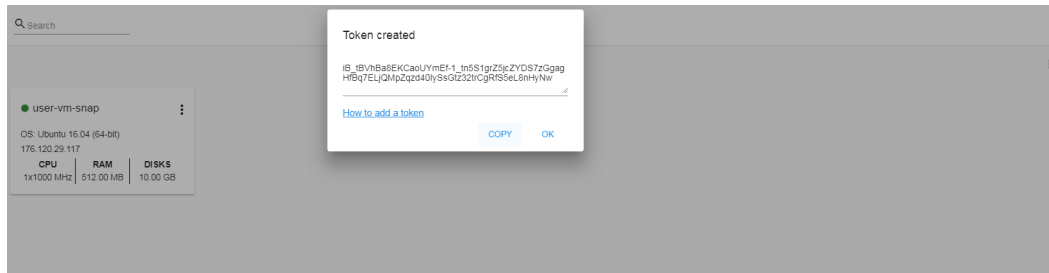
- **Log View** - This option is available if the Log View plugin is activated via the configuration file. It allows creating and managing a secret token required for secure publishing of VM logs (see more details in [the plugin documentation](#)).



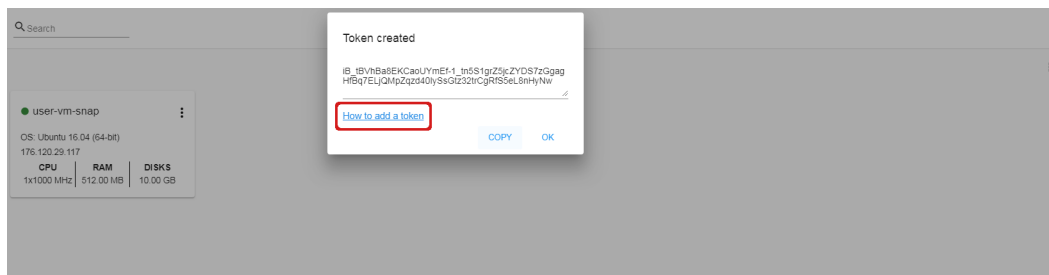
Under the Log View submenu of the Action box a user can select between two actions:

- **Create token** - Allows creating a token. When selected, it asks to confirm the action and opens a modal window with the newly created token:

The created token can be copied by clicking COPY.



To access the detailed information on how to add the token to the Filebeat configuration, please, use the provided link to the plugin documentation:



Click OK to close the window.

- **Invalidate token** - Allows making the token invalid. It is necessary in case of compromising when a token needs to be changed to a new one. In the appeared window, input the token into the text field and click **INVALIDATE**. The token will become invalid.

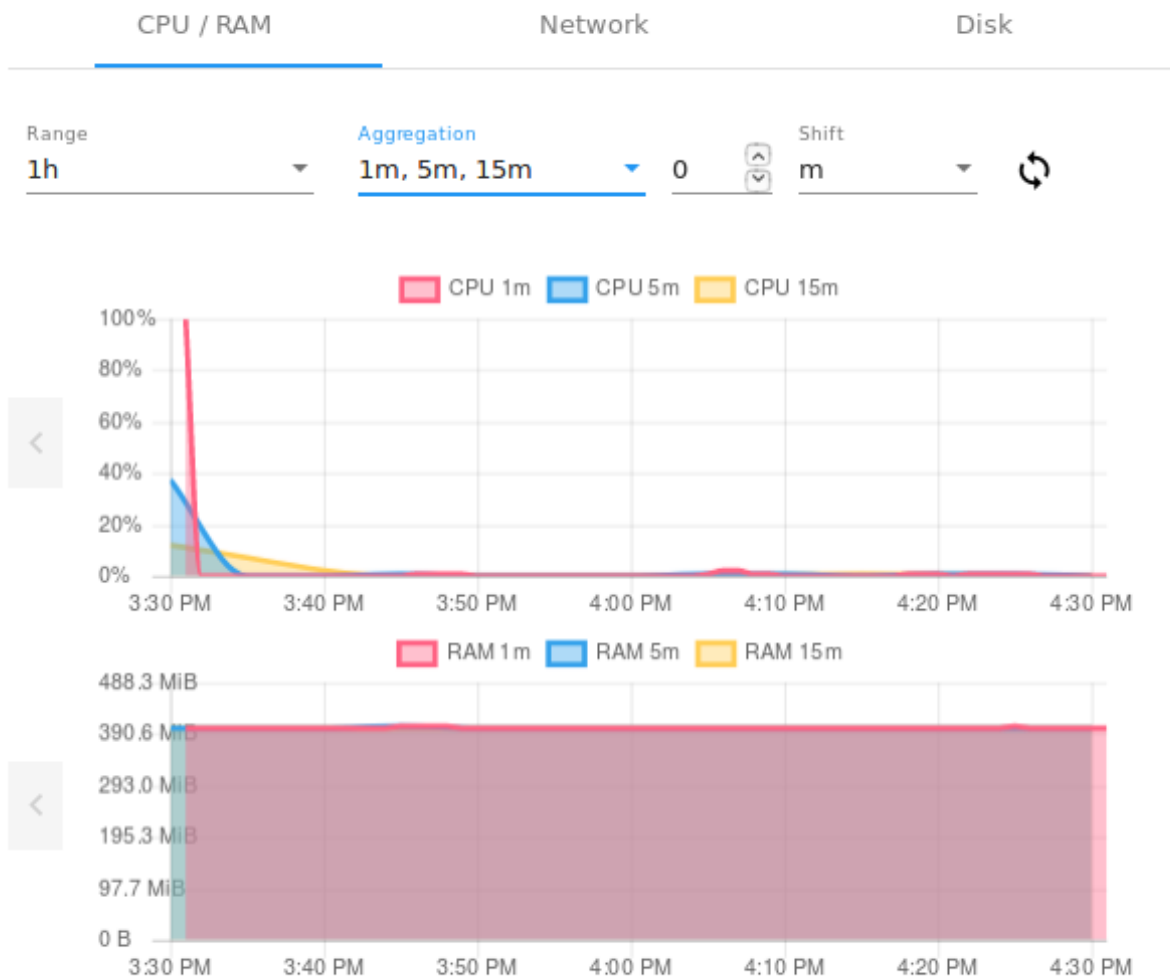
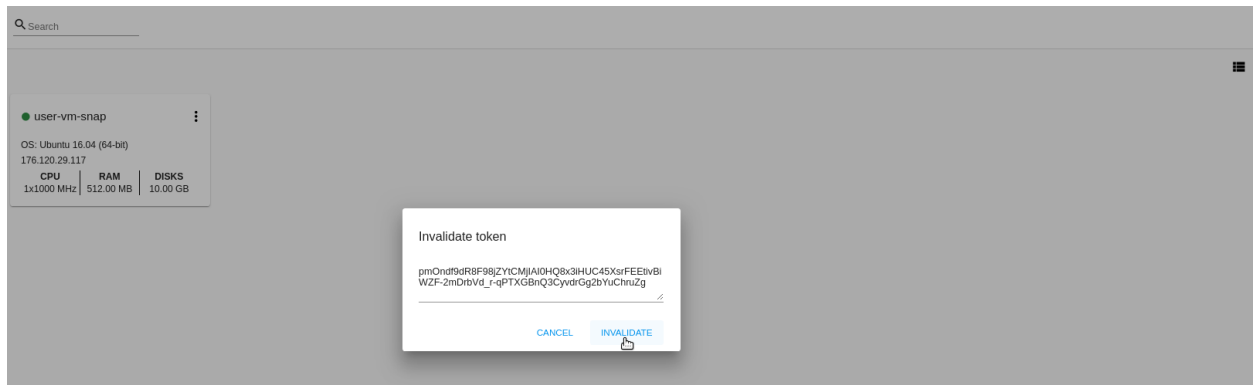
Or you may click **CANCEL** to close the window. The token will remain valid.

- **Pulse** - It is a new feature created in CloudStack-UI to visualize the VM performance statistics. By clicking “Pulse” at the Actions box you will open a modal window with 3 tabs: CPU/RAM, Network, Disk. There you can see the charts of resources statistics for the VM.

You can adjust the graphs by range, data aggregation period, shift interval and other parameters.

This plugin is convenient for dynamic monitoring of VM performance. Find more information about it in the [official documentation](#). Pulse plugin deployment instructions can be found at the [Pulse Plugin](#) page.

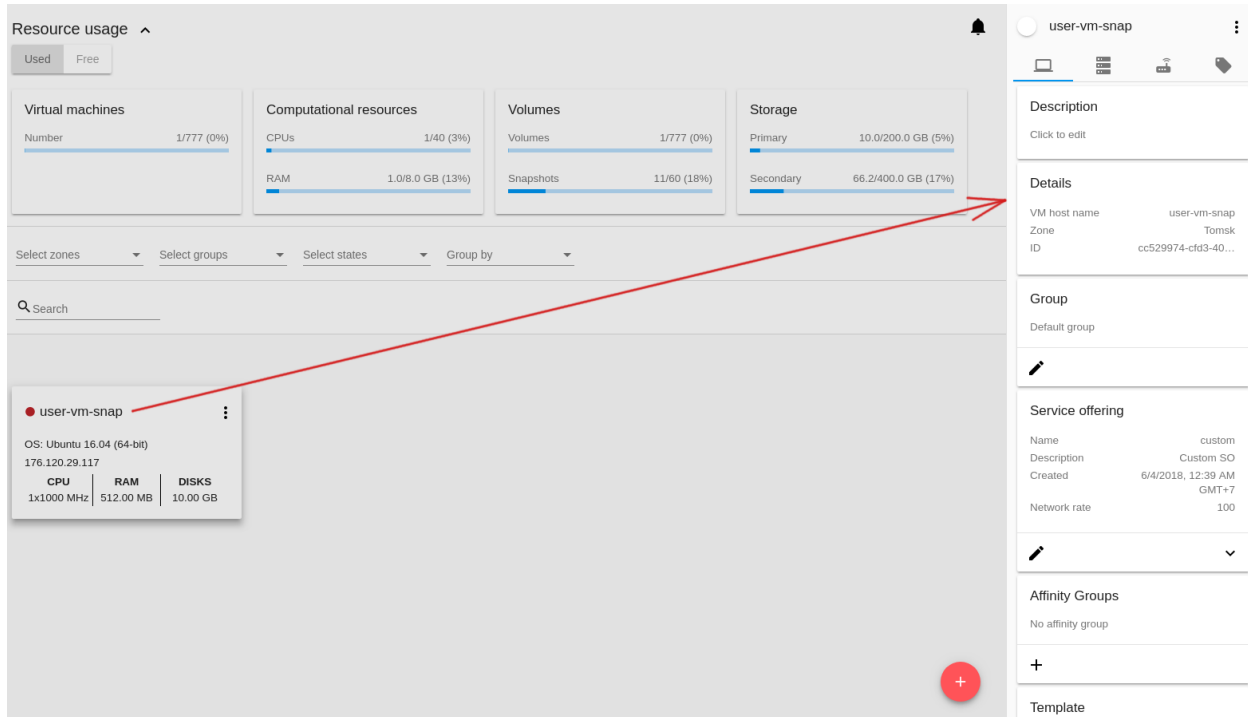
Note: Please, note, when performing one of the actions from the list, other actions in this list are disabled until the action in progress finishes.



2.2.4 VM Details Sidebar


For each virtual machine, you can get the details.

By clicking a VM line or card you can open a sidebar to the right.



Here and in all other sections the sidebar width is adjustable - you can change it by hovering over its edge and dragging to the width you wish.

In the details sidebar you will find the information for the selected virtual machine:


1. VM name.
2. Color-picker  - Allows marking a virtual machine with a color to distinguish it in the list. The range of available colors for VMs is specified in the [configuration file](#).
3. Actions on the VM. See the [VM Action Box](#) section below.


You will see four tabs in the sidebar. Let's describe what information on the virtual machine is presented in each tab.

Virtual Machine Tab

The Virtual Machine tab contains the general setting of the VM. Some settings can be edited here. At the bottom you can see the Statistics section which shows real-time data for the VM performance.

1. Description - A short description of the VM. Click the block to edit it. Enter a few words about the VM. Click "Save" to save the description. It is a custom description for your machine. It is saved to tags with `csui.vm.description` tag.

The description can be edited. Click "Edit"  to change the description.

It also can be edited from the Tags tab. Click Edit icon  next to the `csui.vm.description` tag and change the description text in the appeared form.

Resource usage ^

Used

Free

Virtual machines

Number 1/777 (0%)

Computational resources

CPUs 1/40 (3%)

RAM 1.0/8.0 GB (13%)

Volumes

Volumes 2/777 (0%)

Snapshots 9/60 (15%)

Storage

Primary 25.0/200.0 GB (13%)

Secondary 52.1/400.0 GB (13%)

Select zones

Select groups

Select states

Group by

Search

user-vm-snap

OS: Ubuntu 16.04 (64-bit)

176.120.29.117

CPU

RAM

DISKS

1x1000 M... | 512.00 MB | 10.00 GB

user-vm-snap

Description

Click to edit

Details

VM host name user-vm-snap

Zone Tomsk

Group

No group

Service offering

Name custom

Description Custom SO

Created 6/4/2018, 12:39 AM GMT+7

Network rate 100

Affinity Groups

No affinity group

Template

ubuntu-1804-np-10gb

SSH key

No SSH key

Resource usage ^

Used

Free

Virtual machines

Number 1/777 (0%)

Computational resources

CPUs 1/40 (3%)

RAM 1.0/8.0 GB (13%)

Volumes

Volumes 2/777 (0%)

Snapshots 9/60 (15%)

Storage

Primary 25.0/200.0 GB (13%)

Secondary 52.1/400.0 GB (13%)

Select zones

Select groups

Select states

Group by

Search

user-vm-snap

OS: Ubuntu 16.04 (64-bit)

176.120.29.117

CPU

RAM

DISKS

1x1000 M... | 512.00 MB | 10.00 GB

user-vm-snap

Description

Click to edit

Details

VM host name user-vm-snap

Zone Tomsk

Group

No group

Service offering

Name custom

Description Custom SO

Created 6/4/2018, 12:39 AM GMT+7

Network rate 100

High availability No

Affinity Groups

No affinity group

Template

ubuntu-1804-np-10gb

SSH key

No SSH key

user-vm-snap

Description

Enter text

Edit description here

CANCEL

SAVE

Details

VM host name

user-vm-snap

Zone

Tomsk

ID

cc529974-cfd3-40a8-...

Group

Default group

Resource usage

Used

Free

Virtual machines

Number

3/20 (15%)

Computational resources

CPU

3/40 (8%)

RAM

2.0/8.0 GB (25%)

Volumes

Volumes

3/20 (15%)

Snapshots

14/60 (23%)

Storage

Primary

112/200 GB (56%)

Secondary

11/400 GB (3%)

Select zones

Select groups

Select states

Group by

Search

qwerty

OS Ubuntu 14.04 (32-bit)

176.120.28.7

CPU

1x500 Mhz

RAM

512.00 MB

DISKS

10.00 GB

VM2

OS Ubuntu 14.04 (32-bit)

176.120.28.8

CPU

1x1000 Mhz

RAM

1.00 GB

DISKS

10.00 GB

Edit tag

Key *

csui.vm.description

Value *

19 / 255

Short description for VM2

25 / 255

CANCEL

EDIT

VM2

Search

Show system tags

Common

Key1

Value1

+

csui

csui.vm.agreement-accepted

true

csui.vm.color

#8BC34A


csui.vm.description

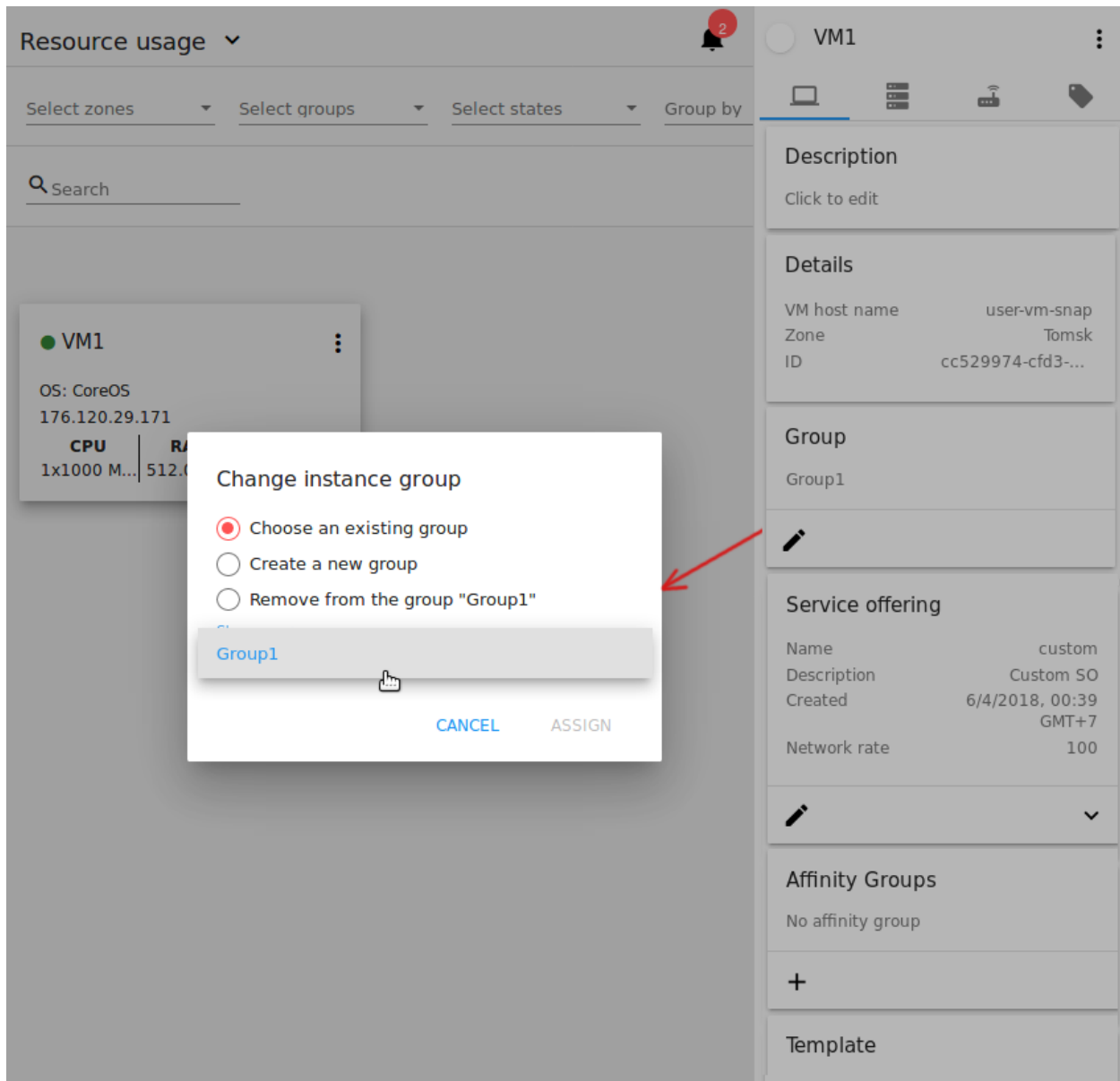
Short description ...

csui.vm.password

K7pCvE

+


2. Details - Displays the VM host name, the zone selected for the VM to be available in, the machine ID.
3. Group - A group the VM is assigned to. Edit this field by clicking the “Edit” button . In the appeared dialog window choose a group from the drop-down list. Click “Assign” to assign the VM to the chosen group.

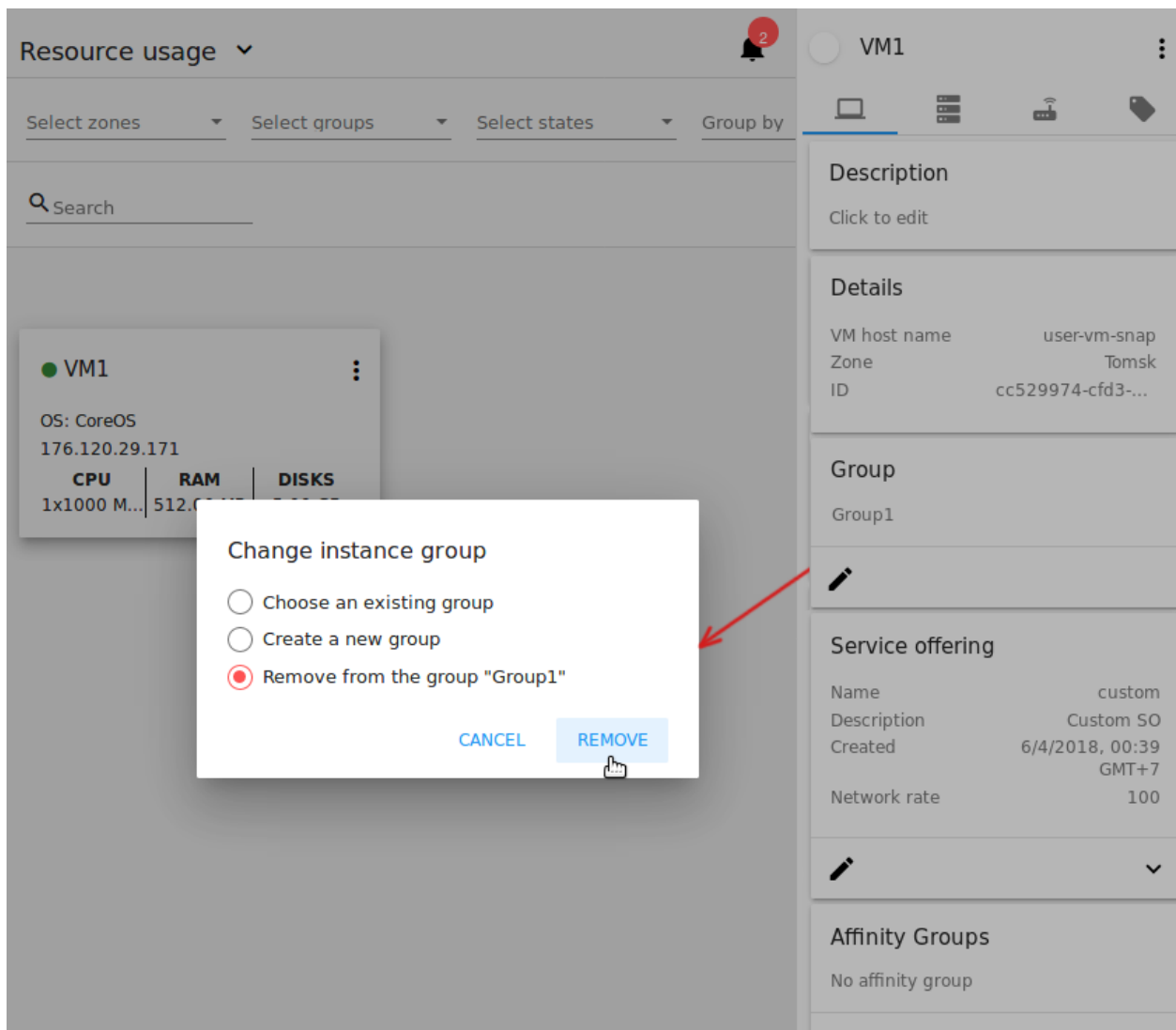
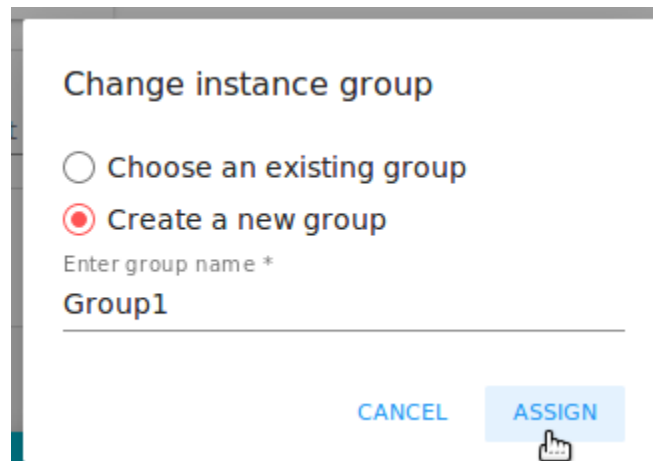


Or you can create a new group right from this window selecting the “Create a new group” option. Click “ASSIGN” to assign the created group to the VM.

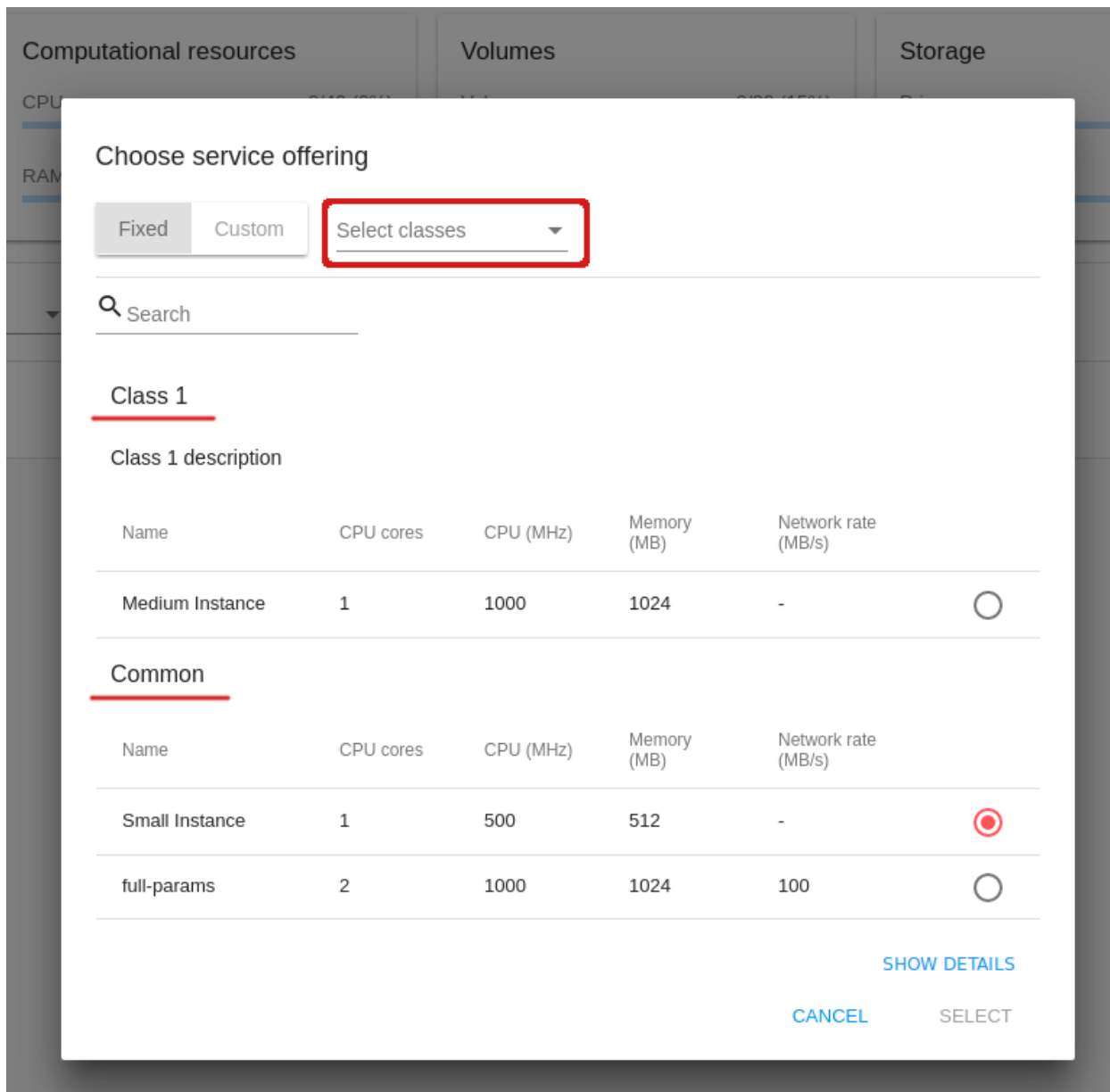
To remove a machine from the assigned group select the “Remove from the group” option and click “REMOVE” to eliminate the VM from the group. A *Default group* will be displayed for this machine.

4. Service offering - The service offerings of the VM. Expand the section to view the whole list of offering parameters.

Edit this field by clicking the “Edit” button . In the appeared window you will see the list of available service offerings.



The list consists of two sections - Fixed and Custom. In each section, offerings can be filtered by classes if classes are determined in the [configuration file](#).



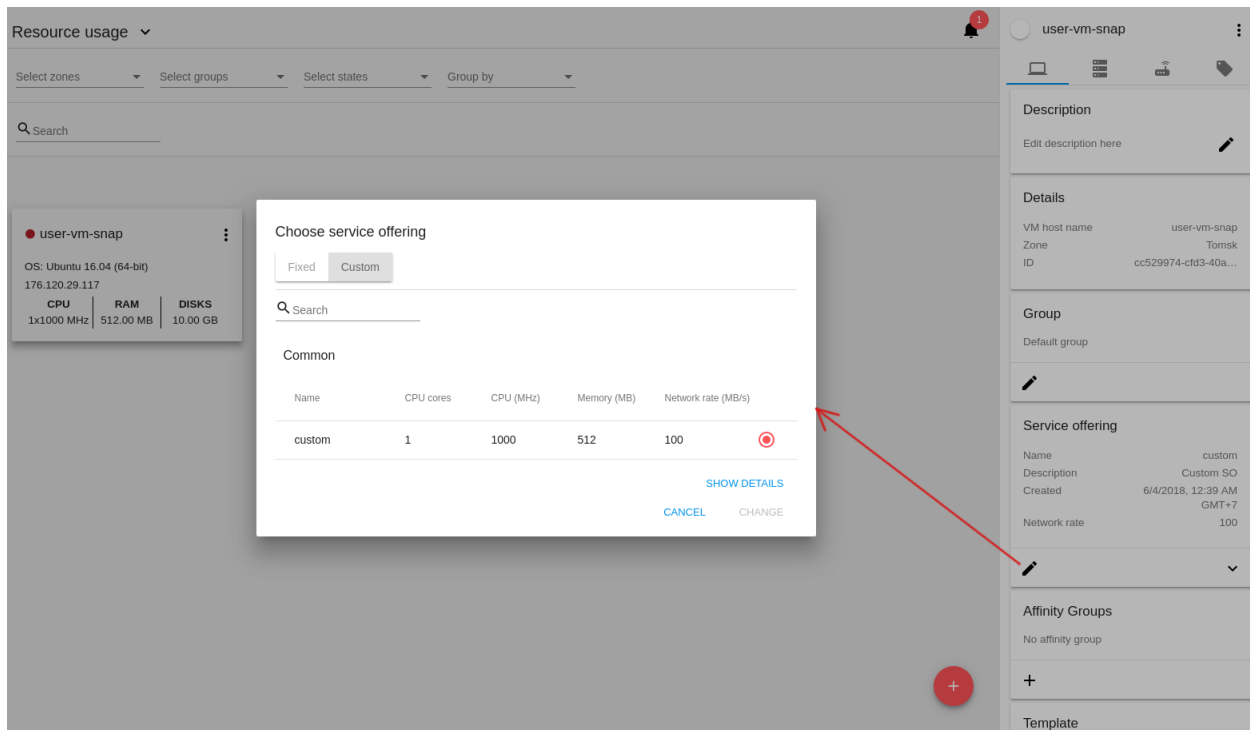
You can use the search tool to find an offering in the list by a name or a part of the name.

Select an option from the list to change the service offering.

Click “Change” to implement the edits.

Note: The system checks the amount of available account resources. In case a selected service offering does not fit the amount of available account resources, a warning message will appear saying the offering cannot be selected.

A started virtual machine will be rebooted at editing the service offering.




5. Affinity Group - The affinity group(s) assigned to the virtual machine. A name and a type of groups are displayed here. Groups are listed in alphabetic order. Hovering over a group name shows a description of a group (if provided at creation).


If no affinity group is assigned to the VM, or you wish to add another affinity group to the list, click “Add” (+) in the block. A dialog box appears where you can choose an existing group or create a new one.

Select a group in the list and click “Assign” to assign it to the VM. A user can add several groups to one virtual machine.

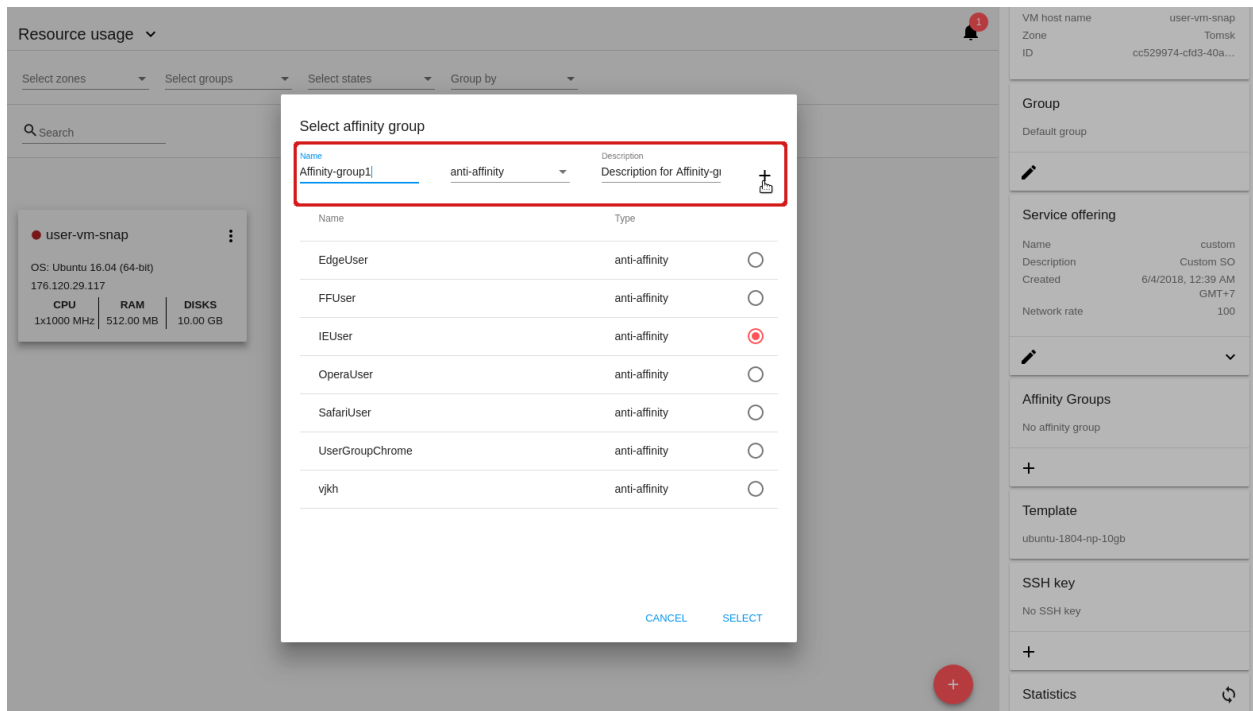
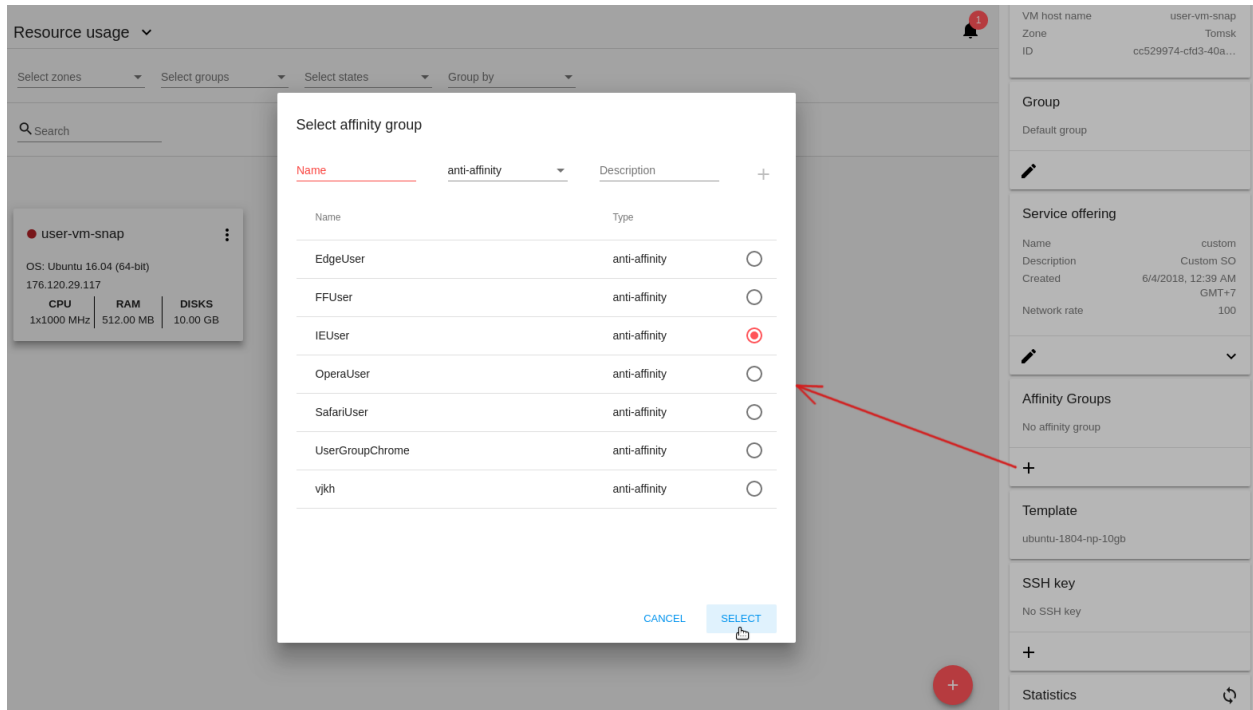
To create an affinity group fill in the form at the top of the dialog box and click “+” to add the group to the list. Then, you can assign the newly created group to the VM.

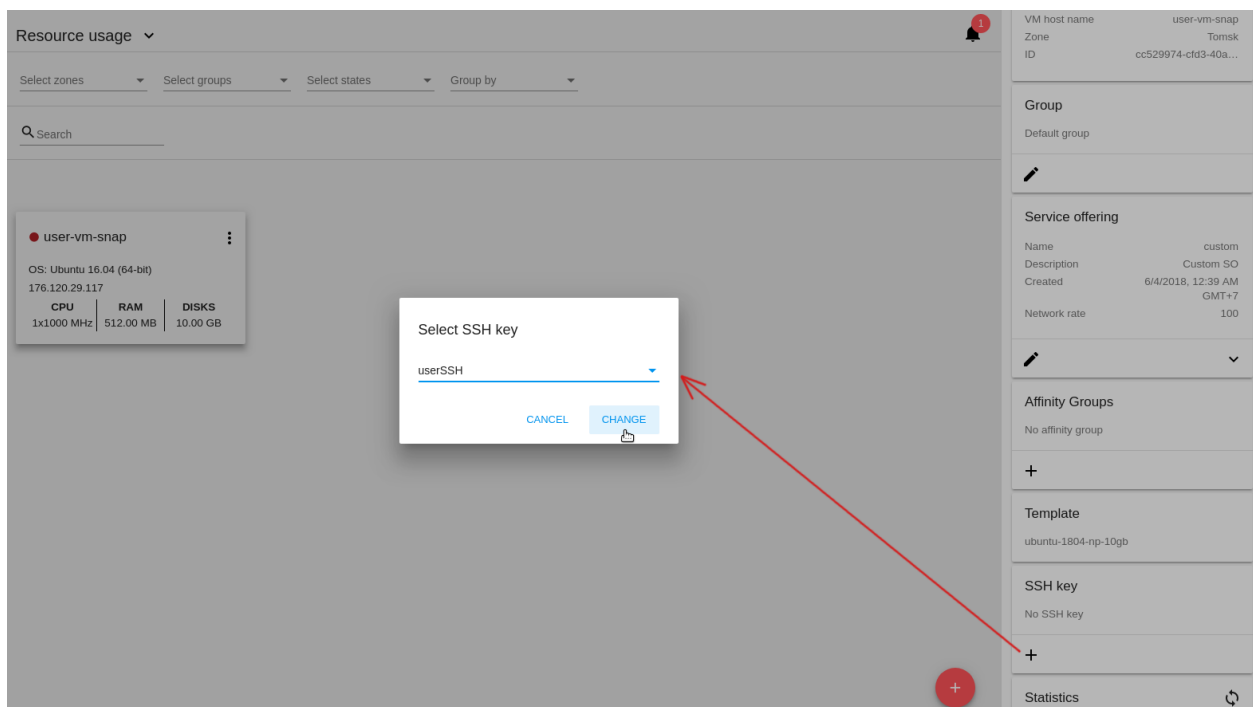
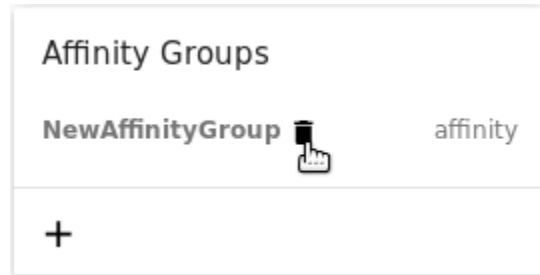
When assigning an affinity group to a started virtual machine, the system will suggest you stopping the VM. Click “OK” in the dialog window. Then, the VM will be started again.

The selected group/groups can be deleted by clicking  near the group name in the list.

6. Template - Shows the template used to create the virtual machine.
7. SSH key - Shows the SSH key of the virtual machine. Add the SSH key by clicking “+”. In the appeared window select the SSH key in the drop-down list and click “CHANGE”:
At saving the new SSH key for a started VM you will see the warning: “You need to stop the virtual machine to reset SSH key.” Click “OK” if you want to stop it right now. Click “Cancel” to drop the edits.
8. Statistics - shows VM statistics on CPU utilized, Network read, Network write, Disk read, Disk write, Disk read (IO), Disk write (IO). Refresh data by clicking the “Refresh” button  in the upper-right corner.
9. VM Snapshots

This section presents the information on snapshots created for the virtual machine. It shows the details for the last taken snapshot, allows viewing a complete list of all machine’s snapshots and





managing them. You also can take a VM snapshot in this section.

The screenshot shows the CloudStack UI interface. On the left, a tooltip for 'user-vm-snap' displays the following information:


user-vm-snap		
OS: Ubuntu 16.04 (64-bit)		
176.120.29.117		
CPU	RAM	DISKS
1x1000 MHz	512.00 MB	10.00 GB

On the right sidebar, the 'Service offering' section shows details for a custom offering. Below it, the 'VM snapshots' section is highlighted with a red box, showing the last snapshot and a 'VIEW ALL (1)' link.

The following information is displayed in this section:

- Details on the last taken snapshot: name, creation date and time;
- “View All” allows viewing a full list of snapshots created for the machine. It opens a modal window where a user can see the list of snapshots and manage them using the action buttons:

A user can manage snapshots in the list using action buttons:

- **Revert VM to snapshot** - Allows returning the virtual machine to the state captured in the snapshot. It is useful if you implemented any changes to the VM and they went wrong. You can easily restore the VM to its previous state using this action. Select “Revert VM to snapshot” by clicking  and confirm your action in the dialog window. The VM will be reverted.

Note: The machine cannot be reverted to the snapshot state if the current Service Offering of the VM differs from that used at the moment the snapshot was taken.

- **Delete** - Allows deleting a snapshot from the system.

Create Snapshot

Note: Taking a VM snapshot is available for machines in the Running state only.

To create a snapshot click ‘+’ and fill in the appeared form:

- Name - Enter a name for the snapshot.
- Description - Provide a short description for the snapshot.

Resource usage ▾

Select zones ▾ Select groups ▾ Select states ▾ Group by ▾



Search

user-vm-snap

OS: Ubuntu 16.04 (64-bit)
176.120.29.117

CPU	RAM	DISKS
1x1000 MHz	512.00 MB	10.00 GB

VM Snapshots

Name	Description	Date	Actions
i-214-4925-vm_VS_2...	-	12/11/2018, 11:23 AM GMT+7	 

CLOSE

Service offering

Name: custom
Description: Custom SO
Created: 6/4/2018, 12:39 AM GMT+7
Network rate: 100

Affinity Groups

No affinity group

Template

ubuntu-1804-tp-10gb

SSH key

No SSH key

Statistics

CPU utilized	0%
Network read	51934 KB
Network write	760 KB
Disk read	660560 KB
Disk write	2524516 KB
Disk read (IOPS)	IOPS
Disk write (IOPS)	IOPS

VM snapshots

Last snapshot: [VIEW ALL \(1\)](#)

i-214-4925-vm_VS_20181211042337
12/11/2018, 11:23 AM GMT+7

Resource usage ▾

Select zones ▾ Select groups ▾ Select states ▾ Group by ▾



Search

user-vm-snap

OS: Ubuntu 16.04 (64-bit)
176.120.29.117

CPU	RAM	DISKS
1x1000 MHz	512.00 MB	10.00 GB

VM Snapshots

Name	Description	Date	Actions
i-214-4925-vm_VS_2...	-	12/11/2018, 11:23 AM GMT+7	 

CLOSE

Service offering

Name: custom
Description: Custom SO
Created: 6/4/2018, 12:39 AM GMT+7
Network rate: 100

Affinity Groups

No affinity group

Template

ubuntu-1804-tp-10gb

SSH key

No SSH key

Statistics

CPU utilized	0%
Network read	51934 KB
Network write	760 KB
Disk read	660560 KB
Disk write	2524516 KB
Disk read (IOPS)	IOPS
Disk write (IOPS)	IOPS

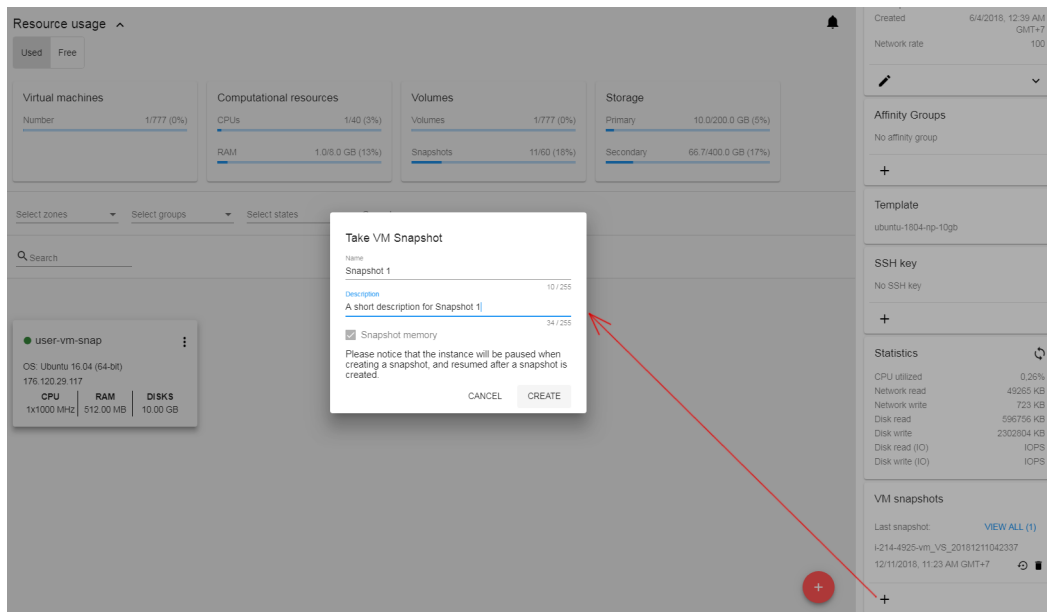
VM snapshots

Last snapshot: [VIEW ALL \(1\)](#)

i-214-4925-vm_VS_20181211042337
12/11/2018, 11:23 AM GMT+7

- Snapshot memory - Check the box to snapshot the VM CPU and memory, i.e. a snapshot of the *DiskAndMemory* type. Currently, it is activated by default and is not editable.

Once all fields are completed, click CREATE to save the snapshot.

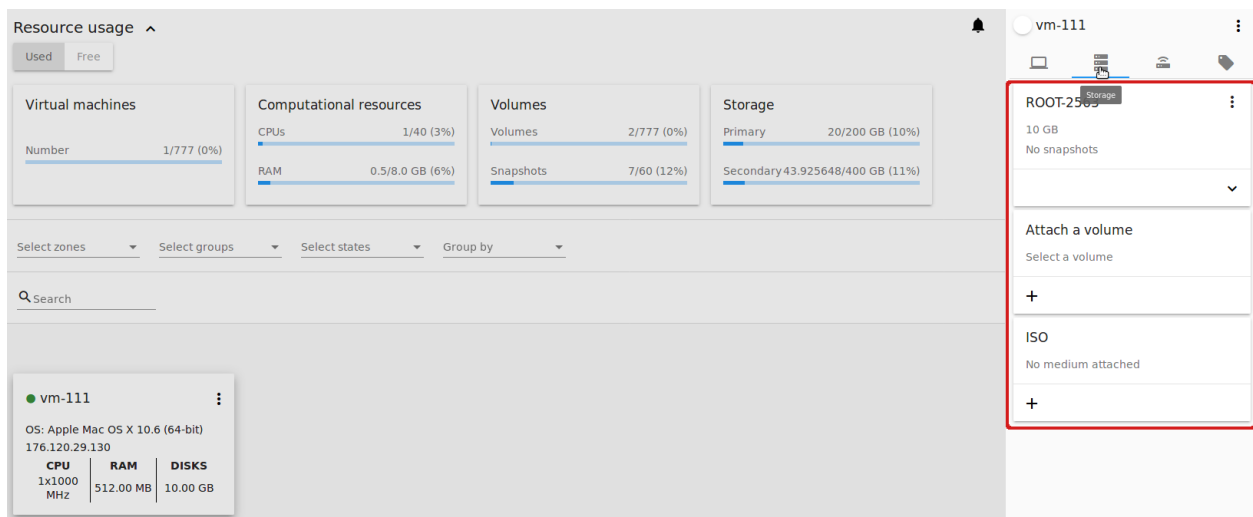


The VM will be paused for creating a snapshot and then resumed. The snapshot will appear in the list of VM snapshots.

To drop the snapshot creation, click CANCEL.

Storage Tab

The second tab - Storage - contains the information on the volumes allocated to the virtual machine as well as snapshots created for the volumes.



In this tab the following information is presented:

1. Disk information

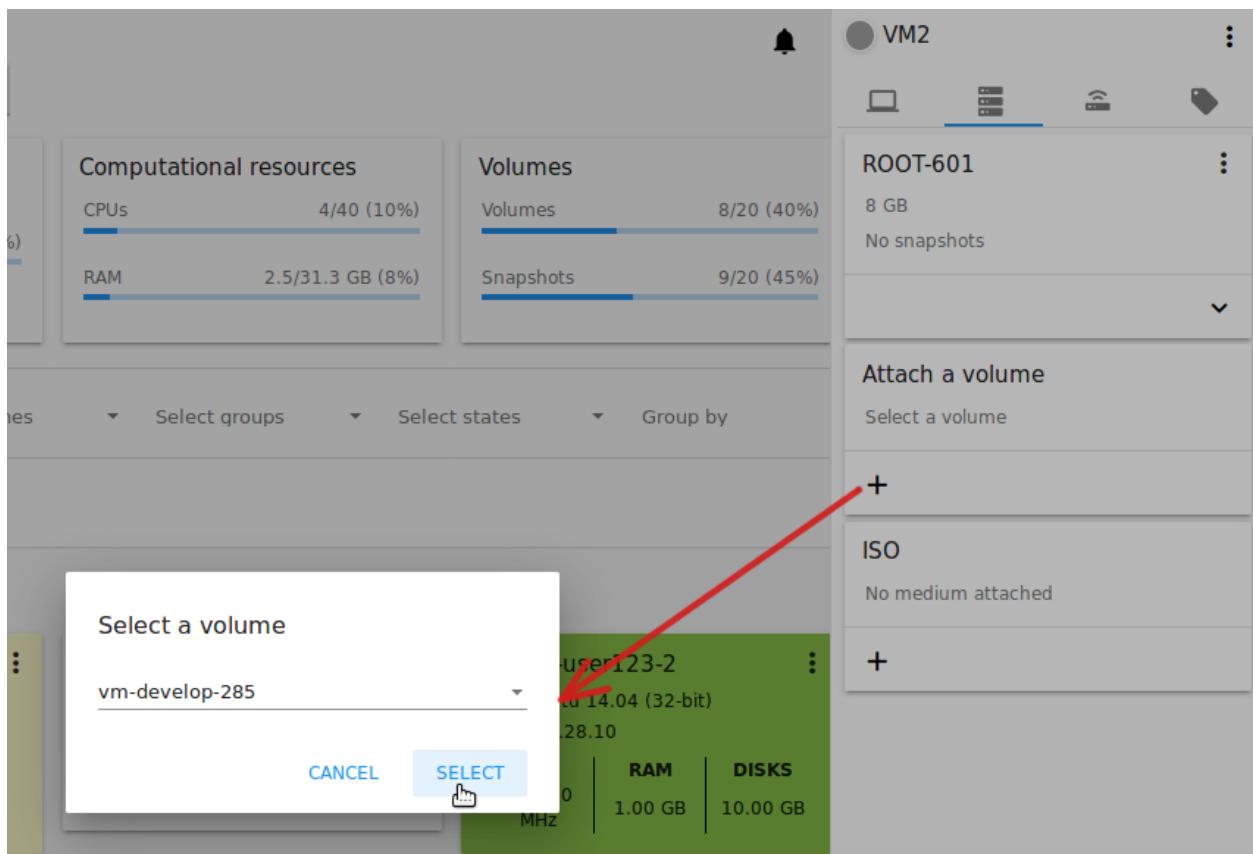
Each VM has a root disk. Besides, data disks can be added to the VM.

The following general information on a root disk is presented (expand the card to see the whole list):

- Name - The disk name.
- Size - The disk size.
- Creation Date and Time.
- Storage Type (Shared/Local).
- Last Snapshot information.
- Action Box.

2. **Attach a volume** - Allows attaching a data disk to the VM.

Additional volume (a data disk) can be attached to the VM. Click “Select” to select a data disk. Select a disk in the drop-down list and click “SELECT”.

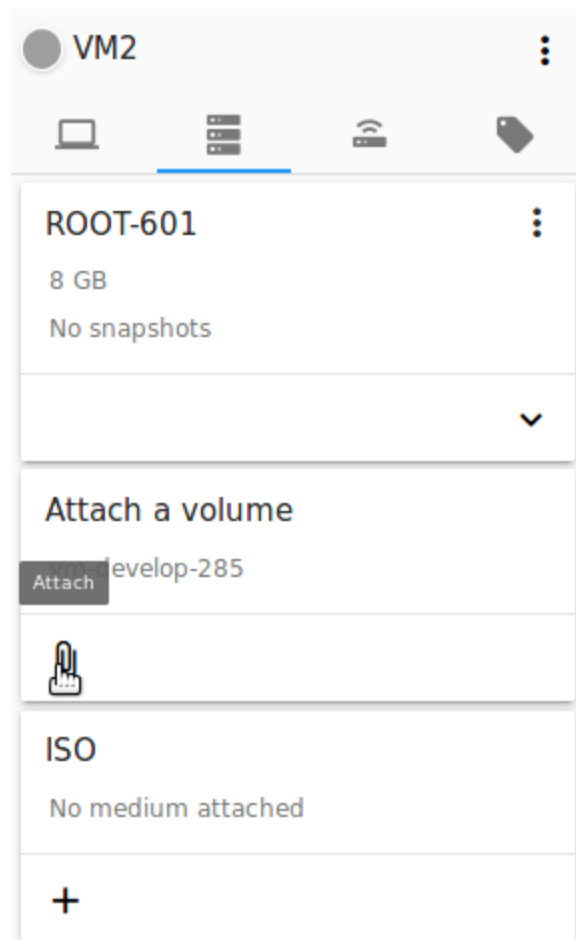


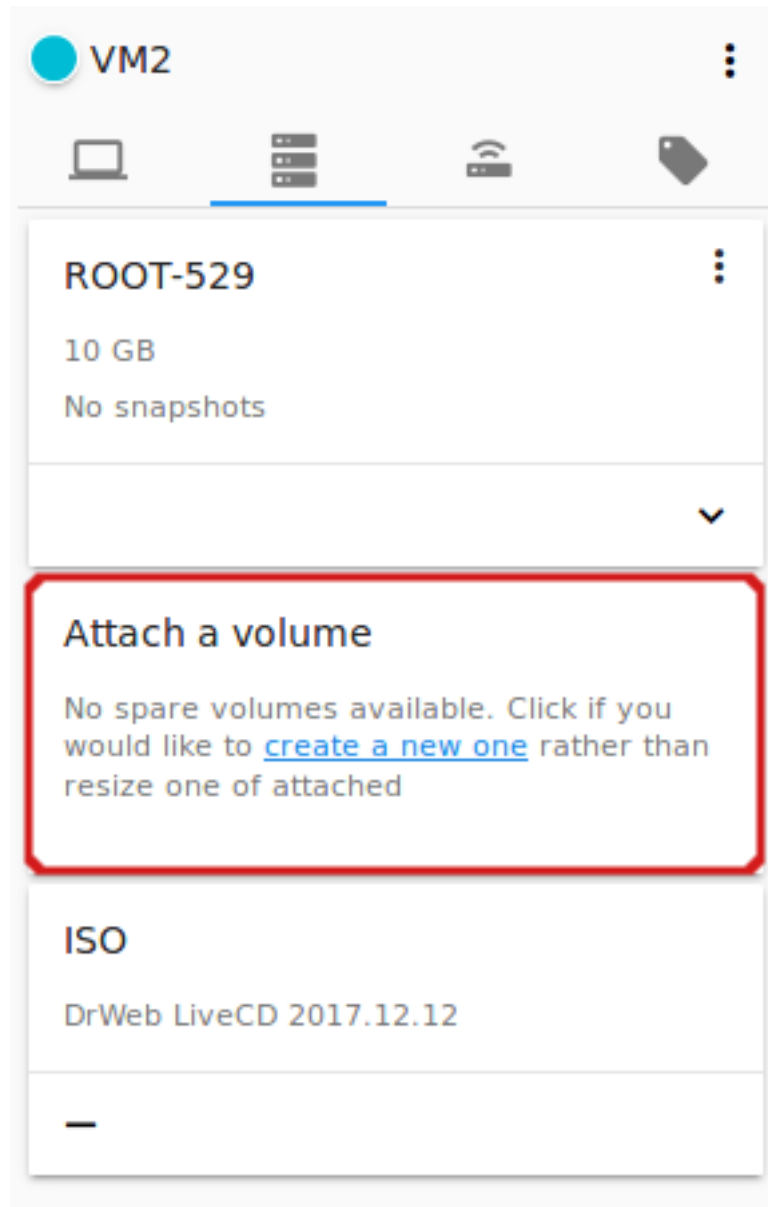
The chosen data disk will appear for the virtual machine with the “Attach” button. Click “Attach” to attach the selected disk to the virtual machine.

If there are no available spare drives yet, you can create one right from this panel.

Click “Create new volume” and you will be moved to the Storage section. A “New volume” form will appear where you should specify the following information:

Note: Required fields are marked with an asterisk (*).

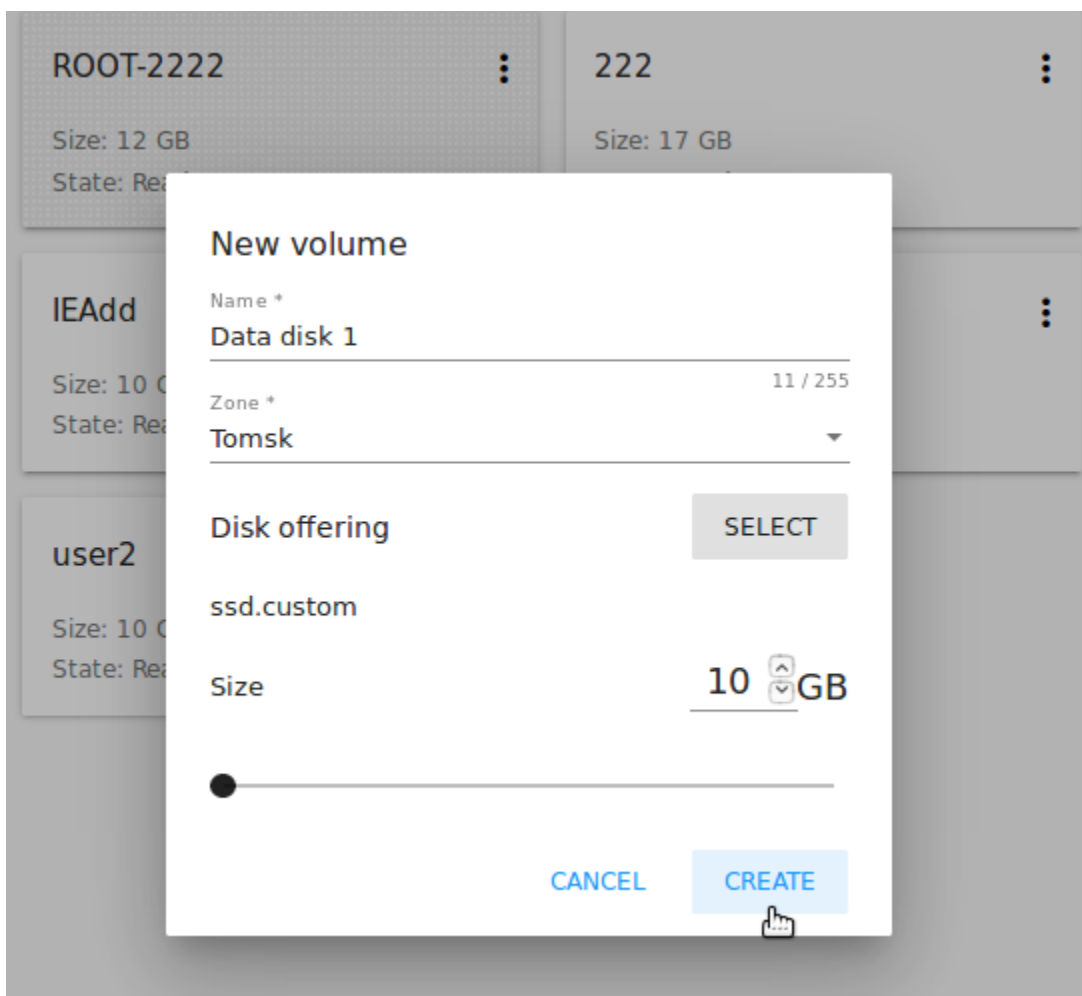




- Name * - Name of the new data disk.
- Zone * - Select a zone for it from the drop-down list.
- Disk offering * - Select a disk offering from the list in the modal window. The disk offering list is managed by Root Administrator.
- Size - Set the disk size if it is available. Disk size can be changed if a custom disk offering is selected above.


Once all fields are filled in, click “CREATE” to save the new volume.

Click “CANCEL” to drop the new volume creation.



Move back to the virtual machine information sidebar. Under the “Storage” tab in the “Attach a volume” section click “+” to select an additional disk. Select a data disk in the drop-down list and click “Select” to add it to the “Attach a volume” section. To attach the volume press the “Attach” button.

Volume Action Box

For each volume, the Actions list can be opened by clicking the actions icon .

The following actions on disks are available in this list:

For root disks:

- Take a snapshot;
- Set up snapshot schedule;
- Resize the disk.

For data disks:

- Take a snapshot;
- Set up snapshot schedule;
- Detach;
- Resize the disk;
- Delete.

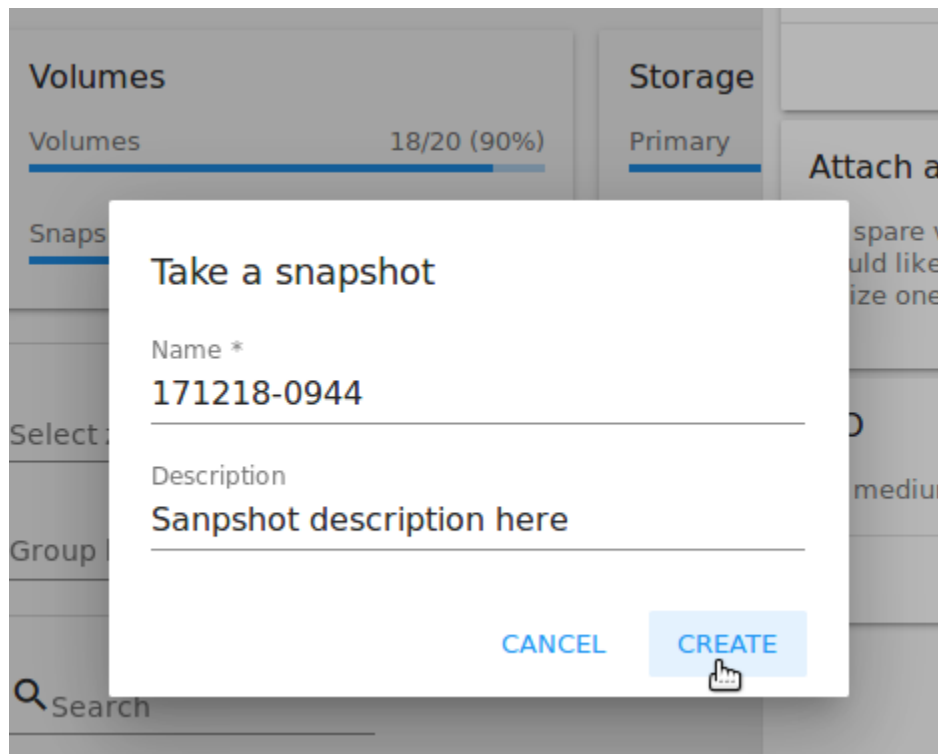
Take a snapshot

You can take a VM snapshot to preserve all the VM's data volumes as well as (optionally) its CPU/memory state. This is useful for quick restore of a VM.

Click "Take a snapshot" in the disk Actions list and in the dialog window enter the following information:

Note: Required fields are marked with an asterisk (*).

- Name of the snapshot * - Define a name for the snapshot. It is auto-generated in the form <date>-<time>. But you can specify any name you wish.
- Description - Add a description of the snapshot to know what it contains.



All snapshots are saved in the list of snapshots. In the disk information, you will see the name and time of the *last-taken snapshot*. For each snapshot the list of actions is available. Find more information on snapshot actions in the *Snapshot Action Box* sections below.

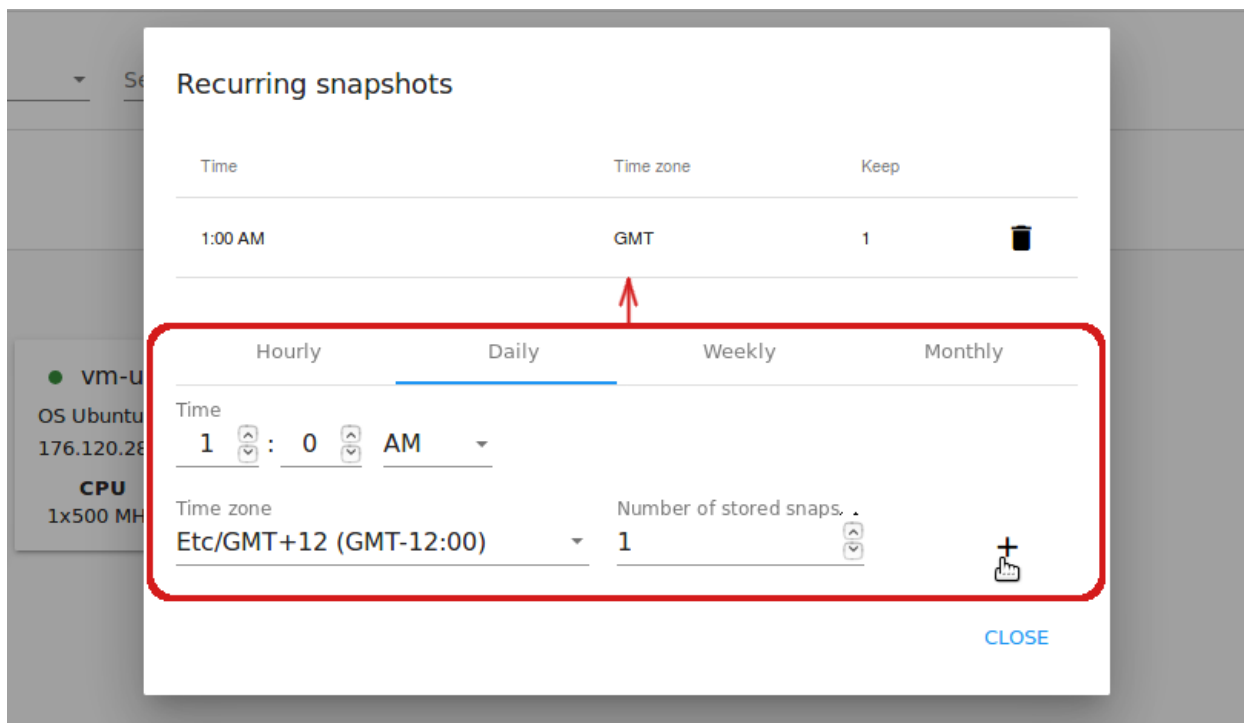
Set up snapshot schedule

You can schedule regular snapshotting by clicking “Set up snapshot schedule” in the Actions list.

In the appeared window set up the schedule for recurring snapshots:

- Select the frequency of snapshotting - hourly, daily, weekly, monthly;
- Select a minute (for hourly scheduling), the time (for daily scheduling), the day of week (for weekly scheduling) or the day of month (for monthly scheduling) when the snapshotting is to be done;
- Select the timezone according to which the snapshotting is to be done at the specified time;
- Set the number of snapshots to be made.

Click “+” to save the schedule. You can add more than one schedule but only one per each type (hourly, daily, weekly, monthly).



Resize the disk

Note: This action is available to data disks created on the base of disk offerings with a custom disk size. Disk offerings with custom disk size can be created by Root Administrators only.

Selecting “Resize the disk” option in the Actions list you are able to enlarge the disk size.

In the appeared window set up a new size using the slider and click “RESIZE” to save the edits.

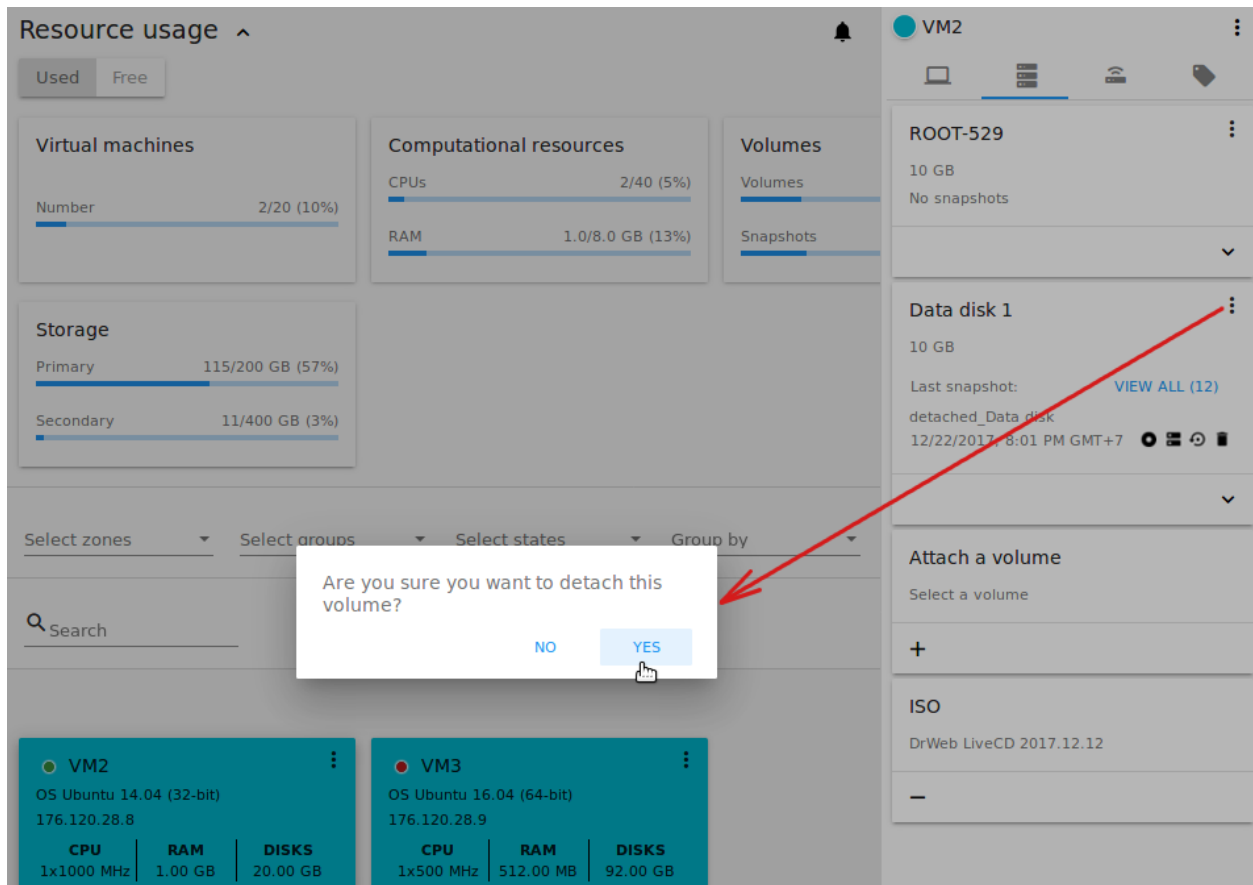
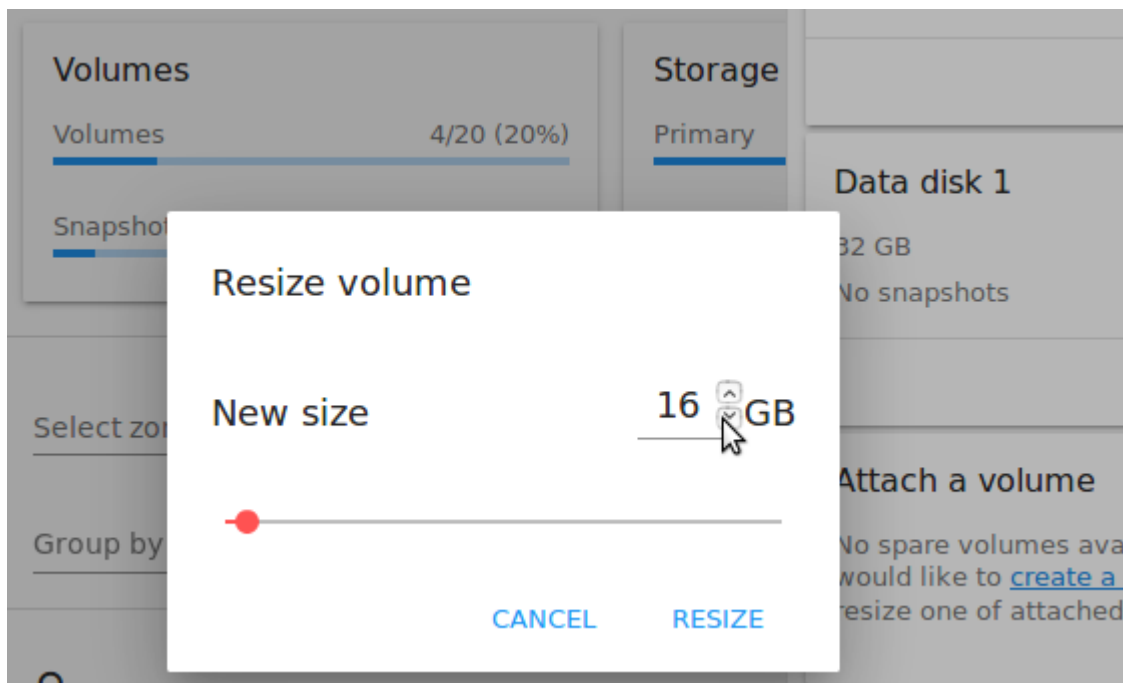
Click “CANCEL” to drop the size changes.

Detach

This action can be applied to data disks. It allows detaching the data disk from the virtual machine.

Click “Detach” in the Actions list and confirm your action in the dialog window.

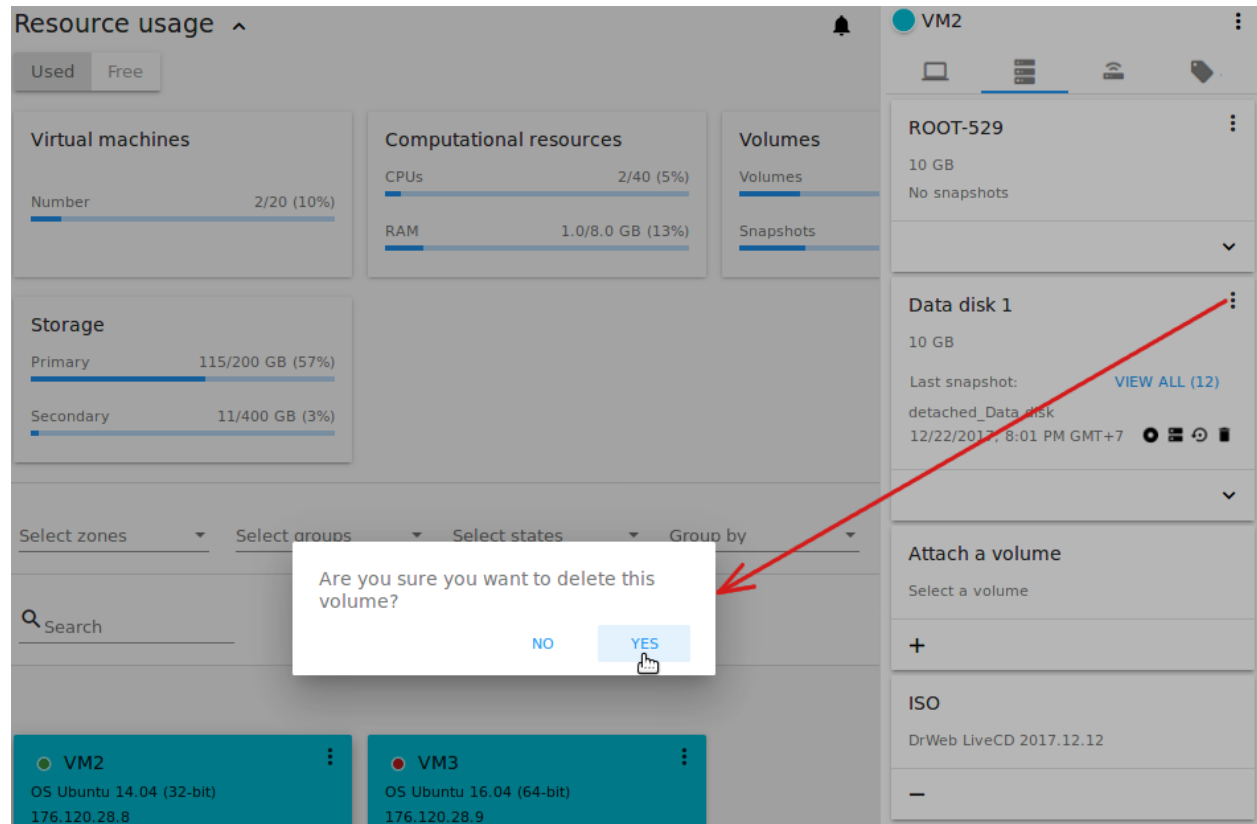
The data disk will be detached. It will be in the list of **Spare** drives in the *Storage* section.



Delete

This action can be applied to data disks. It allows deleting a data disk from the system right in the *Storage* VM details sidebar.

Click “Delete” in the volume Actions list and confirm your action in the dialog window.



The data disk will be deleted from the system right at this moment.

If a disk has snapshots, the system will ask you if you want to delete the snapshots of the disk as well. Click “Yes” to delete the snapshots. Click “No” to leave the snapshots in the system after volume deleting.

Snapshot Action Box

Note: For a newly taken snapshot all actions except “Delete” are disabled until the snapshot is backed up to the Secondary Storage that may take some time. Once it is backed up, a full range of actions is available to a user.

For each snapshot the following actions are available:

- **Create a template** - Register a new template right from the disk information block of the sidebar. In the appeared window fill in the form:

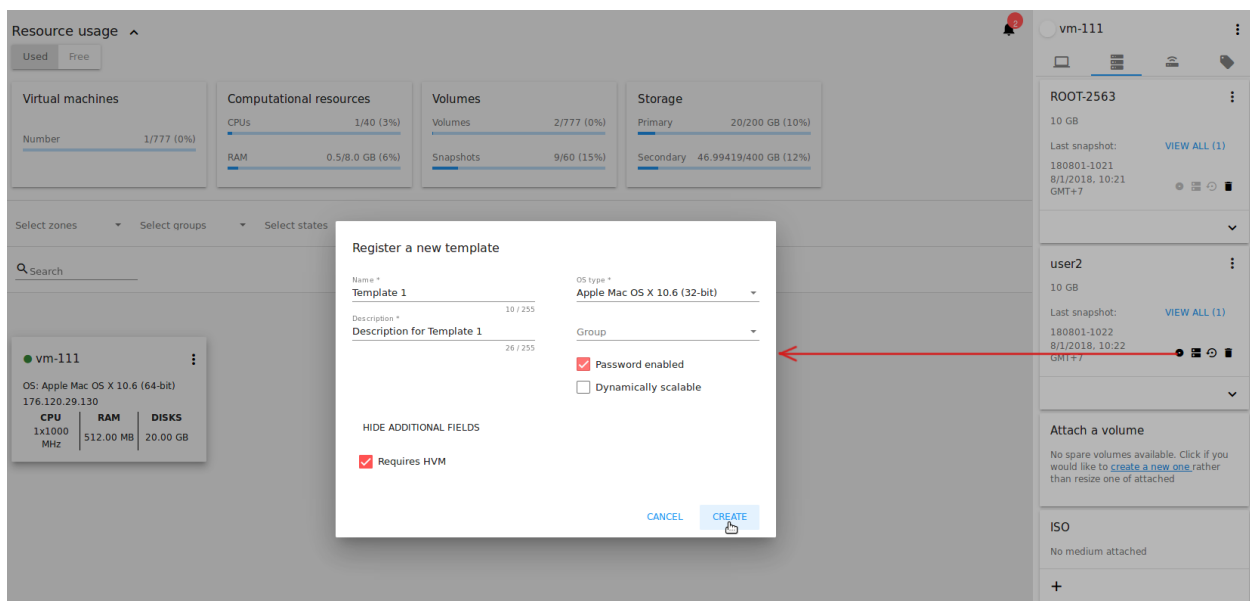
Note: Required fields are marked with an asterisk (*).

- Name * - Enter a name of the new template.

- Description * - Provide a short description of the template.
- OS type * - Select an OS type from the drop-down list.
- Group - Select a group from the drop-down list.
- Password enabled - Tick this option if your template has the CloudStack password change script installed. That means the VM created on the base of this template will be accessed by a password, and this password can be reset.
- Dynamically scalable - Tick this option if the template contains XS/VM Ware tools to support dynamic scaling of VM CPU/memory.

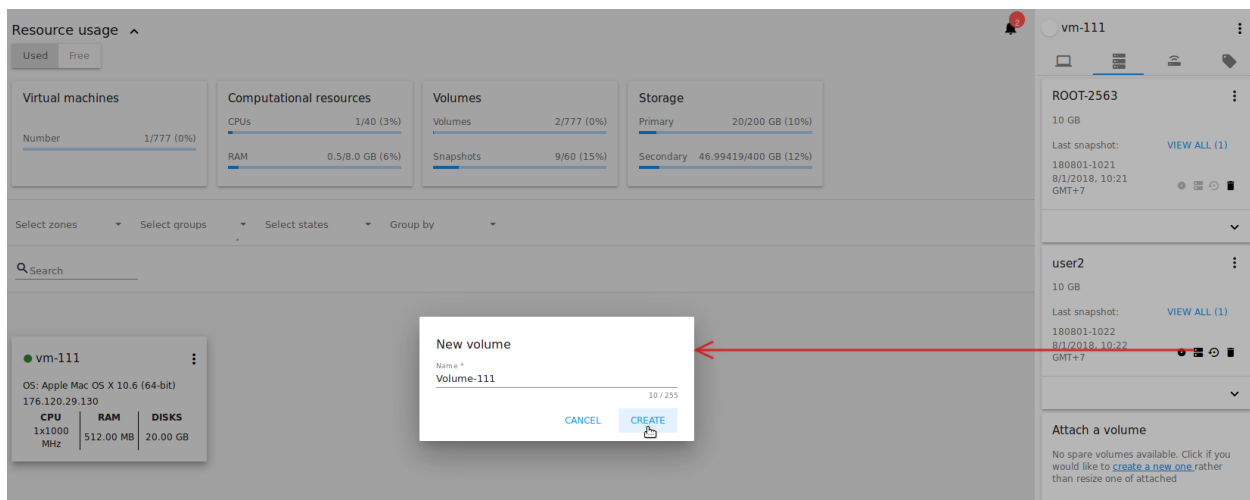
Click “SHOW ADDITIONAL FIELDS” to expand the list of optional settings. It allows creating a template that requires HVM. Tick this option in this case.

Once all fields are filled in click “CREATE” to create the new template.



- **Create Volume** - Allows creating a volume from the snapshot.

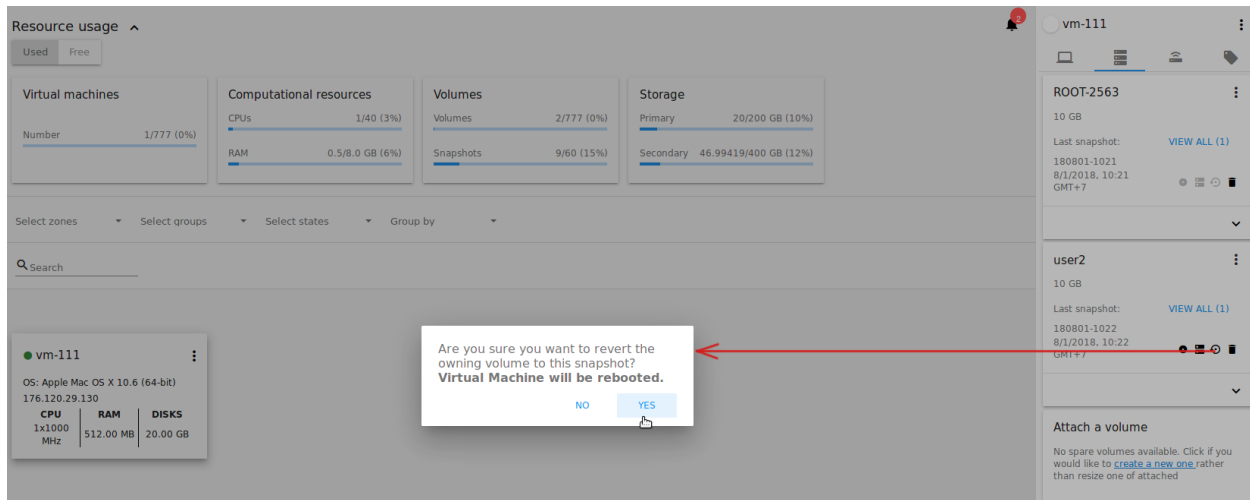
Type a name for a new volume into the Name field in the modal window. Click “CREATE” to register a new volume.



Click “CANCEL” to cancel the volume creation.

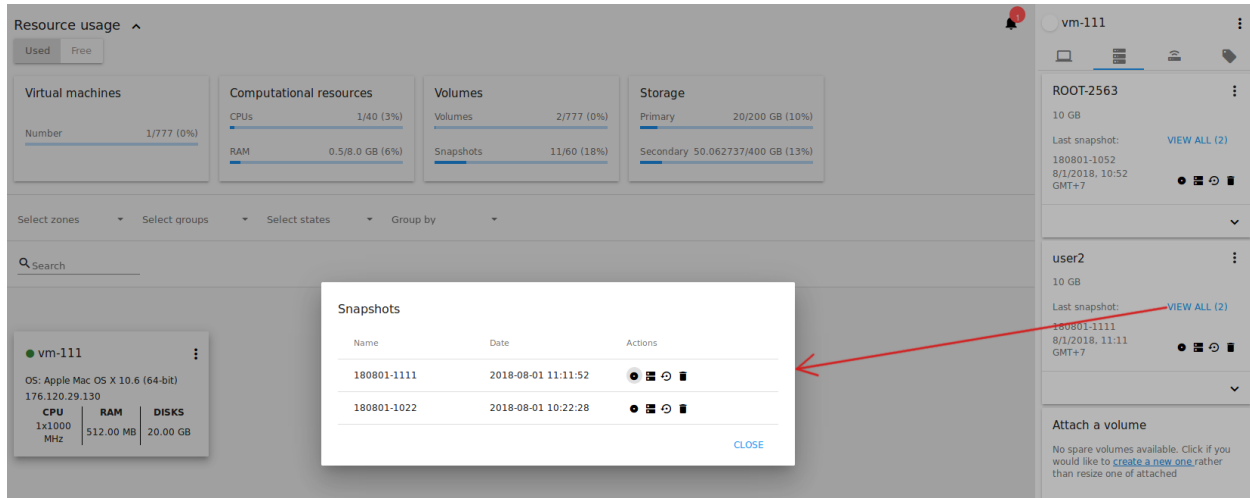
- **Revert Volume To Snapshot** - Allows turning the volume back to the state of the snapshot.

In the dialog window confirm your action. Please, note, the virtual machine the volume is assigned to will be rebooted.



- **Delete** - allows deleting the last-taken snapshot.

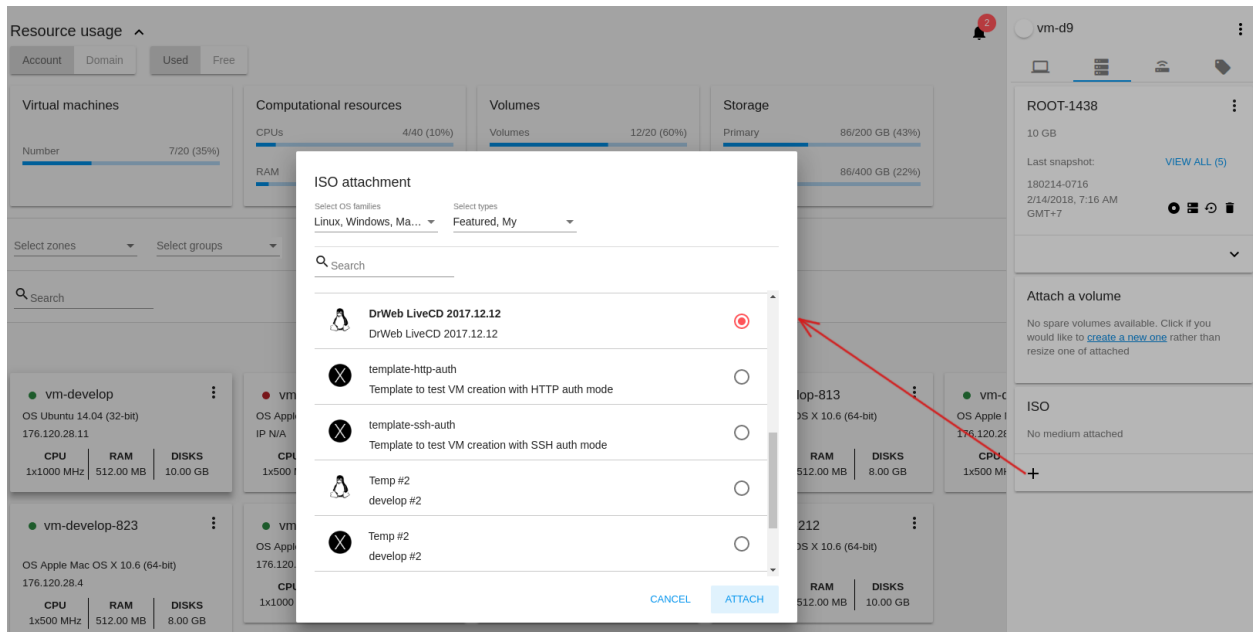
Besides, you can see all the snapshots in the list by clicking the “VIEW ALL” button. In the appeared window you will see the list of all snapshots. For each snapshot in the list, the same actions are available: you can create a template, or delete a snapshot.



3. ISO - Allows attaching ISO.

Attach ISO by clicking the “Attach” button in the ISO card. In the dialog window you will see the list of available ISO files. To easily find the ISO file you need, please, use the search tool above the list. Additionally, you can filter the list by OS family(-ies), by type(-s), by group(-s). Tick the ISO file you wish in the list and click “ATTACH”. The ISO will be attached to the VM.

You can detach the ISO file by clicking the “Detach” button.




Network Tab

Under the Network tab the network configurations of the VM are presented.

1. **NIC information** - VM network details are shown here: Network name, Netmask, Gateway, IP, Broadcast URI, Traffic Type, Type, Default, MAC address.

You can add a secondary IP for the VM from this tab. Click “+” next to the Secondary IP option and confirm your action in the dialog window. The IP appears for the VM.

You can delete the secondary IP by clicking the “Delete” button next to it.

2. **Firewall rules** - Allows viewing the security group assigned to the virtual machine. Click  to open the list of assigned security group(s).

You can filter the list by IP version, types and/or protocols. Or you can adjust the view by grouping the list by types and/or protocols.

In the modal window you can edit a security group. Click “EDIT” to move to editing form. There you will be able to add rules, or delete the selected ones from the list.

To add rules, please, fill in the fields in the bar above the list and click “+”:

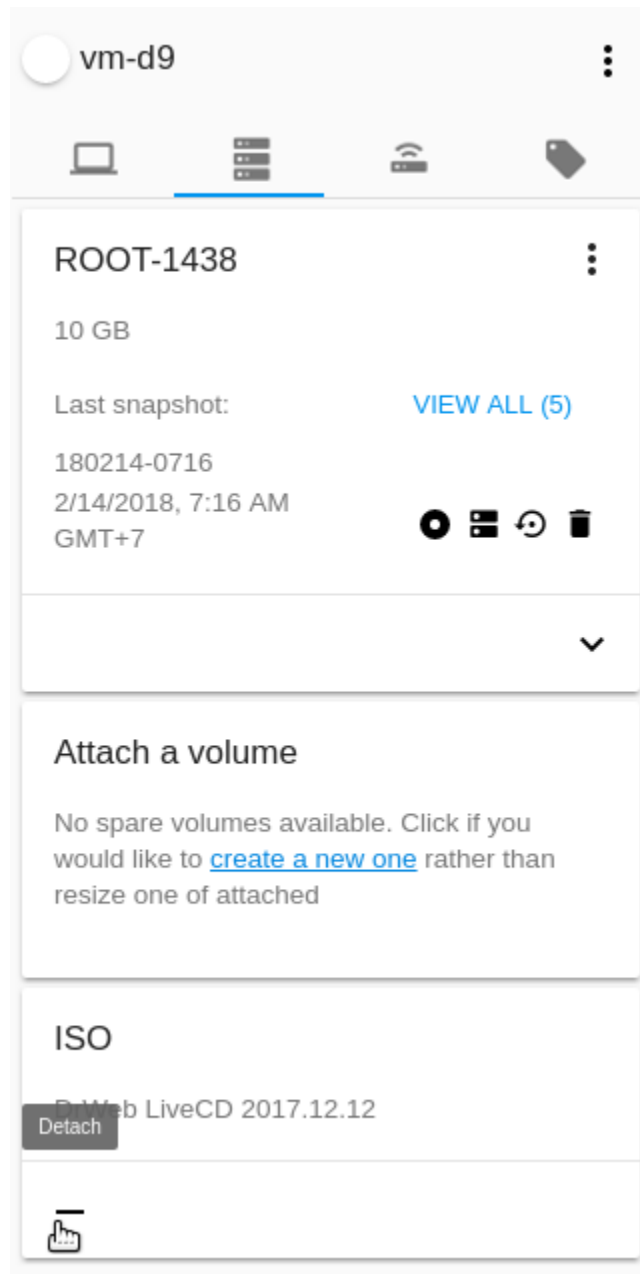
To delete rules, please, click “Delete” icon in the list. The rule will be deleted from the security group.

Then you can move back to the view mode, or close the window.

Please, note, when editing shared security groups, a warning message appears:

Click “Yes” if you still want to edit a shared security group. You will be moved to the “Firewall” section where you can edit the security group. After editing, go back to the virtual machine that uses this group. You will see the rules are edited.

See the [Firewall](#) section for more information on firewall rules in the system.



Resource usage ^

Used Free

Virtual machines

Number	1/777 (0%)
--------	------------

Computational resources

CPU's	1/40 (3%)
-------	-----------

Volumes

Volumes	2/777 (0%)
---------	------------

Storage

Primary	20/200 GB (10%)
---------	-----------------

Select zones Select groups Select states Group by

Search

vm-111

OS: Apple Mac OS X 10.6 (64-bit)
176.120.29.130

CPU	RAM	DISKS
1x1000 MHz	512.00 MB	20.00 GB

NIC#1 Configuration

IPv4	176.120.29.130/23
MAC address	1e:00:da:00:02:7f
Gateway v4	176.120.28.1
Type	Shared
IPv6 address	2001:67c:20dc:1...
IPv6 CIDR	2001:67C:20DC:1...
IPv6 gateway	2001:67C:20DC:1...
Secondary IP	+

Firewall rules

sg-vm-111

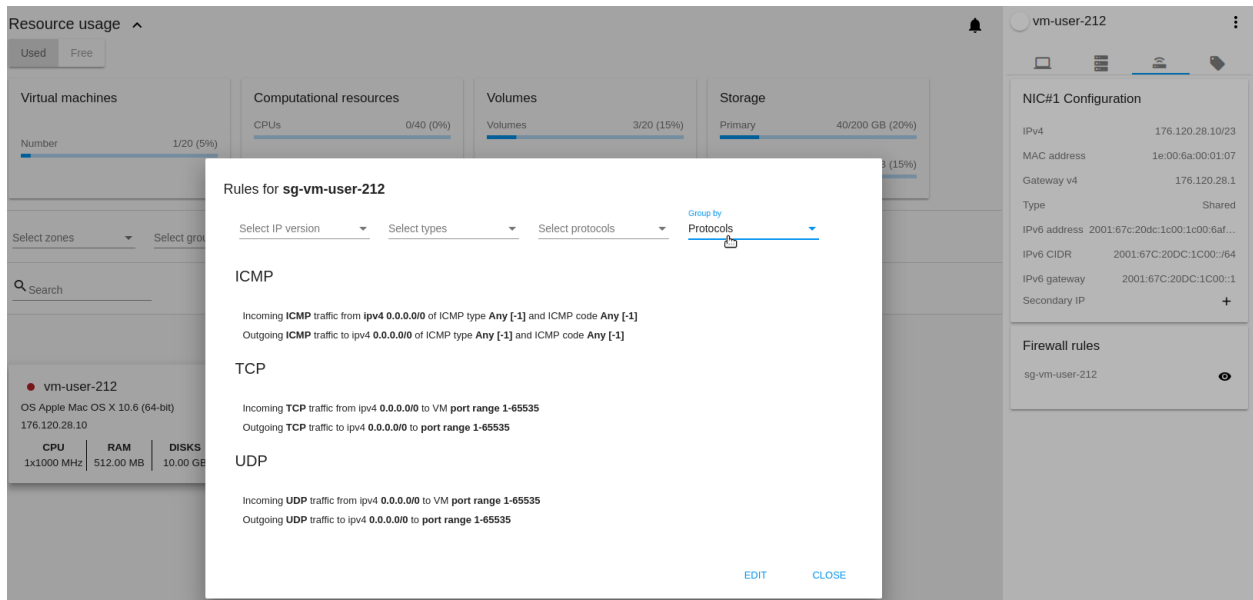
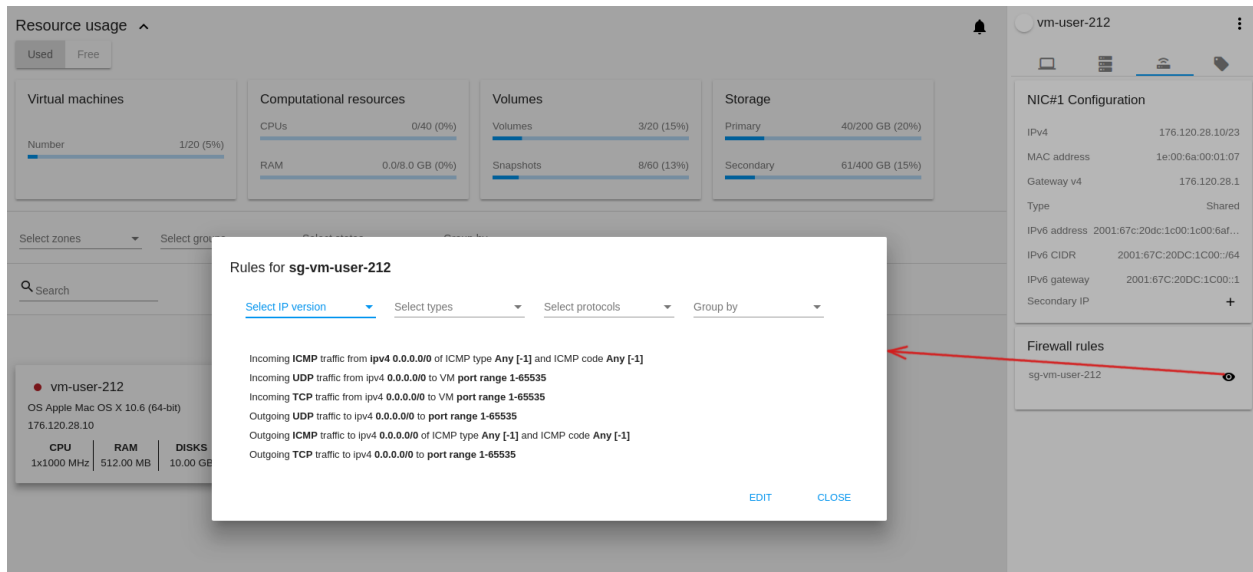
vm-user-8

NIC#1 Configuration


IPv4	176.120.28.8/23
MAC address	1e:00:57:00:01:05
Gateway v4	176.120.28.1
Type	Shared
IPv6 address	2001:67c:20dc:1c00:1c00:...
IPv6 CIDR	2001:67C:20DC:1C00::/64
IPv6 gateway	2001:67C:20DC:1C00::1
Secondary IP	+
176.120.28.12	🗑

Firewall rules

default



Edit rules for **sg-vm-222**

Ingress	TCP	CIDR v4/v6 *	Start port *	End port *	
		10.1.2.3/4	7	12	

Incoming **ICMP** traffic from **ipv4 0.0.0.0/0** of ICMP type **Any [-1]** and ICMP code **Any [-1]**

Incoming **UDP** traffic from **ipv4 0.0.0.0/0** to VM **port range 1-65535**

Incoming **TCP** traffic from **ipv4 0.0.0.0/0** to VM **port range 1-65535**


Outgoing **TCP** traffic to **ipv4 0.0.0.0/0** to **port range 1-65535**

Outgoing **UDP** traffic to **ipv4 0.0.0.0/0** to **port range 1-65535**

Outgoing **ICMP** traffic to **ipv4 0.0.0.0/0** of ICMP type **Any [-1]** and ICMP code **Any [-1]**

[VIEW](#) [CLOSE](#)

Edit rules for **sg-vm-222**

Ingress	TCP	CIDR v4/v6 *	Start port *	End port *	
		10.1.2.3/4	7	12	

Incoming **ICMP** traffic from **ipv4 0.0.0.0/0** of ICMP type **Any [-1]** and ICMP code **Any [-1]**

Incoming **UDP** traffic from **ipv4 0.0.0.0/0** to VM **port range 1-65535**

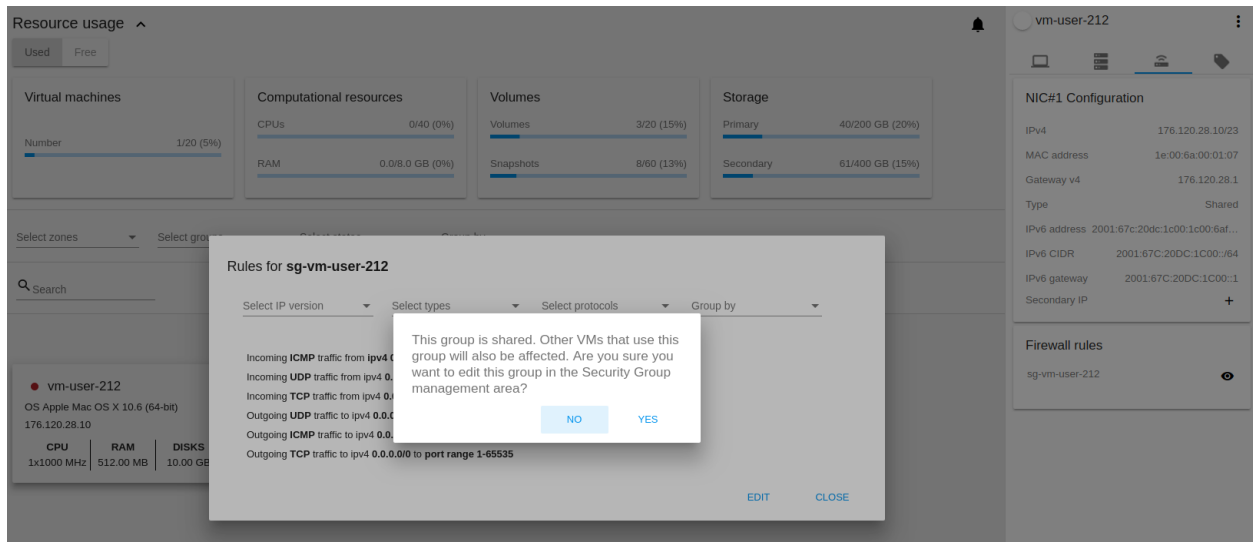
Incoming **TCP** traffic from **ipv4 0.0.0.0/0** to VM **port range 1-65535**

Outgoing **TCP** traffic to **ipv4 0.0.0.0/0** to **port range 1-65535**

Outgoing **UDP** traffic to **ipv4 0.0.0.0/0** to **port range 1-65535**

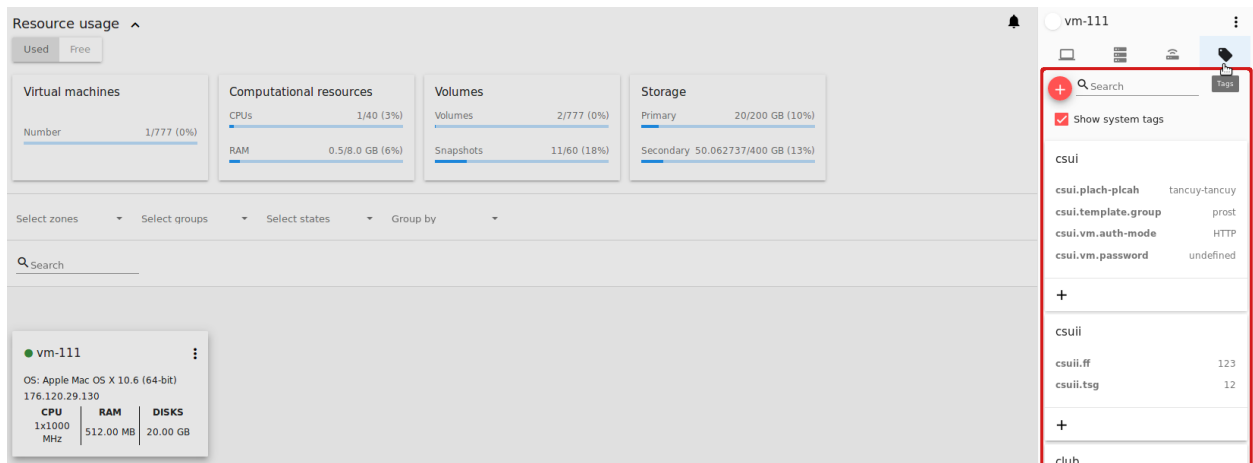
Outgoing **ICMP** traffic to **ipv4 0.0.0.0/0** of ICMP type **Any [-1]** and ICMP code **Any [-1]**

[VIEW](#) [CLOSE](#)



Tags Tab

Under this tab, you can create and see the VM tags.



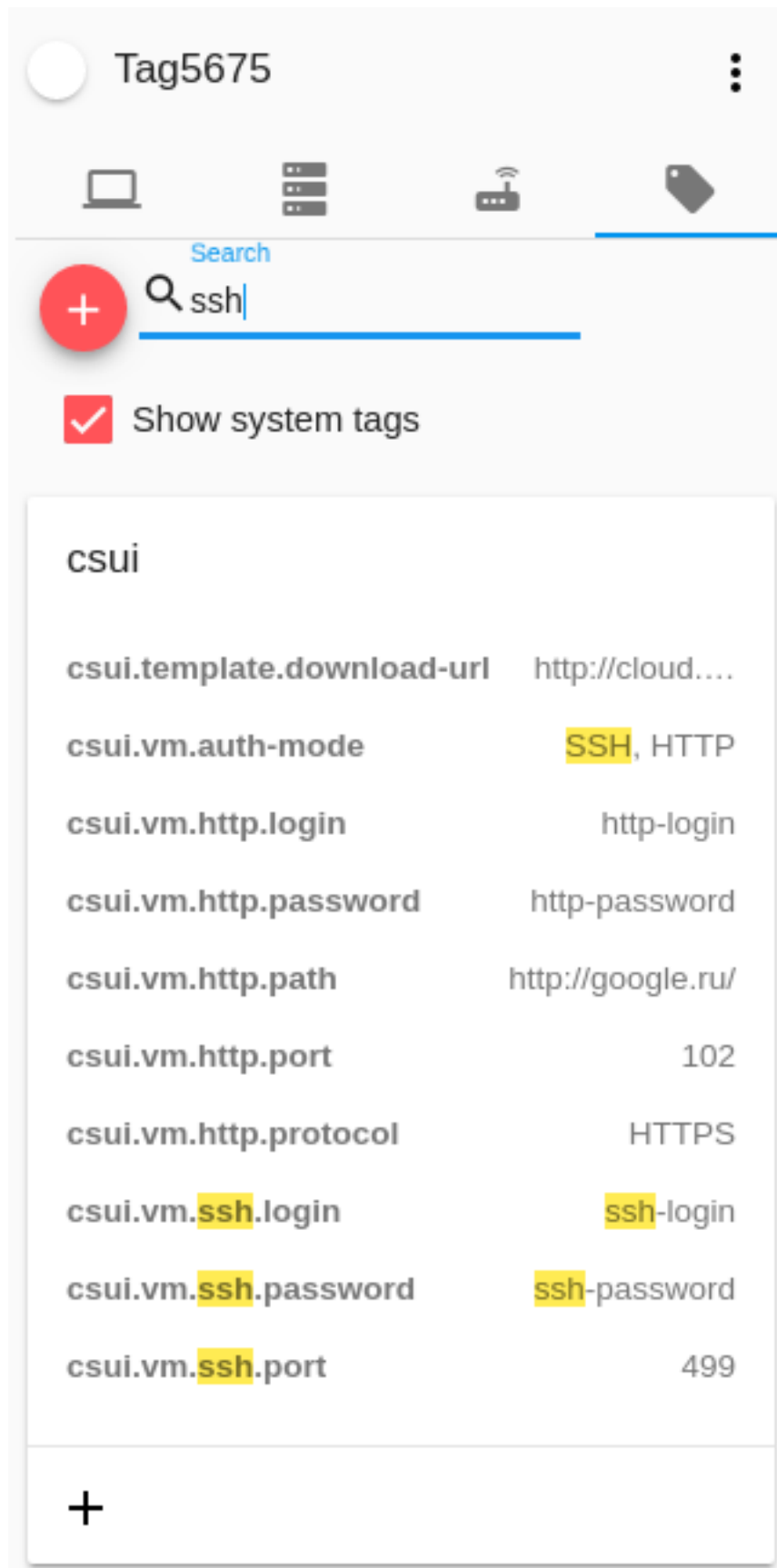
CloudStack-UI uses tags very extensively to provide additional UX capabilities. Tags are key-value pairs. So it makes a kind of a key-value storage for the meta-information - VM description or group, or a user language. The tags used by Cloudstack-UI are system tags. They are prefixed with `csui`. You can find the full list of system tags supported by CloudStack-UI at the [page](#).

System tags are used to provide functionality from the user interface perspective. Changing these tags affects the functionality of the application. The “Show system tags” checkbox allows to view or hide system tags of the virtual machine. Uncheck this box to hide system tags from the list. It helps to avoid accidental unwanted changes. If a user has disabled displaying of these tags, the system will remember it and next time tags will also be hidden.

To find the tag you are interested in, please, use the search tool above the tag list. You can enter a name or a part of the tag name to distinguish it in the list.

The tags assigned to the virtual machine are presented in the list. System tags are presented in one card, other tags - in a separate card. For each tag in the list the following actions are available when hovering the mouse over the tag key:

- Edit - Allows editing the tag. In the appeared form define a new key and/or value (both fields are required). Click “Edit” to save the edits. Click “Cancel” to drop the edits. The tag won’t be changed then.



- Delete - Allows deleting the tag. Click “Delete” and confirm your action in the dialog window.

The screenshot displays the 'Resource usage' section for VM2. It includes metrics for Virtual machines (2/20, 10%), Computational resources (CPU: 2/40, 5%; RAM: 1.0/8.0 GB, 13%), Volumes, and Storage (Primary: 115/200 GB, 57%; Secondary: 11/400 GB, 3%). Below these are filters for zones, groups, states, and grouping. A search bar is present. At the bottom, two VM cards are shown: VM2 (OS Ubuntu 14.04, 32-bit, IP 176.120.28.8) and VM3 (OS Ubuntu 16.04, 64-bit, IP 176.120.28.9). On the right, a sidebar for VM2 shows system tags under the 'Show system tags' checkbox. The tags are listed in a table:

Common	
Key1	Value1
+	
csui	
csui.vm.agreement-accepted	true
csui.vm.color	#00BCD4
csui.vm.password	K7pCvE
+	

Create Tags

You can create a tag right from *Tags* tab.

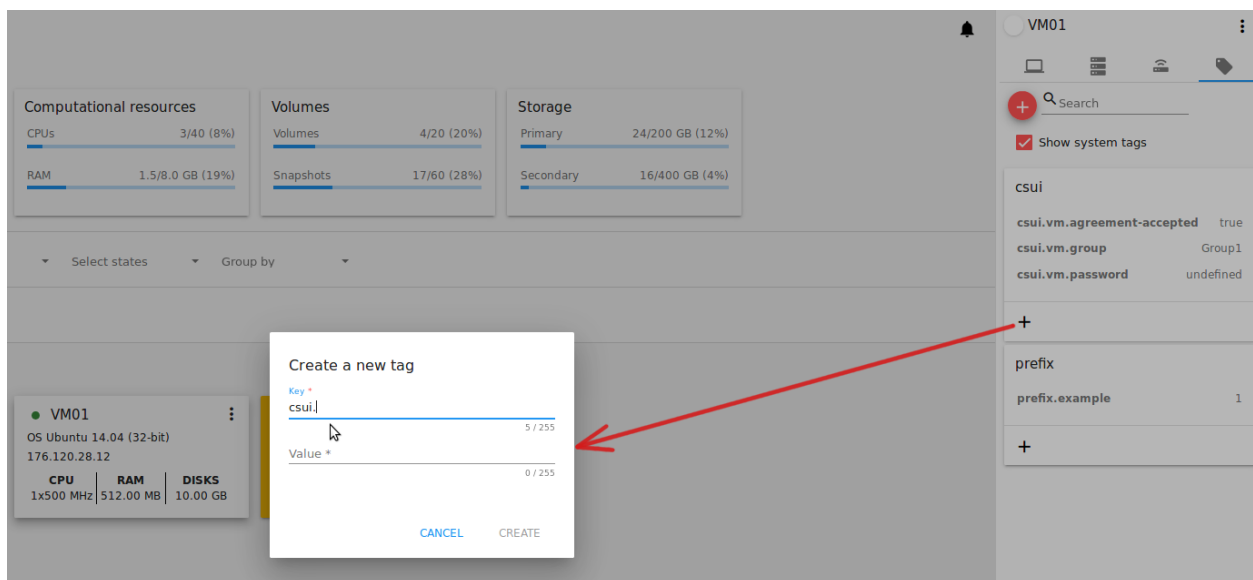
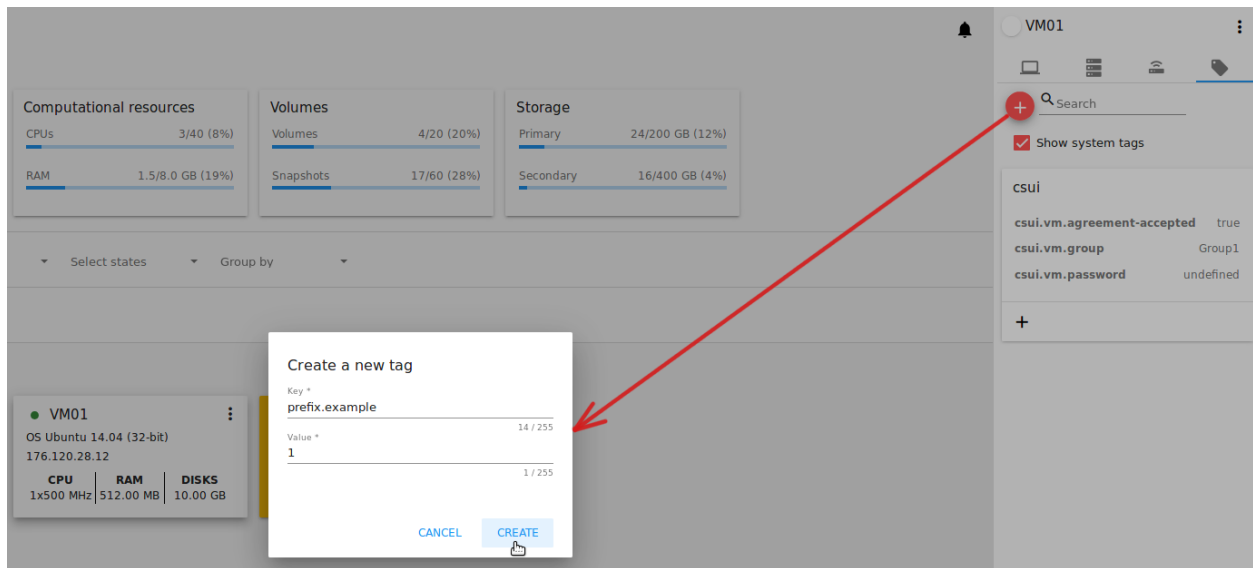
Click “Create”  and fill in the appeared form:

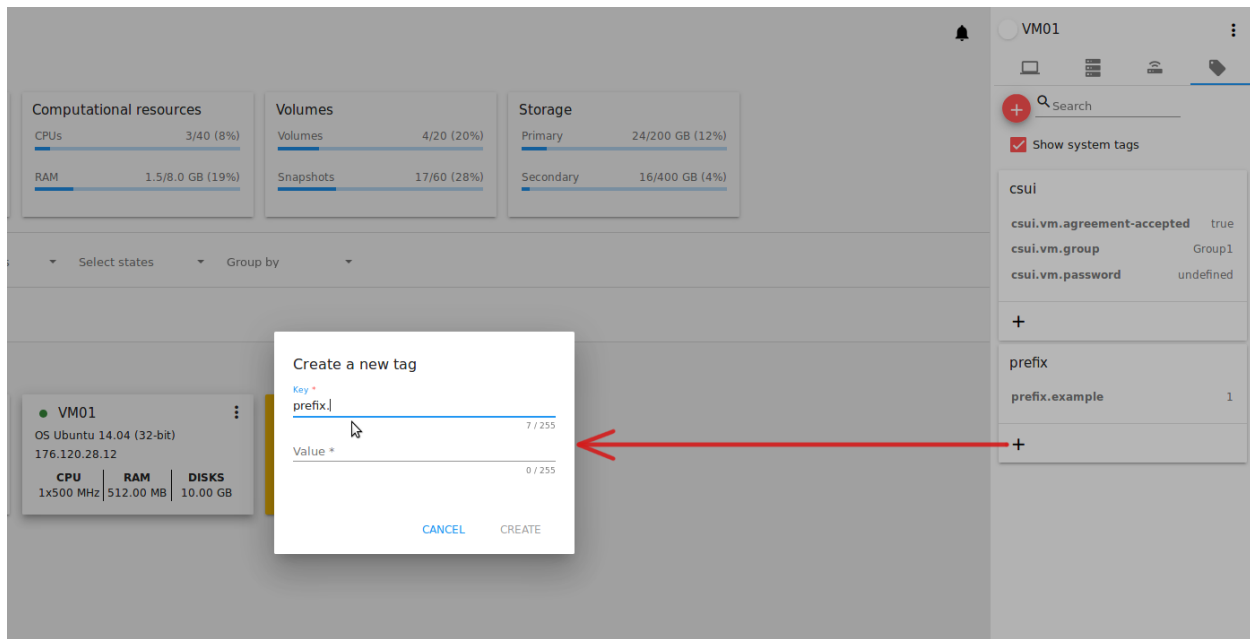
Note: Required fields are marked with an asterisk (*). You cannot use space as the first symbol.

- Key * - Enter a key here.
- Value * - Enter the value here.

When adding a system tag, click “+” in the card to open the creation form. You will see that the `csui` prefix is automatically prepopulated here.

If you create a non-system tag, it will be saved in a new card. If you have entered a key in the format `<prefix>.<example>`, a card will be named as “`<prefix>`”. When creating a new tag from this card, click “+” in the card and in the tag creation form the *Key* field will be prepopulated with the `<prefix>`.





2.2.5 Access a Virtual Machine

Access VM component allows a user to obtain all necessary credentials to access a VM in the final dialog box shown after VM creation, or later when a user selects a corresponding action in the VM Action box. Depending on tags determined for a template or a VM, the system allows getting access to the VM interaction interface. Currently, the following access modes are supported:

- Via a VNC console - active by default for all VMs;
- Via SSH;
- Via HTTP.

The three access modes can be used at the same time for one machine.

You can find more information on how to enable a necessary access mode at the [wiki-page](#).

Selecting “Access VM” in the VM action list, you open a modal window with three tabs. The view and contents of the modal window are determined by the defined tags. Some tabs in the window can be inactive. That means these access modes are not enabled for the machine. In active tab(s) you can view detailed access information for the machine: login, password, port, path and other.

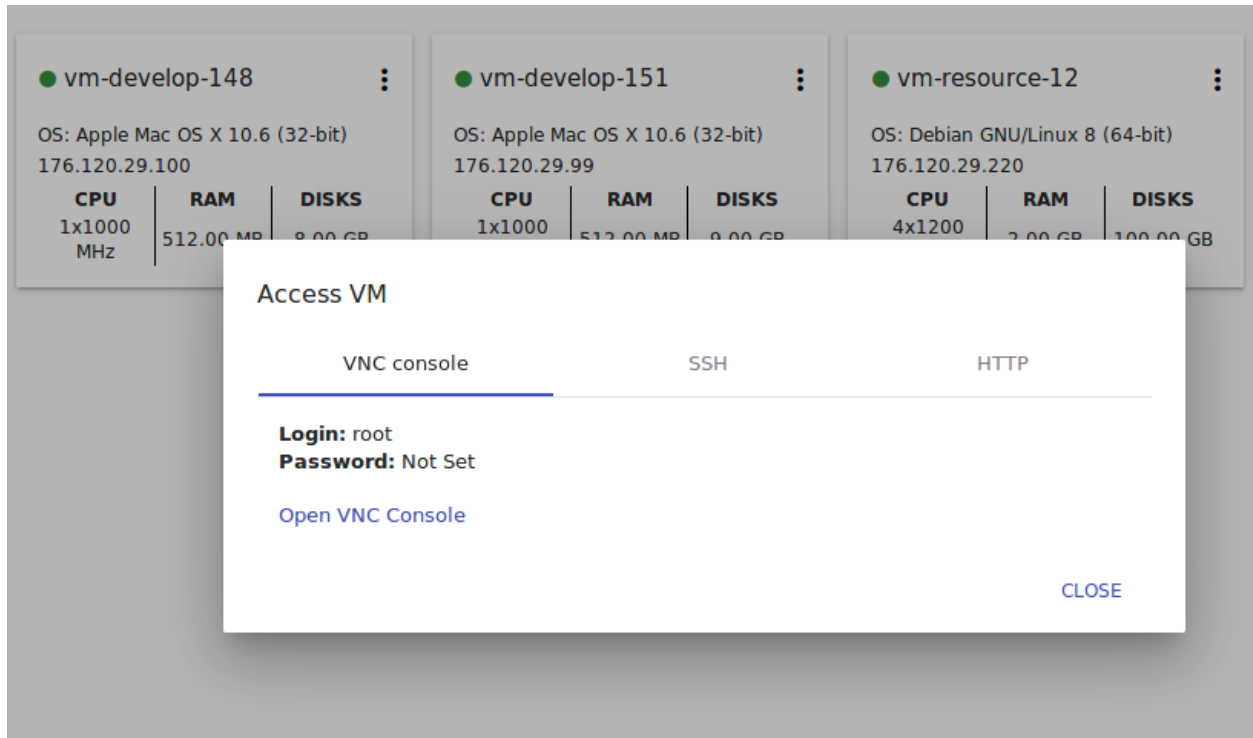
In each tab you can click on a corresponding link to open a console or a window to access the VM.

Below you will find more information on each access mode.

VNC console

This tab contains the following details:

- Login;
- Password (if available);
- Open VNC console link that opens a console to access the VM.





SSH

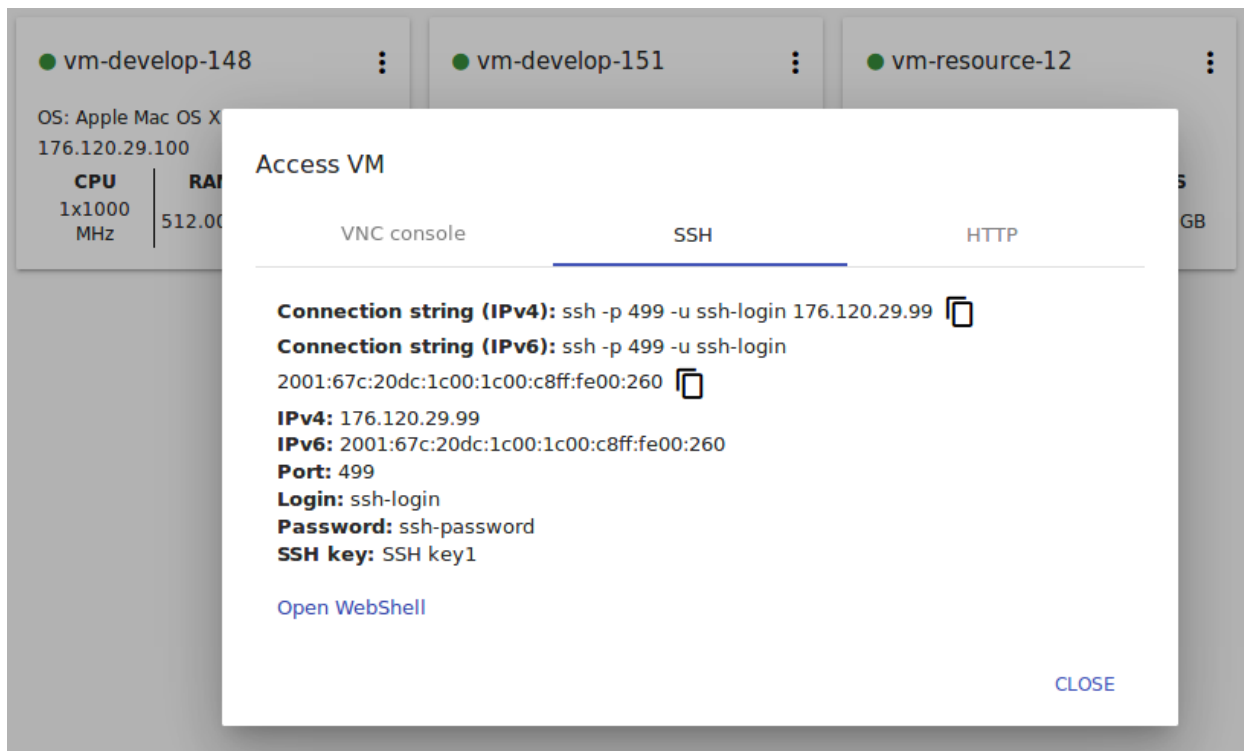
This tab is active if the access via SSH is enabled. It is determined by the following template tags:

```
csui.vm.auth-mode = SSH
csui.vm.ssh.login = login
csui.vm.ssh.password = password
csui.vm.ssh.port = port
```

This tab displays the following details:

- Connection String (IPv4), that can be copied by clicking on .
- Connection String (IPv6), that can be copied by clicking on .
- IPv4
- IPv6
- Port
- Login
- Password
- SSH Key
- Open WebShell - a clickable link to open a WebShell console.

In case the WebShell plugin is enabled, a user can SSH to VM in browser. To find more information on deployment and using the WebShell plugin, please, refer to the [page](#).



HTTP

Under this tab you can access a VM via HTTP/HTTPS URL. This mode is defined by the tags:

```
csui.vm.auth-mode = HTTP
csui.vm.http.protocol = HTTP|HTTPS
csui.vm.http.port =
csui.vm.http.path =
csui.vm.http.login =
csui.vm.http.password =
```

Note: If no `csui.vm.http.port` is defined, then default values are used:

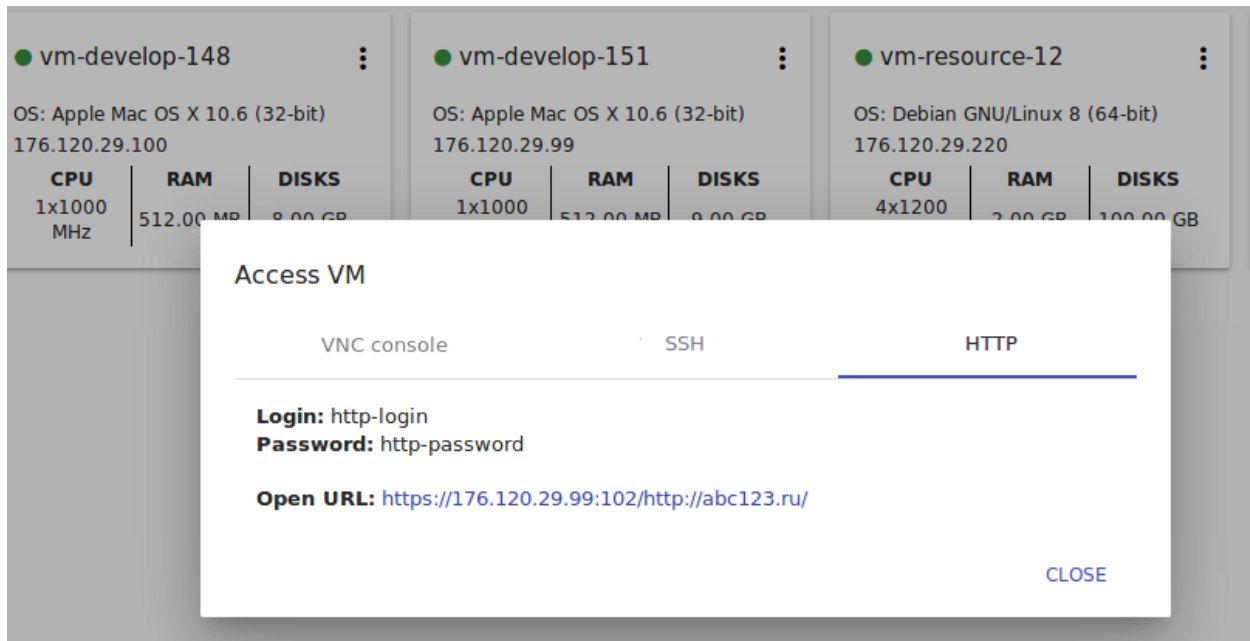
- for HTTPS protocol: 443
- for HTTP protocol: 80

This tab displays the following information:

- Login;
- Password (if available);
- Open URL with a clickable URL.

To configure VM access via HTTP/HTTPS, please, refer to [page](#).

To close the modal window click “CLOSE”.



2.3 Storage

Contents

- *Storage*
 - *Drive list*
 - * *Filtering of Drives*
 - *Create New Volume*
 - *Volume Details Sidebar*
 - * *Snapshots Action Box*
 - *Volume Action Box*

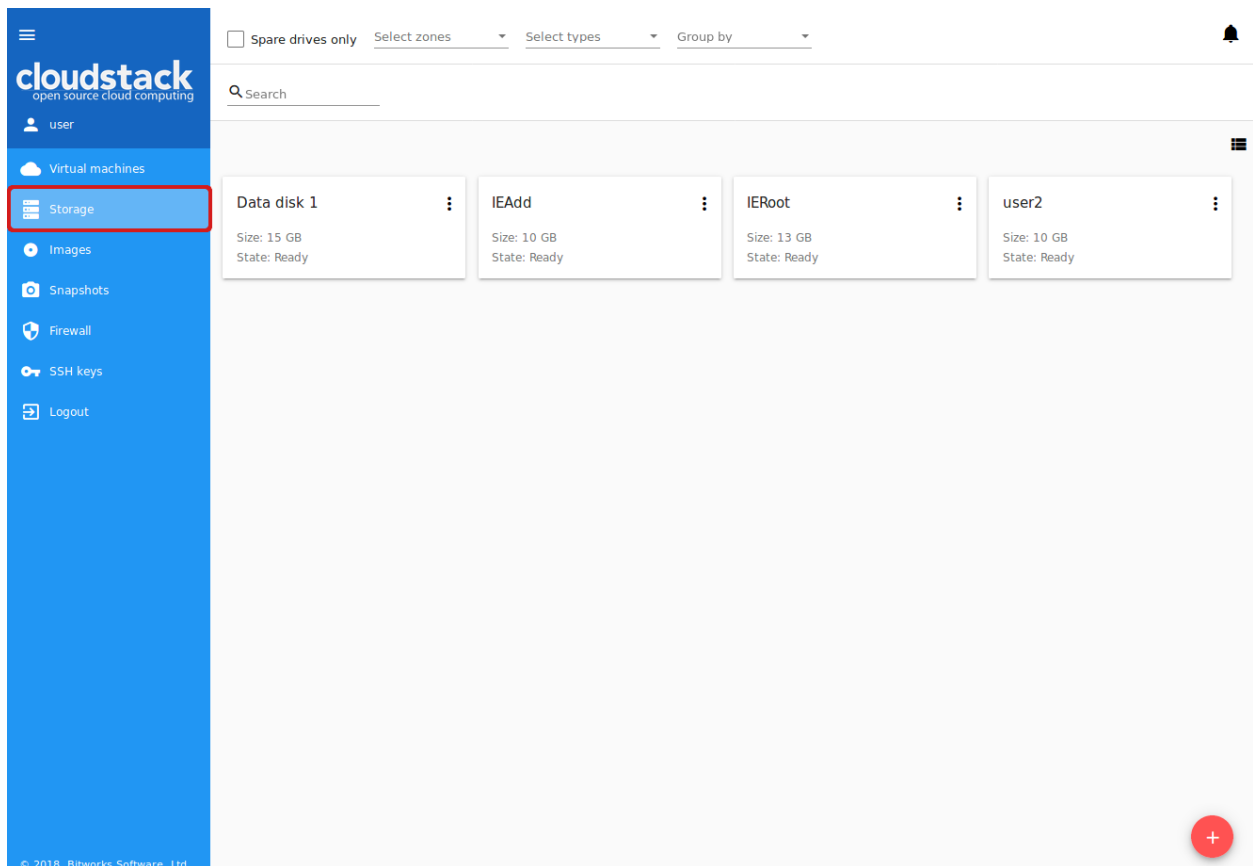
In the *Virtual Machines* -> *Storage* section, you can create and manage drives for virtual machines. Here you can add new disks, create templates and snapshots of a volume, view the list of snapshots for each volume.



2.3.1 Drive list

Note: If you have just started working with CloudStack and you do not have virtual machines yet, you have no disks in the list. Once you create a VM, a root disk is created for it automatically. Creation of an additional disk takes resources and requires expenses. Please, make sure you definitely need an additional data disk.

Here you can find a list of disks existing for your user.

Domain Administrator can see disks of all accounts in the domain.



Disks can be viewed as a list or as a grid of cards. Switch the view by clicking a view icon  /  in the upper-right corner.

Filtering of Drives

Root disks are visually distinguished from data disks in the list. There is an option to display only spare disks which allows saving user's time in certain cases.


As in all lists, there is the filtering tool for selecting drives by zones and/or types. You also can apply the search tool selecting a drive by its name or a part of the name.

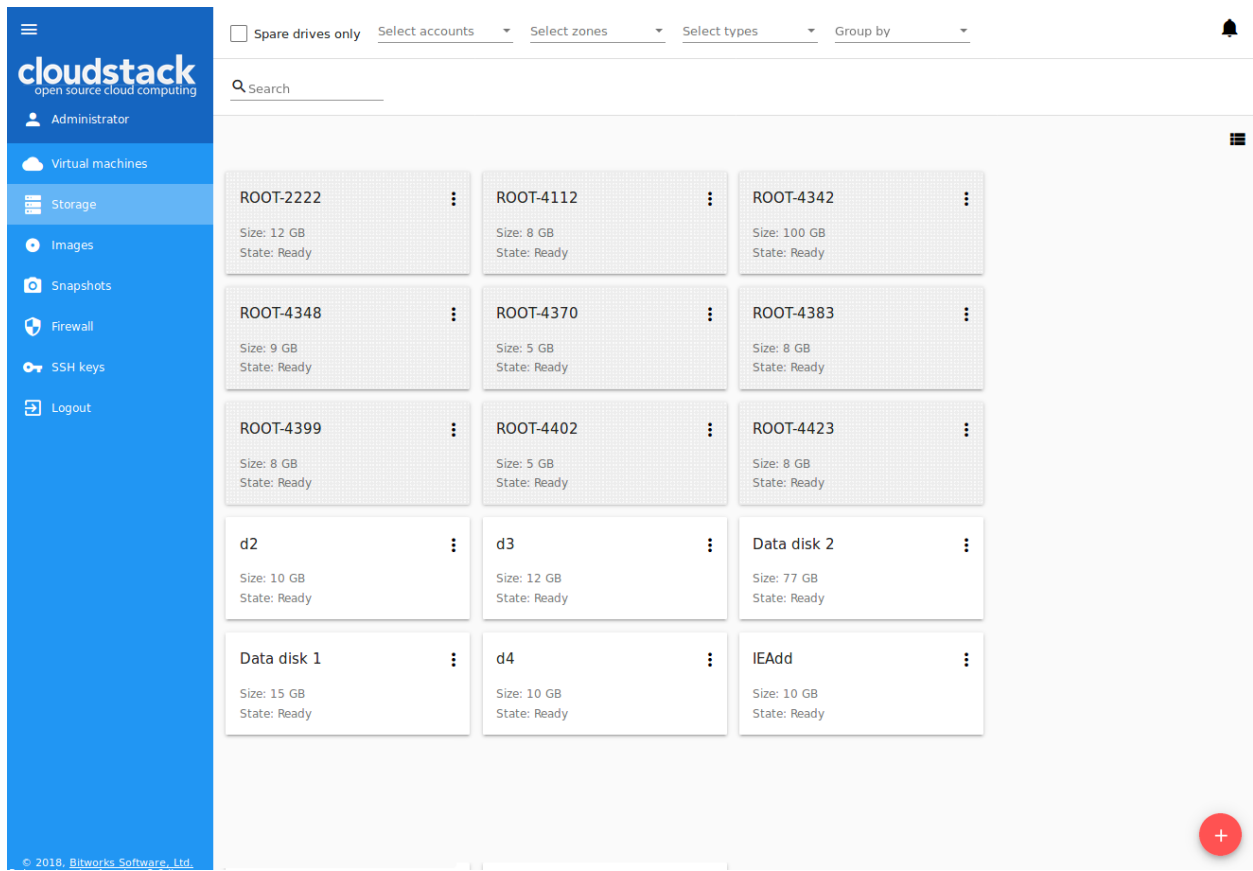
For better distinguishing of drives in the list you can group them by zones and/or types, like in the figure below:

Domain Administrators can see the list of drives of all accounts in the domain. Filtering by accounts is available to Administrators.

For each drive in the list the following information is presented:


- Drive name,
- Size,
- State - Ready or Allocated.

The Actions button  is available to the right. It expands the list of actions for a disk. See the information on actions in the [Volume Action Box](#) section below.



2.3.2 Create New Volume

In the *Storage* section you can create new volumes. Please, note that if you are aimed at creation of a virtual machine, we do not recommend starting from adding new disks to the system. You can go right to the *Virtual Machines* section and create a VM. A root disk will be created for the VM automatically.

If necessary, you can create a data disk and attach it to your VM. By clicking the “Create” button  in the bottom-right corner you will open a creation form. Please, make sure you definitely need an additional disk as it takes resources and requires expenses. If you do not have disks yet, when clicking “Create”, a dialog box will ask you if you surely want to create a drive. Confirm your creation action by clicking “CONTINUE”:

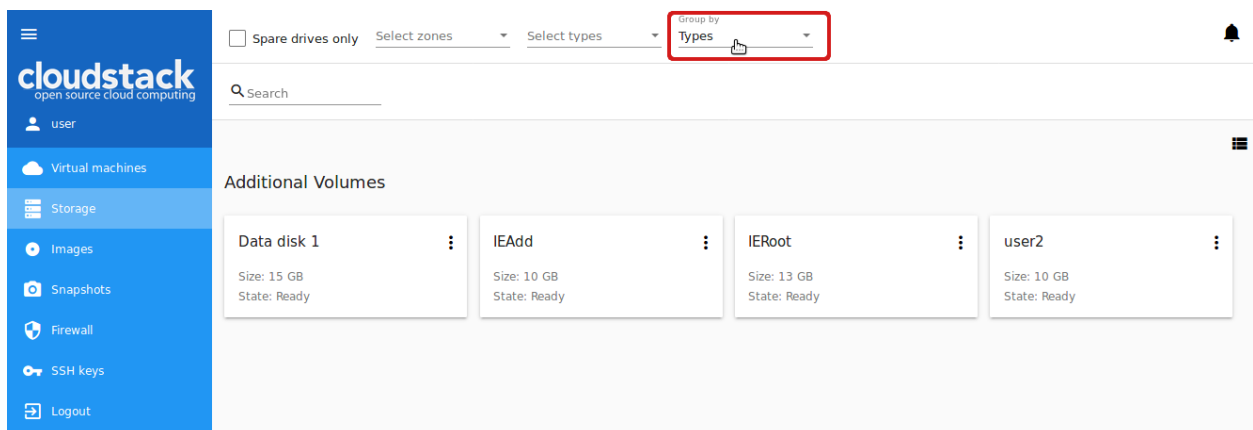
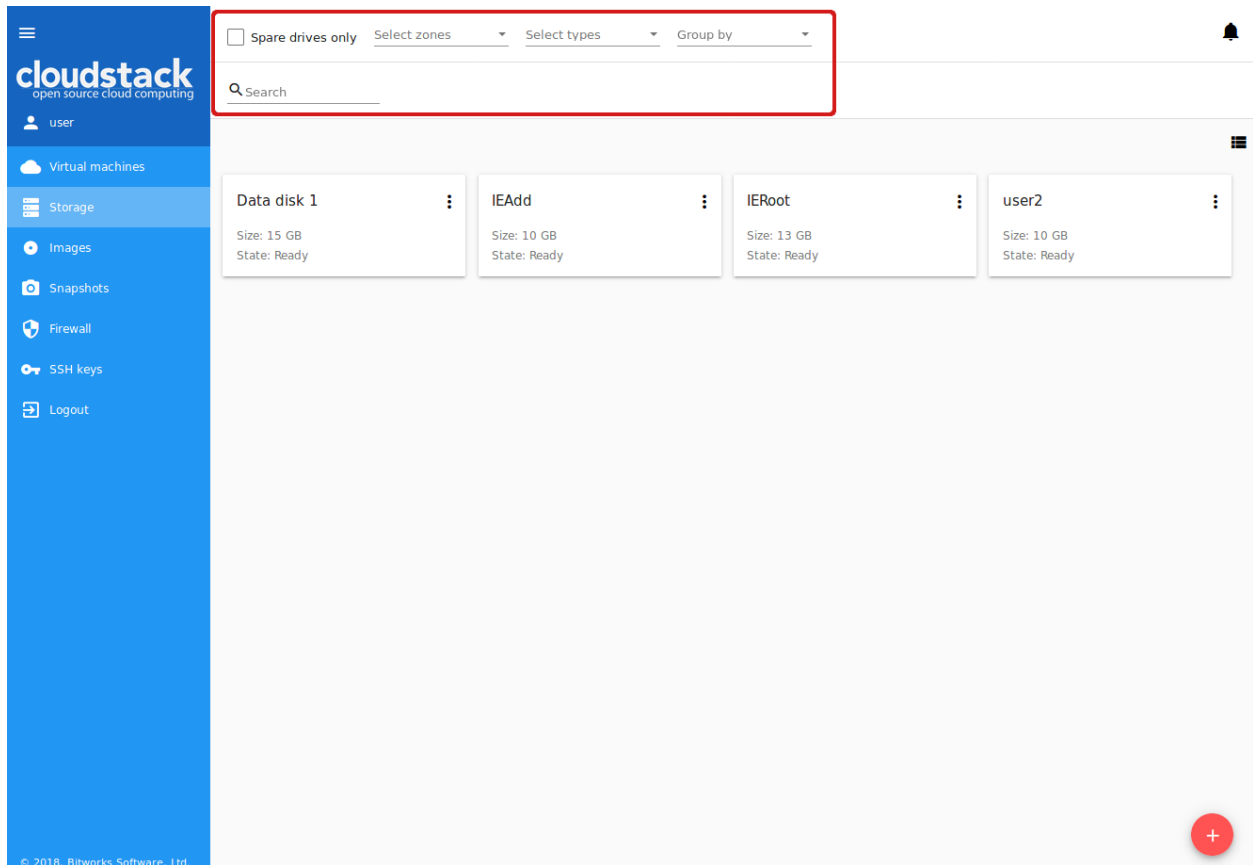
A creation form will appear.

To create a new volume fill in the fields:

Note: Required fields are marked with an asterisk (*).

- Name * - Enter a name of the volume.
- Zone * - Select a zone from the drop-down list.
- Disk offering * - Select from the list of available offerings opening it in a modal window by clicking “SELECT”. The list of available disk offerings is determined in the [configuration file](#) by Administrator.

In the modal window you can see the name and short description for each disk offering and a radio-button to select any option.



☐ Spare drives only

Select accounts
 user

Select zones

Select types

Group by

Search

Data disk 2

⋮

Size: 10 GB
 State: Ready

Template 1

⋮

Size: 2 GB
 State: Ready

☐ Spare drives only

Select zones

Select types

Group by

⬇

Search

⋮

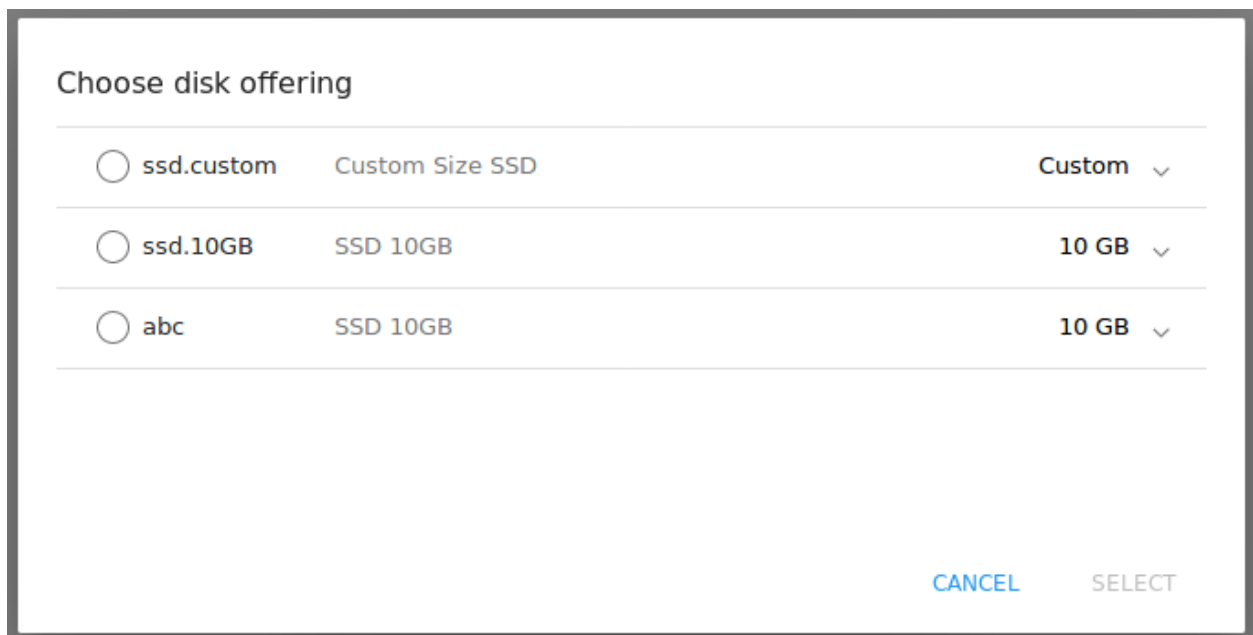
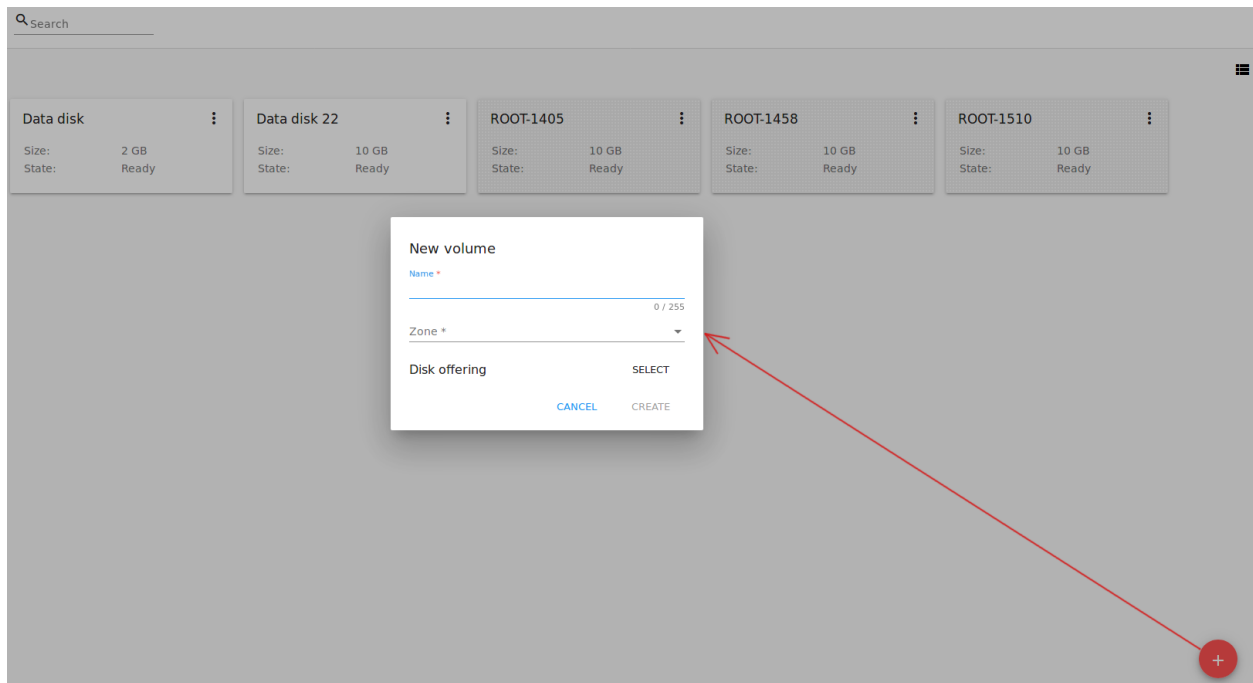
No results

You have no VMs created. When a VM is created from a template, a disk is created automatically.

Are you sure you want to create an additional disk?

CANCEL
CONTINUE

+

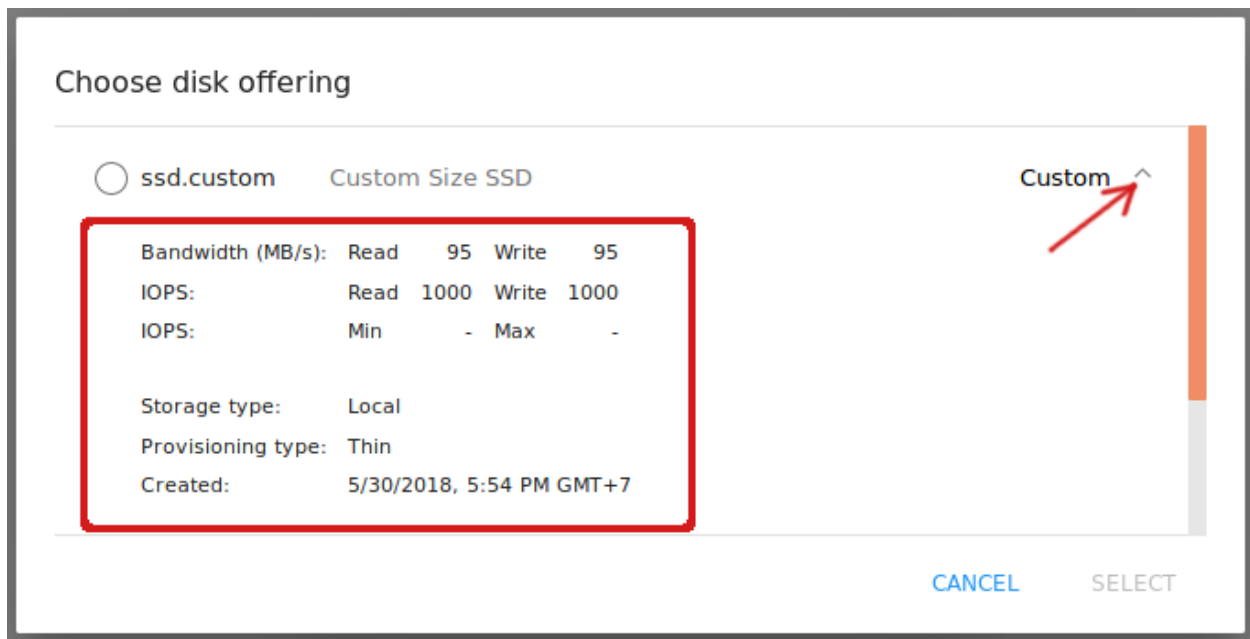


For each disk offering you can expand detailed information by clicking the arrow icon or the whole line in the list. In the appeared section you will see a range of parameters. The following parameters are shown by default:

- Bandwidth (MB/s): Read/Write rates;
- IOPS: Read/Write rates and Min/Max values;
- Storage type;
- Provisioning type;
- Creation date.

Use the scrolling tool to view them all.

More parameters can be added via the [configuration file](#) by an Administrator.



Select a disk offering in the list and click “SELECT”.

If the selected disk offering has a custom disk size (it is set by Administrator), you can change the disk size moving the slider to the volume size you wish or entering a value into the number field.

Click “CREATE” to save the settings and create the new volume. You will see the drive appears in the list.

Click “CANCEL” to drop all the settings. The drive will not be created then.

2.3.3 Volume Details Sidebar

By clicking a disk in the list you can access the information on the volume.

At the right sidebar you can find two tabs:

1. Volume tab - Provides the information on the disk volume:
 - General information - Presents disk size, date and time of creation, the storage type (shared, local).
 - Description - Allows entering a short description to the drive. Click at the Description card and enter a short description in the text block.

Choose disk offering

<input checked="" type="radio"/>	ssd.custom	Custom Size SSD	Custom ▾
<input type="radio"/>	ssd.10GB	SSD 10GB	10 GB ▾
<input type="radio"/>	abc	SSD 10GB	10 GB ▾

CANCEL SELECT

New volume

Name *
Data disk 1

Zone *
Tomsk

Disk offering
ssd.custom

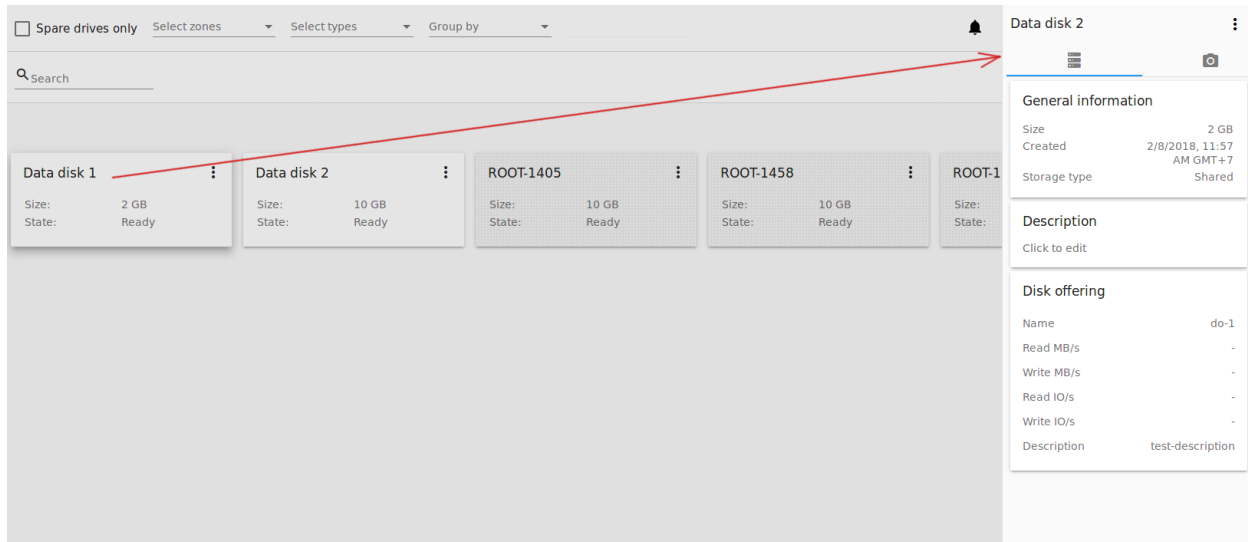
Size
10 GB

CANCEL CREATE

☐ Spare drives only Select zones ▾ Select types ▾ Group by ▾

Search

Data disk 1	Data disk 2	ROOT-604	ROOT-606	ROOT-640
Size: 32 GB State: Allocated	Size: 28 GB State: Allocated	Size: 10 GB State: Ready	Size: 10 GB State: Ready	Size: 10 GB State: Ready



Click “Save” to save the description. Description will be saved to volume tags.

You can edit the description by clicking the “Edit” button  in the tab.

- Disk offering - Presents the information on the disk offering chosen at disk creation.
2. Snapshots tab - Allows creating disk snapshots. Snapshots can be taken for disks with the “Ready” status only.



Click the “Add” button and enter in the dialog box:

- Name - Define a name for the snapshot. It is auto-generated in the format <date>-<time>. But you can specify any name you wish.
- Description - Add a description of the snapshot to know what it contains.

Then click “Create” and see the snapshot has appeared in the list.

Every snapshot is saved in a separate card. There you will see the name and time of the snapshot.

For each snapshot the list of actions is available. Find more information on snapshot actions in the [Snapshots Action Box](#) section below.

Snapshots Action Box

Note: For a newly taken snapshot all actions except “Delete” are disabled until the snapshot is backed up to the Secondary Storage that may take some time. Once it is backed up, a full range of actions is available to a user.

Likewise the Virtual Machine information tab, the same actions are available for a snapshot:

- **Create a template** - Allows creating a template from the snapshot. This template can be used for VM creation.

Fill in the form to register a new template:

Note: Required fields are marked with an asterisk (*).

- Name * - Enter a name of the new template.

Data disk 2

General information

Size	2 GB
Created	2/8/2018, 11:57 AM GMT+7
Storage type	Shared

Description

Enter text

Short description here|



CANCEL

SAVE

Disk offering

Name	do-1
Read MB/s	-
Write MB/s	-
Read IO/s	-
Write IO/s	-
Description	test-description


Data disk 2



General information

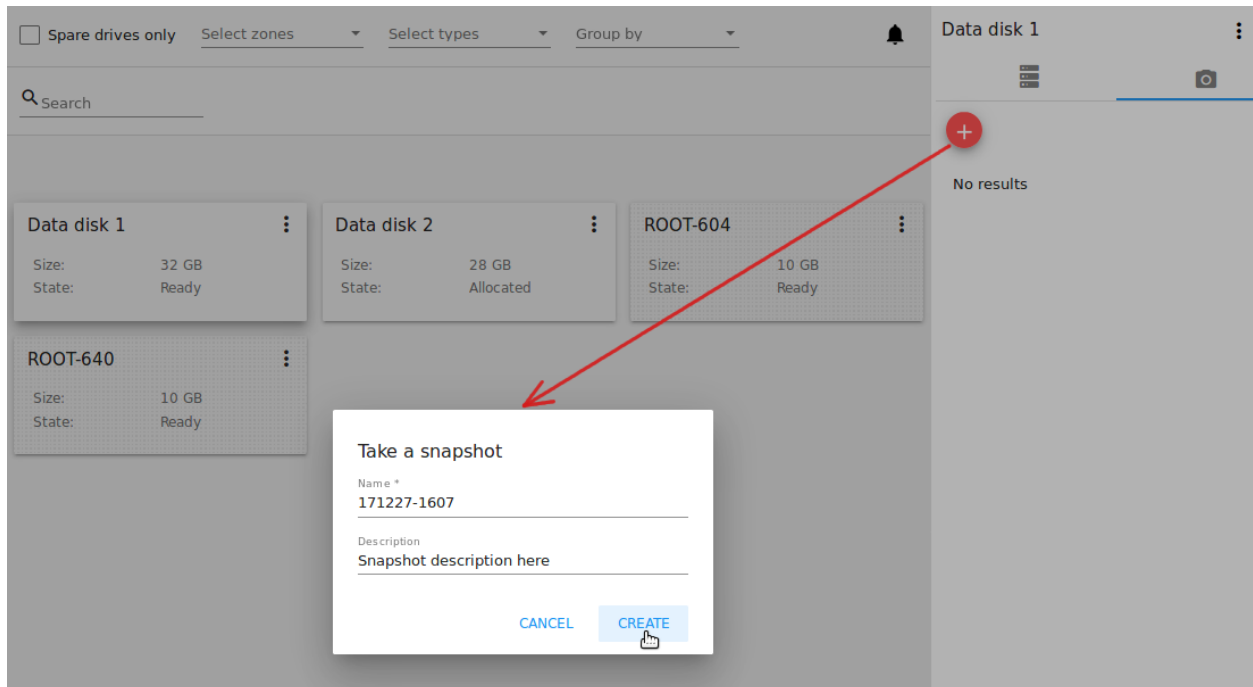
Size	2 GB
Created	2/8/2018, 11:57 AM GMT+7
Storage type	Shared

Description

Short description here

Disk offering

Name	do-1
Read MB/s	-
Write MB/s	-
Read IO/s	-
Write IO/s	-
Description	test-description



- **Description *** - Provide a short description of the template.
- **OS type *** - Select an OS type from the drop-down list.
- **Group** - Select a group from the drop-down list.
- **Password enabled** - Tick this option if the template has the password change script installed. That means the VM created on the base of this template will be accessed by a password, and this password can be reset.
- **Dynamically scalable** - Tick this option if the template contains XS/VM Ware tools to support the dynamic scaling of VM CPU/memory.

Click “SHOW ADDITIONAL FIELDS” to expand the list of optional settings. It allows creating a template that requires HVM.

Once all fields are filled in click “Create” to create the new template.

- **Create Volume** - Allows creating a volume from the snapshot.

Type a name for a new volume into the Name field in the modal window. Click “Create” to register a new volume.


Click “Cancel” to cancel the volume creation.

- **Revert Volume To Snapshot** - Allows turning the volume back to the state of the snapshot.

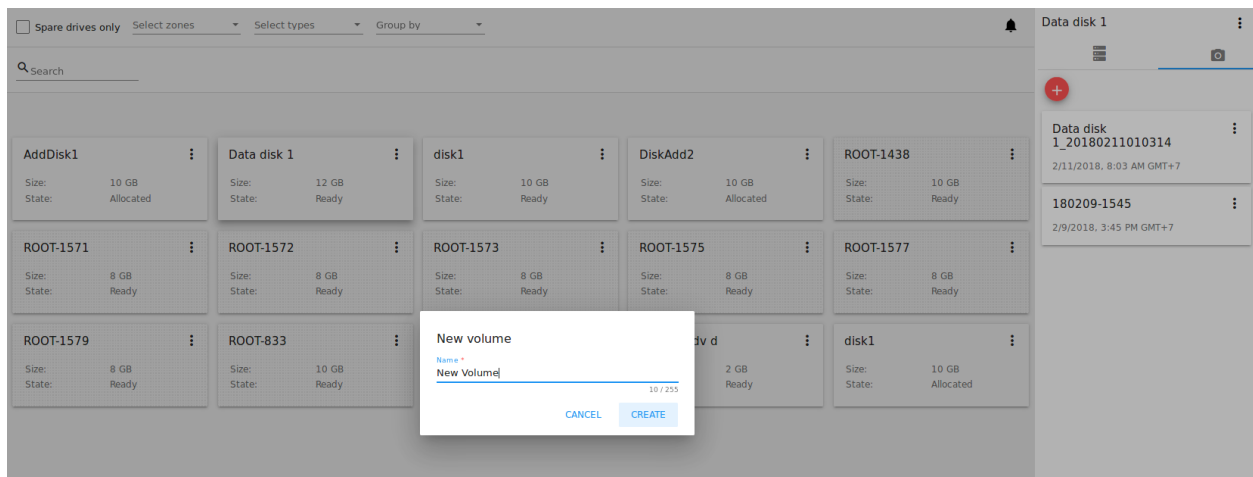
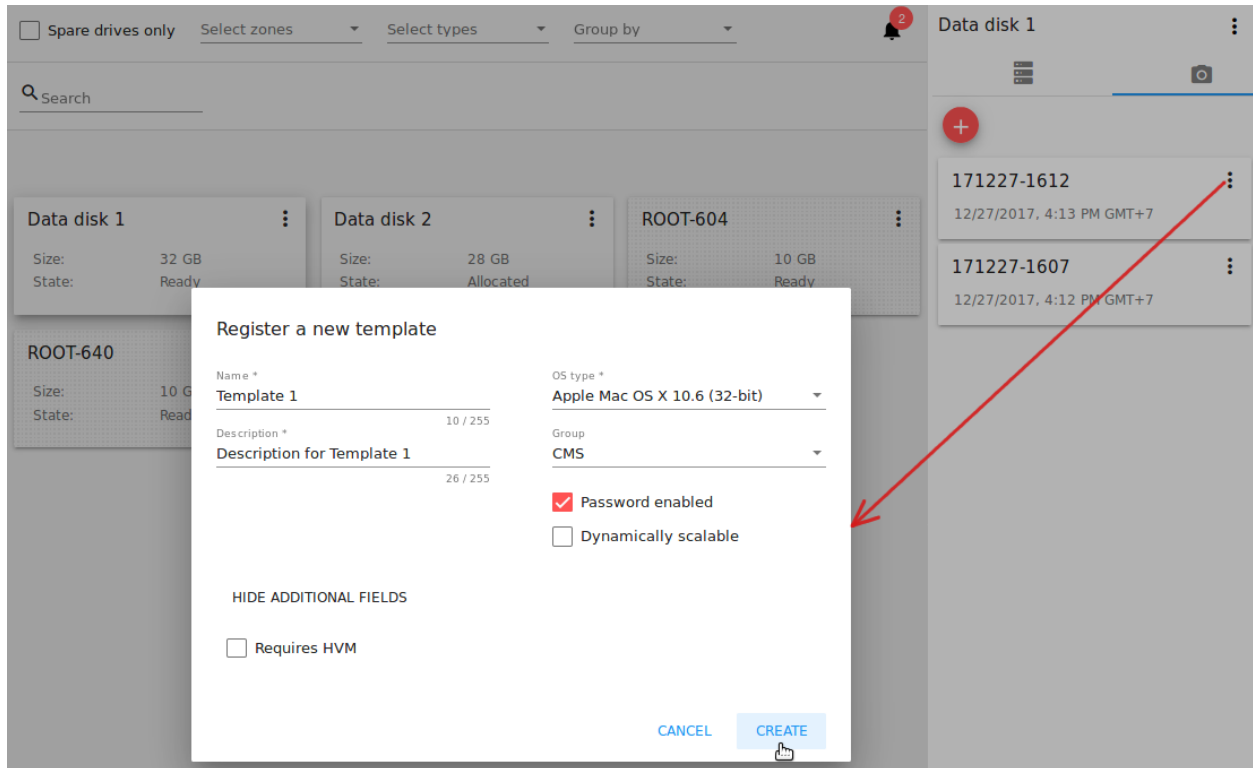
In the dialog box confirm your action. Please, note, the virtual machine the volume is assigned to will be rebooted.

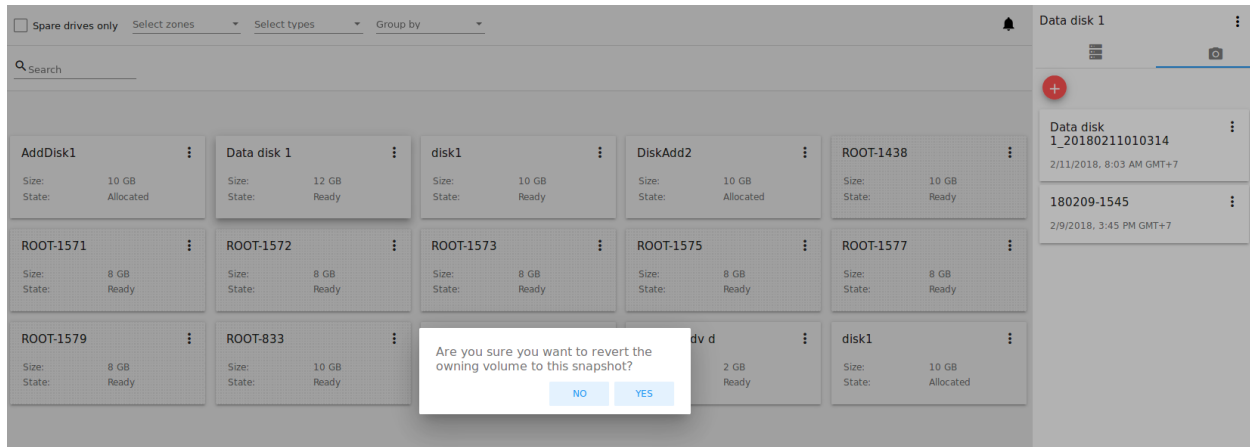
- **Delete** - Allows deleting the snapshot. Click “Delete” in the Action box and confirm your action in modal window. The snapshot will be deleted. Click “Cancel” to cancel the snapshot deleting.

2.3.4 Volume Action Box

Action on drives are available under the Actions button .

The following actions are available on disk:



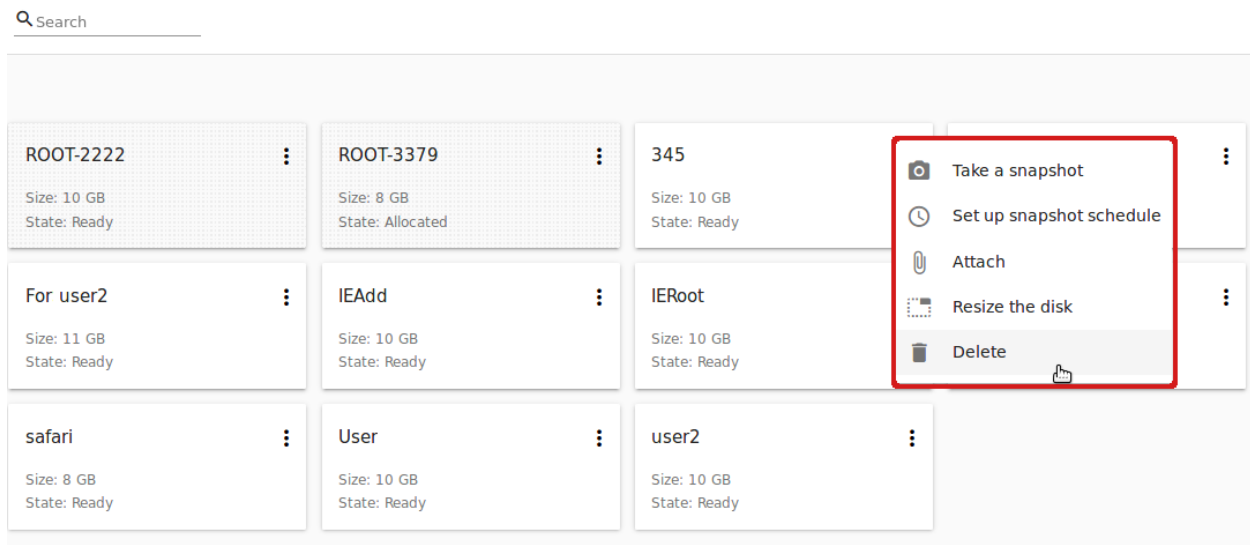


For root disks:

- Take a snapshot;
- Set up snapshot schedule;
- Resize the disk.

For data disks:

- Take a snapshot;
- Set up snapshot schedule;
- Detach;
- Resize the disk;
- Delete.



Take a snapshot

You can take a snapshot of the disk to preserve the data volumes. Snapshots can be taken for disks with the “Ready” status only.

Click “Take a snapshot” in the disk Actions list and in the dialog window enter the following information:

Note: Required fields are marked with an asterisk (*).

- Name of the snapshot * - Define a name for the snapshot. It is autogenerated in the form <date>-<time>. But you can specify any name you wish.
 - Description - Add a description of the snapshot to know what it contains.
-

All snapshots are saved in the list of snapshots. For a snapshot you can:

- Create a template;
- Delete the snapshot.

See the [Snapshots Action Box](#) section for more information.

Set up snapshot schedule

This action is available for disks with the “Ready” status only.

You can schedule the regular snapshotting by clicking “Set up snapshot schedule” in the Actions list.

In the appeared window set up the schedule for recurring snapshots:

- Select the frequency of snapshotting - hourly, daily, weekly, monthly;
- Select a minute (for hourly scheduling), the time (for daily scheduling), the day of week (for weekly scheduling) or the day of month (for monthly scheduling) when the snapshotting is to be done;
- Select the timezone according to which the snapshotting is to be done at the specified time;
- Set the number of snapshots to be made.

Click “+” to save the schedule. You can add more than one schedule but only one per each type (hourly, daily, weekly, monthly).

Resize the disk

Note: This action is available to root disks as well as data disks created on the base of disk offerings with a custom disk size. Disk offerings with custom disk size can be created by Root Administrators only.

You can change the disk size by selecting “Resize the disk” option in the Actions list. You are able to enlarge disk size only.

In the appeared window set up a new size and click “RESIZE” to save the edits.

Click “Cancel” to drop the size changes.

Attach/Detach

This action can be applied to data disks. It allows attaching/detaching the data disk to/from the virtual machine.

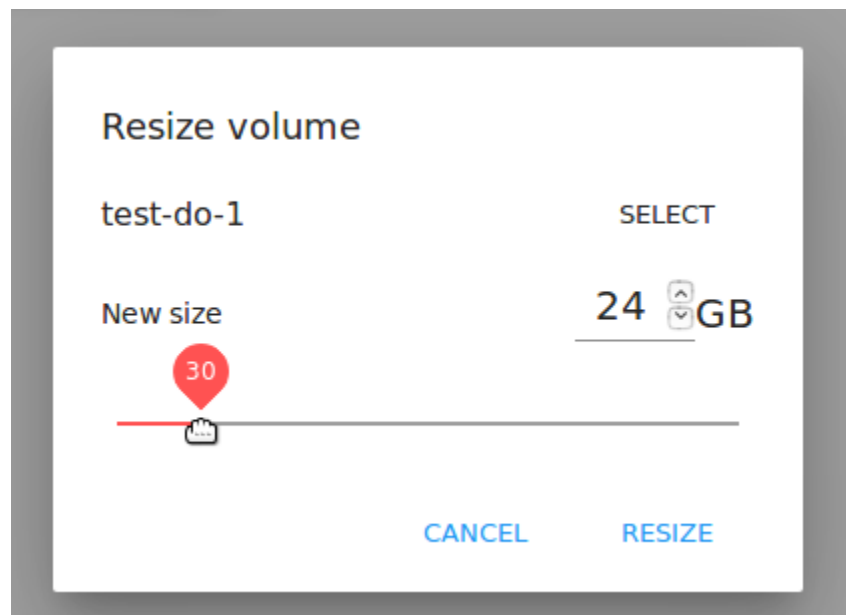
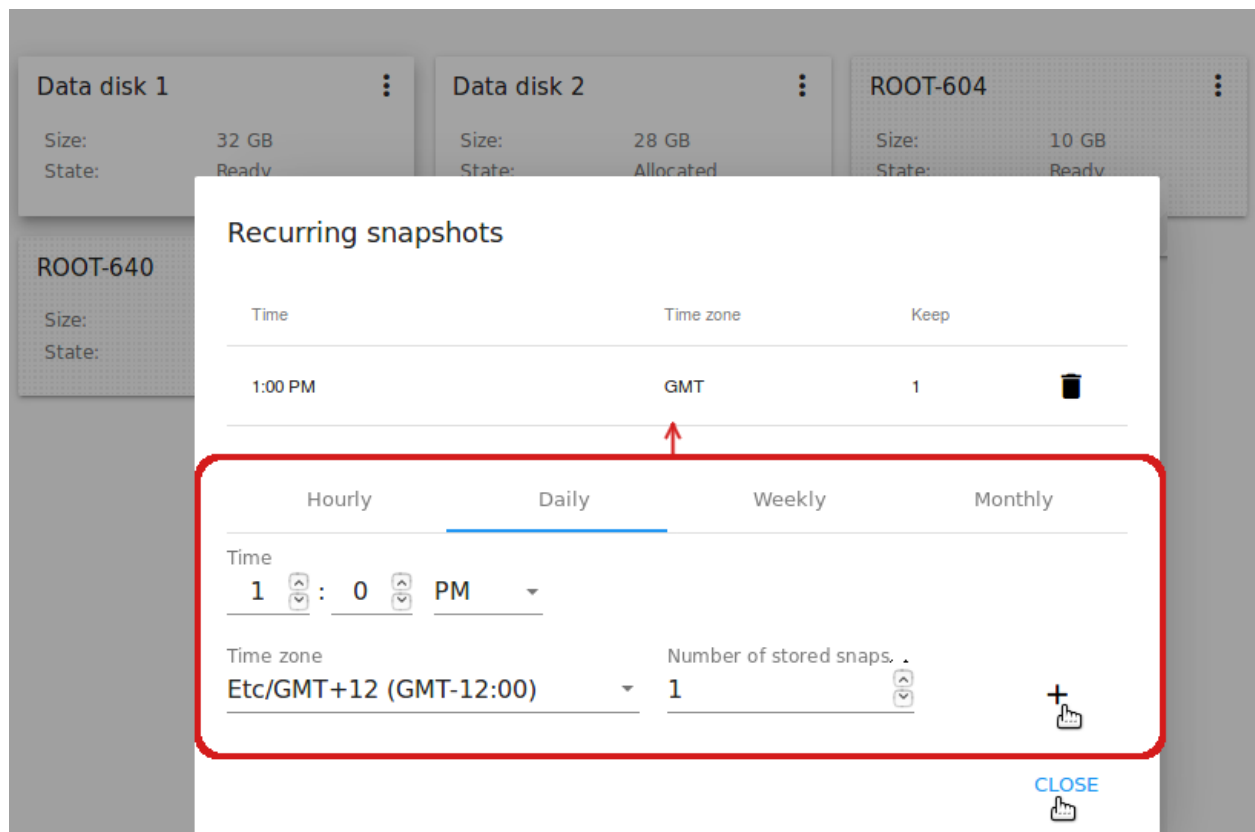
Click “Attach” in the Actions list and in the dialog window select a virtual machine to attach the disk to. Click “ATTACH” to perform the attachment.

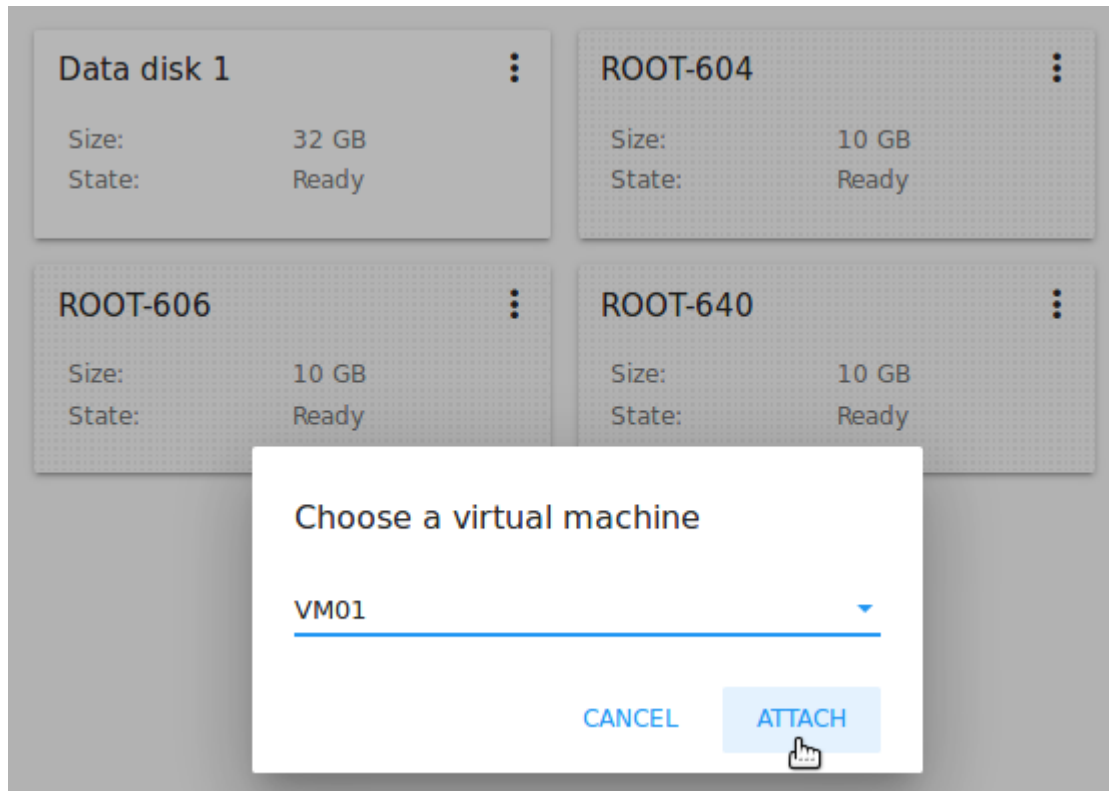
An attached disk can be detached. Click “Detach” in the Actions list and confirm your action in the dialog window. The data disk will be detached from the virtual machine.

Delete

This action can be applied to data disks. It allows deleting a data disk from the system.

Click “Delete” in the Actions list and confirm your action in the dialog window.





If a volume has snapshots the system will ask you if you want to delete them as well. Click “YES” to delete the snapshots of the volume. Click “NO” to keep them.

The data disk will be deleted from the system.

2.4 Images

Contents

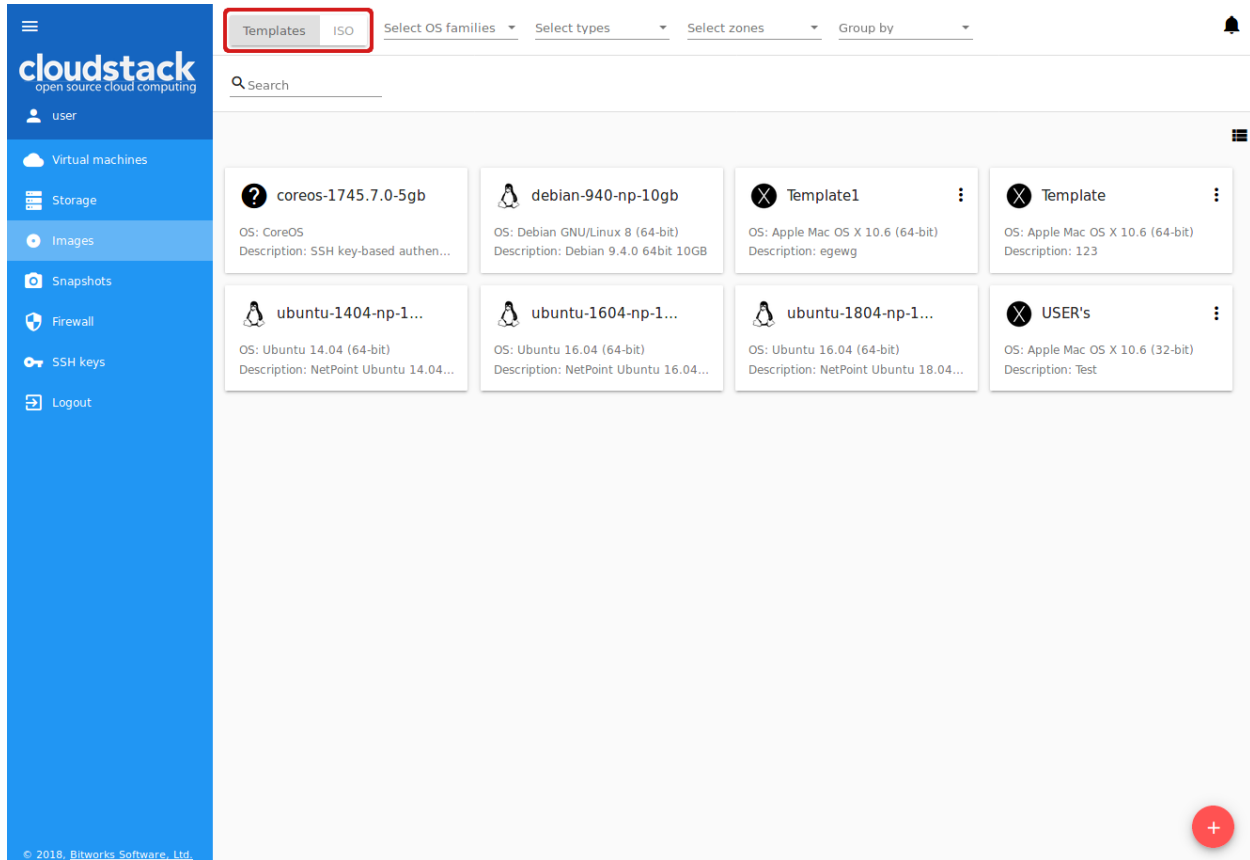
- *Images*
 - *Images List*
 - * *Filtering of Images*
 - *Create Template*
 - *Create ISO*
 - *Template/ISO Details Sidebar*
 - *Template/ISO Action Box*

In the *Virtual Machines* -> *Images* section, you can manage Templates and ISO files that are used as installation sources for VMs.

A template is a reusable configuration for virtual machines. When users create a VM, they can choose from a list of templates. Administrators and users can create new templates and add them to CloudStack.


ISO files are another installation source for virtual machines.


You can switch from Templates to ISOs by selecting a corresponding option above:



2.4.1 Images List

Existing templates/ISOs are presented in the list in the “Images” section. A user can see the templates/ISOs belonging to his/her user only. Domain Administrator can see templates/ISOs of all users in the domain but cannot perform actions on other users’ templates.

You can switch the list view of templates/ISOs to the box view using the view button  in the upper-right corner.

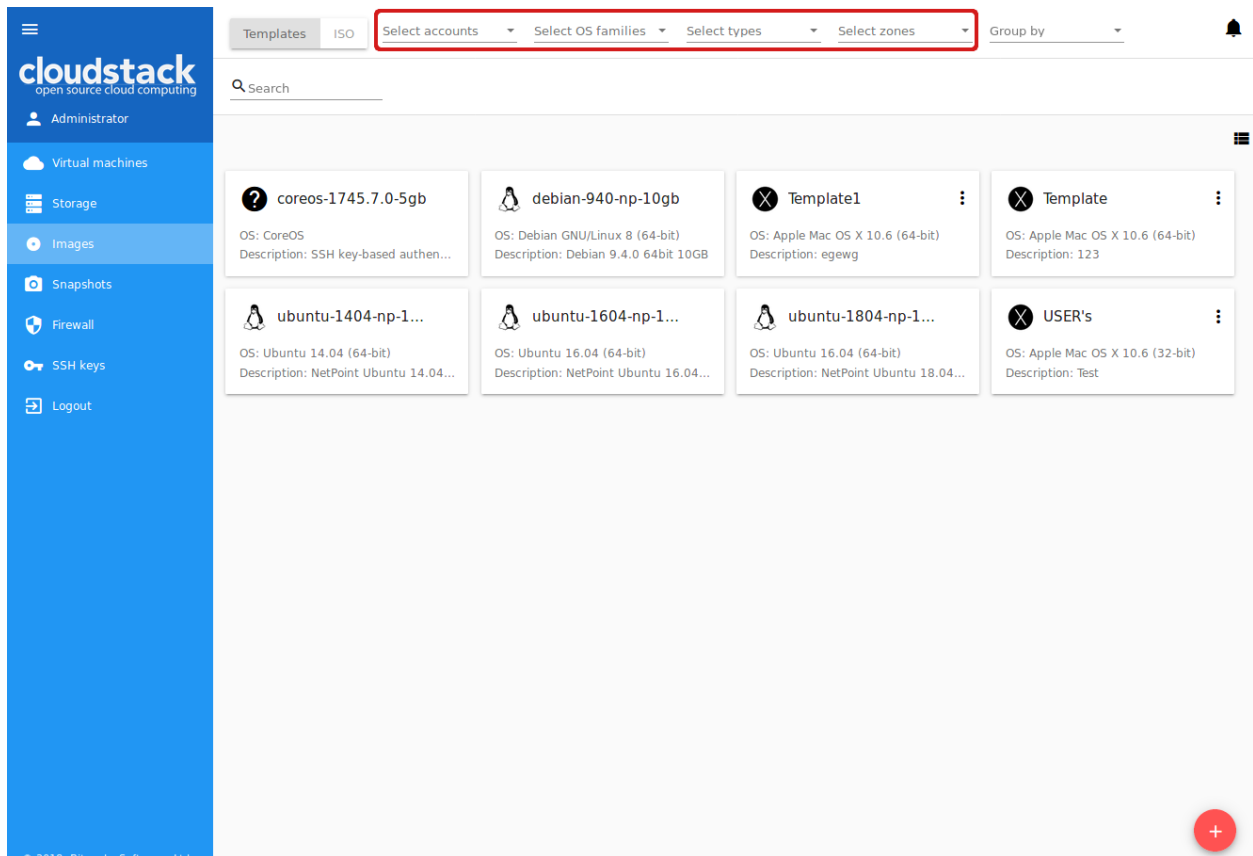
For each template/ISO in the list, you can see its name, OS family, description. The Actions button  expands the list of actions. Actions are available to those templates/ISOs that belong to your user only (corresponding to “My” type). Administrators can see templates/ISOs of all users in the domain, but cannot manage them.

Filtering of Images

The list of templates/ISOs can be filtered using the filtering tool. The filtering parameters are as follows:

- Accounts (for Domain Administrators);
- OS families;
- Types of templates/ISO:
 - My - for user’s templates or ISOs (Private),

- Featured - for templates marked by an Administrator as most prominent for users to select,
- Community - for templates accessible to all users of this CloudStack installation (Public);
- Zones.




Besides, you can adjust the list view using the grouping tool. Templates/ISOs can be grouped by zones or/and groups. Administrators can group the list by accounts.

Use the search tool to easily find a template/ISO by its name or by a part of the name.

2.4.2 Create Template

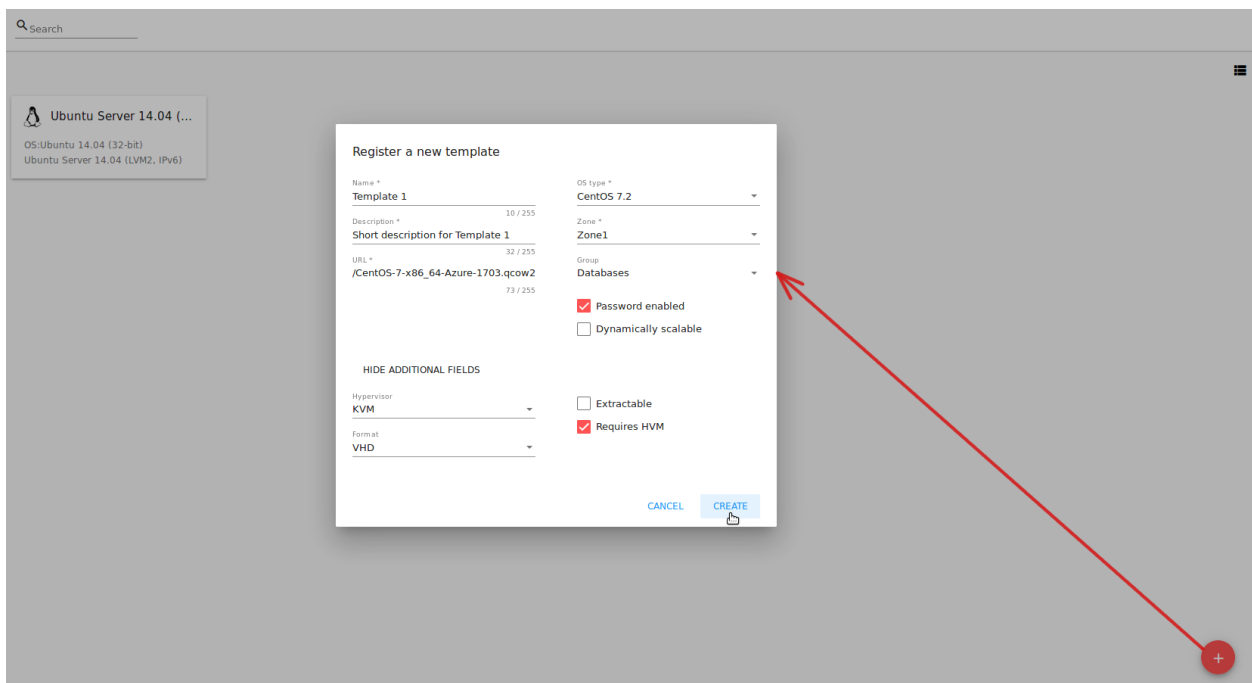
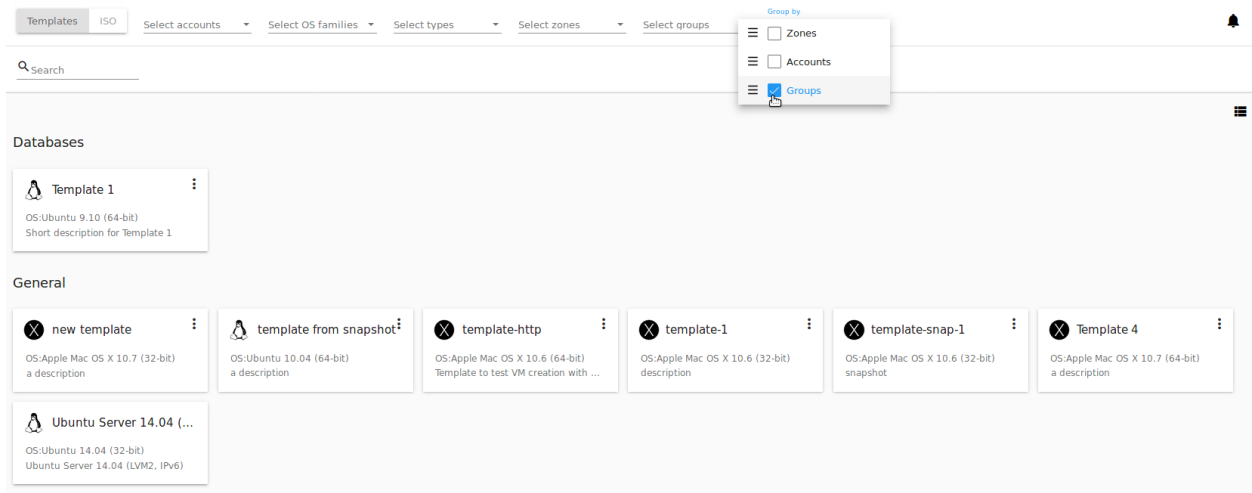
There is a variety of ways to add more templates to the system. In the *VM Details Sidebar* section, we have described one way of template creation from a VM volume snapshot in the “Storage” tab of the VM information sidebar (see *Snapshot Action Box*). From the *Volume Details Sidebar* of the “Storage” section, you also can create a template on the base of the volume snapshot (see *Snapshots Action Box*).

One more way to create a new template is filling in the form in the *Images* section by clicking “Create”  in the bottom-right corner.

It will open a creation form where you should specify the following information:

Note: Required fields are marked with an asterisk (*).

1. Name * - Enter a name for the new template.



2. Description * - Provide a short description to have a general idea about the template.
3. URL * - Specify a valid URL of the template file.
4. OS type * - This helps CloudStack and the hypervisor perform certain operations and make assumptions that improve the VM performance. Select from the drop-down list the necessary option, or select “Other” if there is no needed option in the list.
5. Zone * - Choose the zone where you want the template to be available.
6. Group - Select a group from the drop-down list. The list of groups is managed by Administrator in the [configuration file](#). The group assigned to a template is saved to template tags with the `csui.template.group` tag. The group can be edited or deleted from the [Template/ISO Details Sidebar](#) from the “Template” tab or by editing or deleting the corresponding tag in the “Tags” tab.
7. Password enabled checkbox - Tick this option if your template has the CloudStack password change script installed. That means the VM created on the base of this template will be accessed by a password, and this password can be reset.
8. Dynamically scalable checkbox - Tick this option if the template contains XS/VM Ware tools to support dynamic scaling of VM CPU/memory.
9. “Show additional fields” allows expanding the form and set more settings:
 - Hypervisor - Select a hypervisor from the drop-down list.
 - Format - The format of the template upload file, e.g. VHD or RAW or VMDK.
 - Extractable - Tick this option if the template is available for extraction. If this option is selected, end-users can download a full image of a template.
 - Requires HVM - Tick this option for creating a template that requires HVM.

Once all fields are filled in, click “Create” to create the template with these settings. The created template will appear in the list.

Click “Cancel” to close the form without template creation. All fields will be cleared.

2.4.3 Create ISO



You can create a new ISO file in the *Images* section by clicking “Create” in the bottom-right corner.

It will open a creation form where you should specify the following information:

Note: Required fields are marked with an asterisk (*).

1. Name * - Enter a name for the new ISO file.
2. Description * - Provide a short description to have a general idea about the ISO file.
3. URL * - Specify a valid URL of the ISO file.
4. OS type * - This helps CloudStack and the hypervisor perform certain operations and make assumptions that improve the VM performance. Select from the drop-down list the necessary option, or select “Other” if there is no needed option in the list.
5. Zone * - Choose the zone where you want the ISO file to be available.

6. Group - Select a group from the drop-down list. The list of groups is managed by Administrator in the [configuration file](#). The group assigned to ISO is saved to ISO tags with the `csui.template.group` tag. The group can be edited or deleted from the [Template/ISO Details Sidebar](#) from the “Template” tab or by editing or deleting the corresponding tag in the “Tags” tab.

7. “Show additional fields” allows expanding the form and set more settings:

- Extractable - Tick this option if the ISO file is available for extraction. If this option is selected, end-users can download a full image of an ISO file.
- Bootable - Tick this option to indicate whether the machine can be booted using this ISO.

Once all fields are filled in, click “CREATE” to create the ISO file with these settings. The created ISO file will appear in the list.

Click “CANCEL” to close the form without ISO creation. All fields will be cleared.

The created ISO will appear in the list.

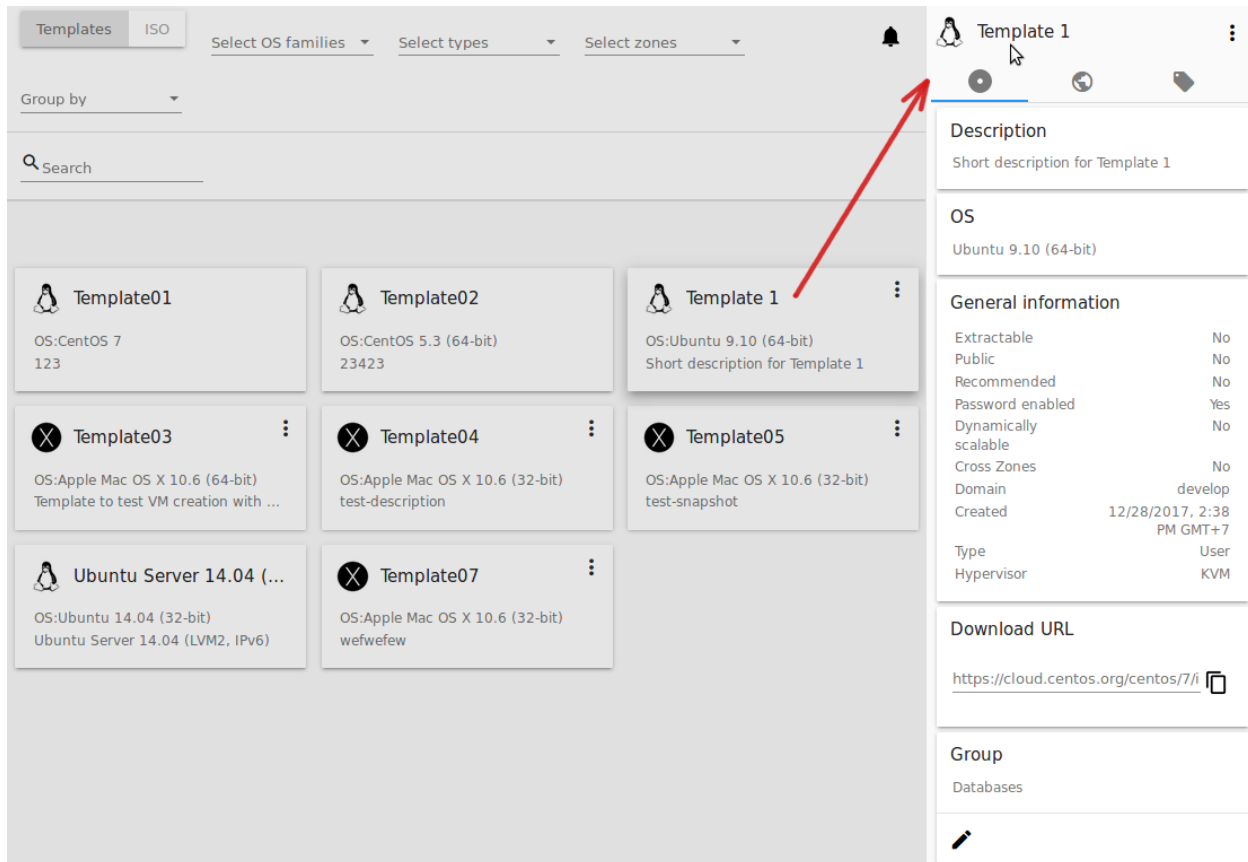
2.4.4 Template/ISO Details Sidebar

The information on each template/ISO is presented in the sidebar to the right. It is opened by clicking the template/ISO card or line in the list. The information is presented here in 3 tabs. Above the tabs you can see the template/ISO general information:



- Name - Template/ISO name and symbol,
- Actions button - Actions list allowing the Delete action.

1. Template tab:

- Description - Template/ISO description provided at its creation.
- OS - The OS selected for this template/ISO.



- General Information - The settings saved for this template/ISO: size, creation date, type, hypervisor, other settings.

- Download URL - The URL provided for this template/ISO. Next to it you can see the “Copy” icon . Click it to copy the URL to clipboard and then paste it in the address line.
- Group - Shows the template/ISO group if it is enabled via the [configuration file](#). You can change the group by clicking “Edit” . Choose an existing group in the appeared window and click “ASSIGN” to assign the template/ISO to the selected group. You can remove the template/ISO from the group. Select the “Remove from the group <group name>” option and click “REMOVE”.

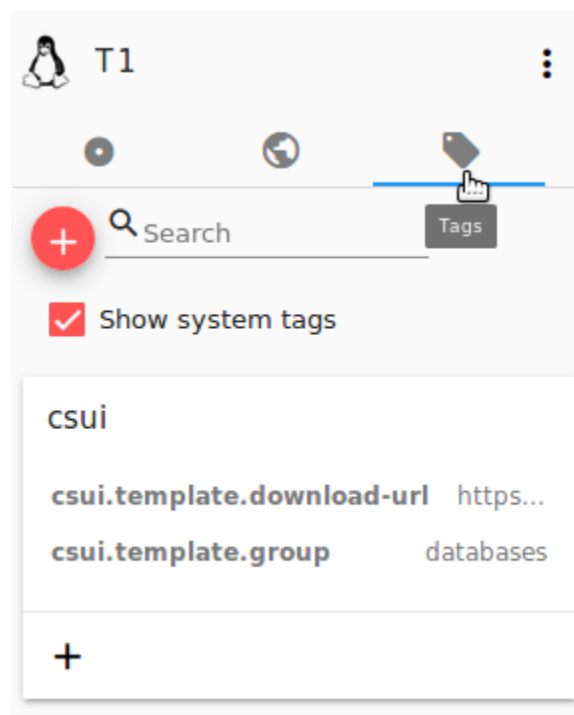
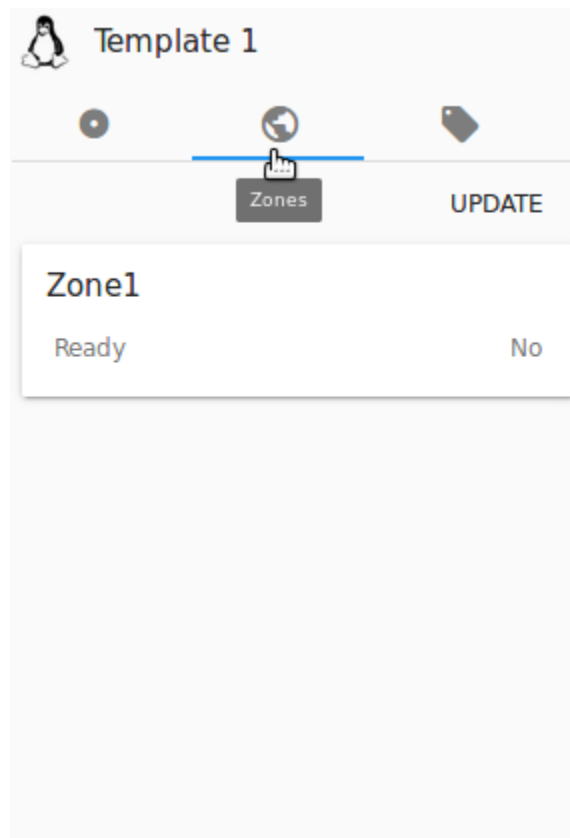
2. Zones tab - Shows the zone where the template/ISO is available. If the zone has “Yes” for the *Ready* status, the template/ISO can be used for VM creation.

3. Tags tab - Presents the list of tags assigned to the template/ISO.

Tags can be system or non-system. System tags are used to provide the functionality from the user interface perspective. Changing these tags affects the functionality of the application. The “Show system tags” checkbox allows to view or hide system tags of the template. Hiding system tags helps to avoid accidental unwanted changes. If a user has disabled displaying of these tags, the system will remember it and next time tags will also be hidden. Uncheck the “Show system tags” checkbox to hide system tags from the list.


The following system tags can be used for templates/ISOs:

- `csui.template.group` - Used to assign a template/ISO to a group.
- `csui.template.download-url` - Used for URL, if any provided for the template/ISO.



Note: Please, see the [list of tags](#) to find system tags that can be used for a template/ISO.

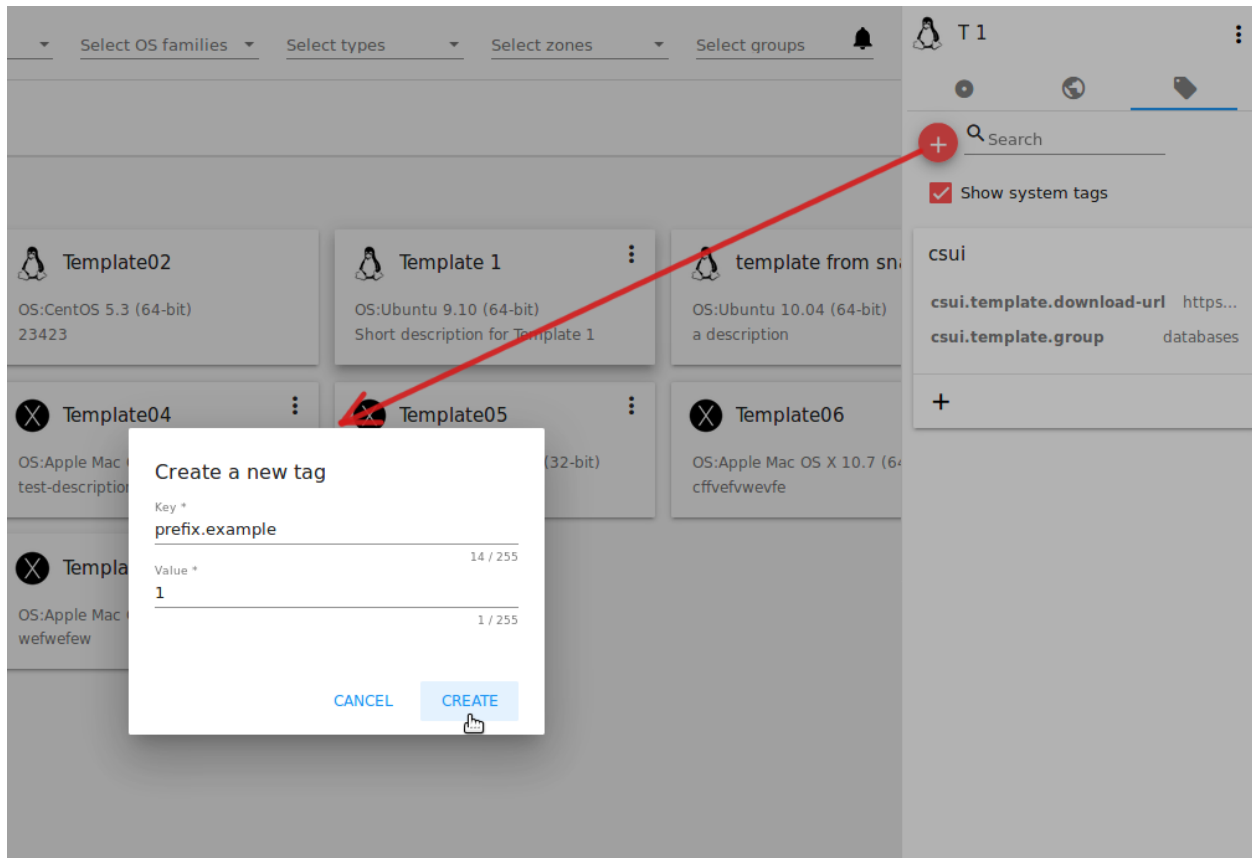
To find the tag you are interested in, please, use the search tool above the tag list. You can enter a name or a part of the tag name to distinguish it in the list.

To add a tag for the template/ISO click “Create” . In the appeared form enter:

- Key *
- Value *

Note: Required fields are marked with an asterisk (*). The values in the fields cannot start with a space.

Click “Create” to assign a new tag to the template/ISO.

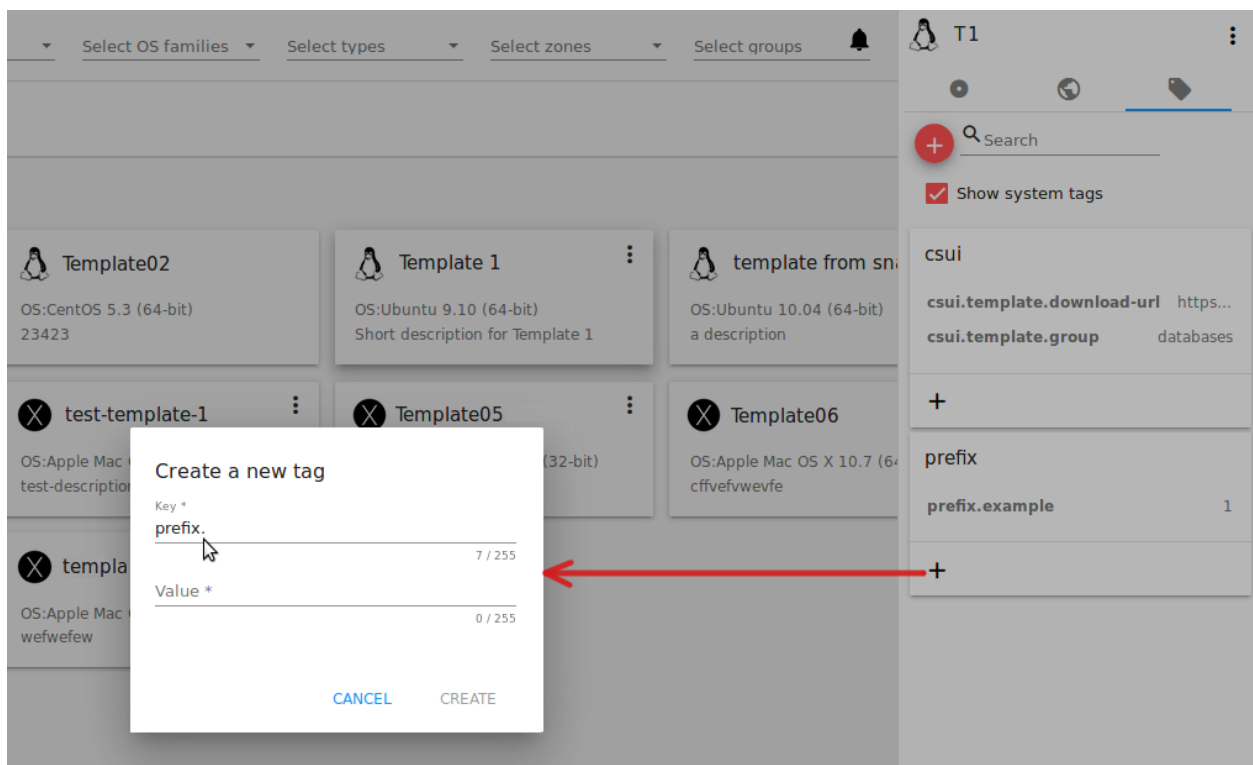
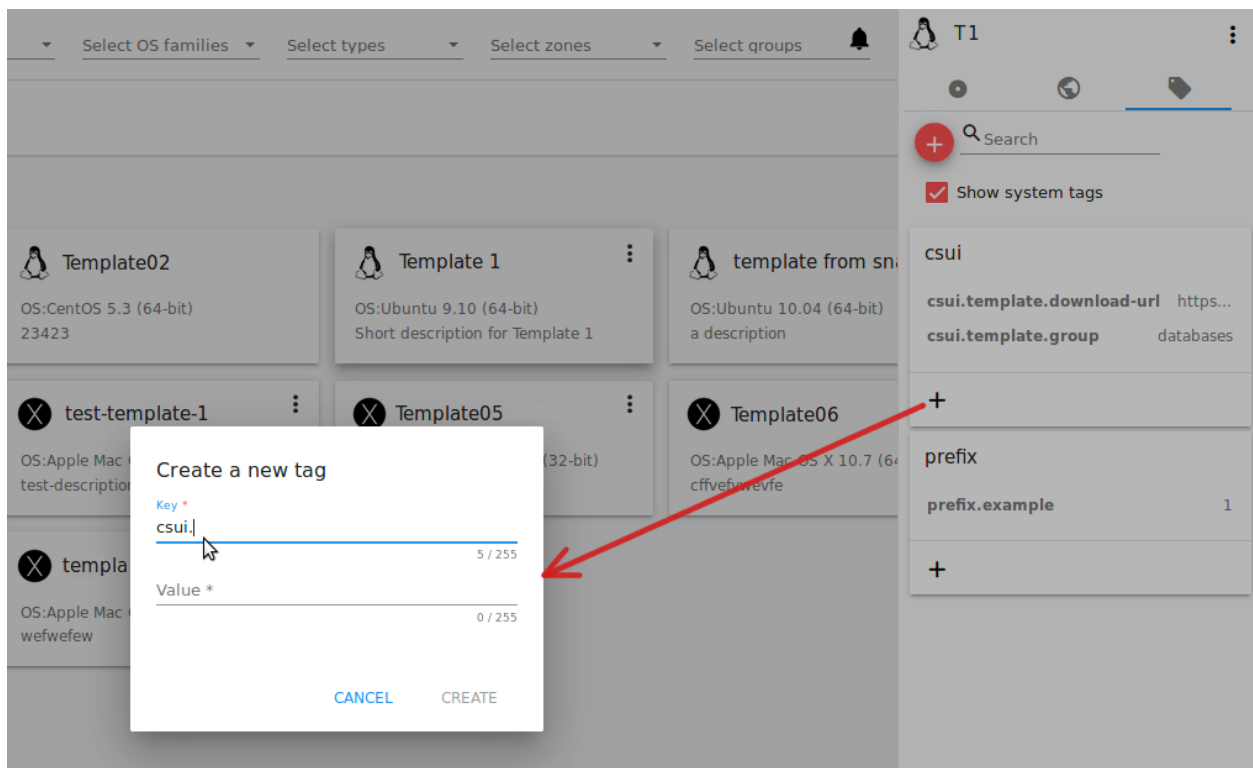


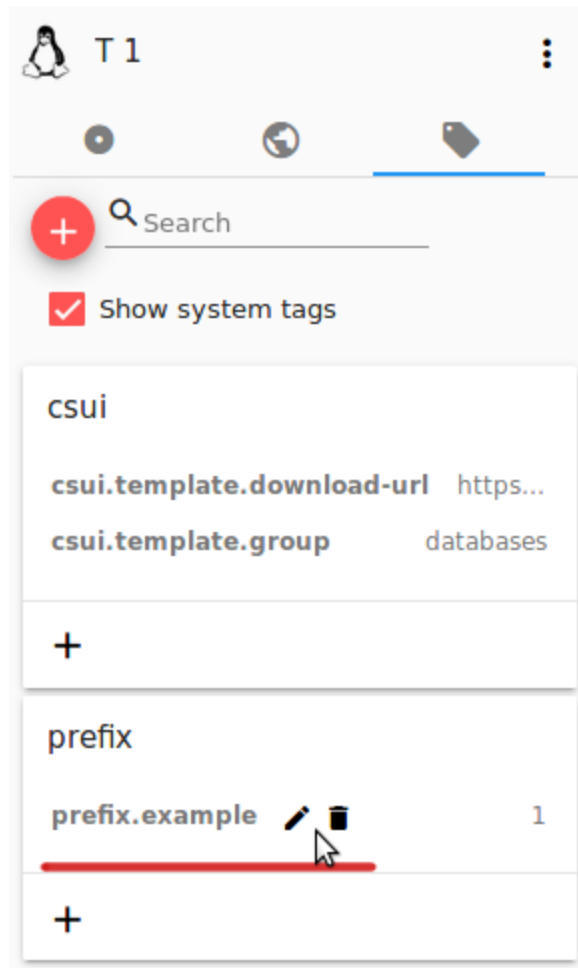
When adding a system tag, click “+” in the card to open the creation form. You will see that the `csui` prefix is automatically prepopulated here.

If you create a non-system tag, it will be saved in a new card. If you have entered a key in the format `<prefix>.<example>`, a card will be named as “`<prefix>`”. When creating a new tag from this card, click “+” in the card and in the tag creation form the *Key* field will be prepopulated with the `<prefix>`.

Tags can be edited or/and deleted. Mouse over the tag in the list and see “Edit” and “Delete” buttons.


Click “Edit” to change the tag’s key or value in the appeared form. Save the edits.

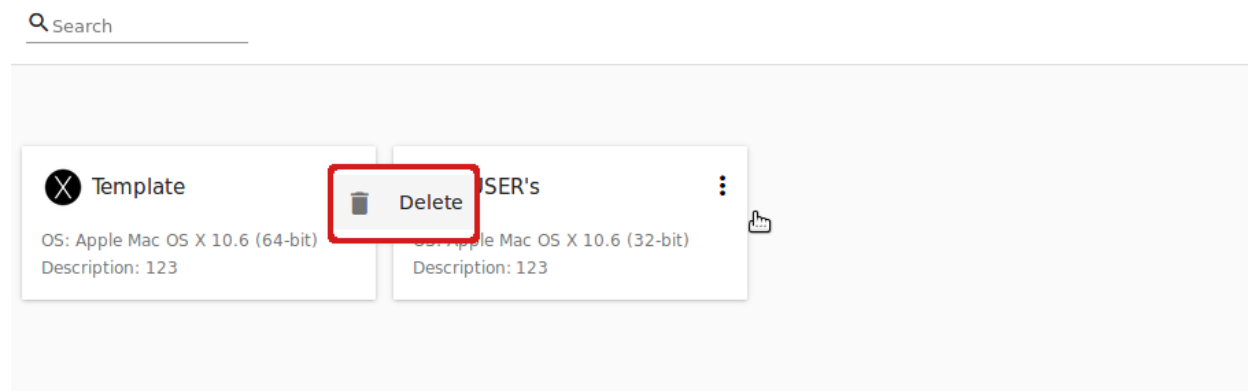




Click “Delete” to delete the tag from the list for this template. Confirm your action in the dialog window. Make sure the tag disappeared from the list of assigned tags.

2.4.5 Template/ISO Action Box

By clicking “Actions”  you can expand the list of actions for those templates/ISO that are in the account your user belongs to (corresponding to “My” type). The deleting action is available here.



Click “Delete” to delete the template/ISO and then confirm your action in the dialog window. The template/ISO will be deleted.

Click “Cancel” to close the window without deleting a template/ISO.

2.5 Snapshots

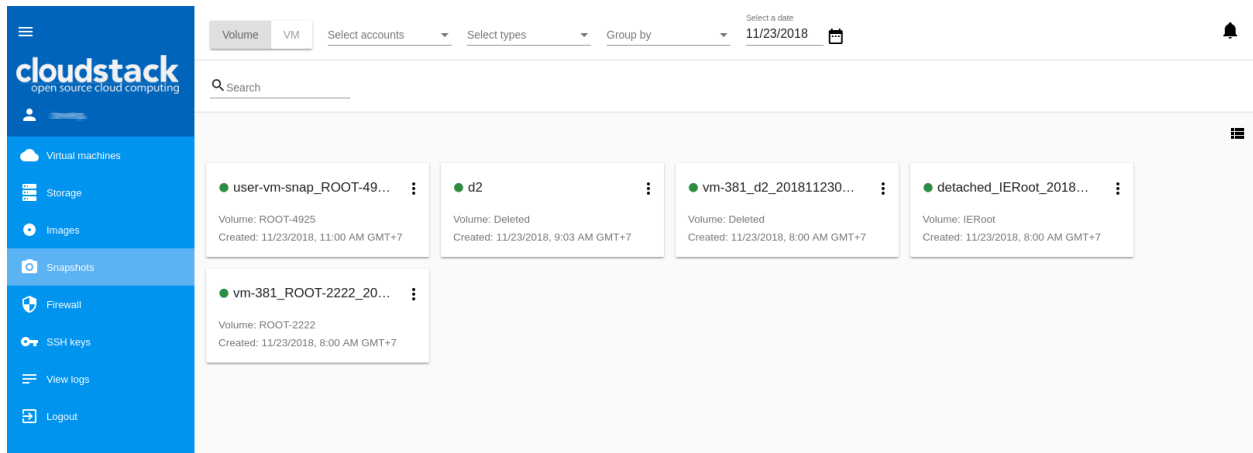
Contents

- *Snapshots*
 - *Snapshots List*
 - * *Filtering of Snapshots*
 - *Snapshot Details Sidebar*
 - *Snapshot Actions Box*

The *Virtual Machines -> Snapshots* section contains the information on snapshots - Volume snapshots and Virtual Machine snapshots - existing in the system.

A Volume snapshot is a capture of virtual machine disks. You can find more information on volume snapshots in the Apache CloudStack [documentation](#).

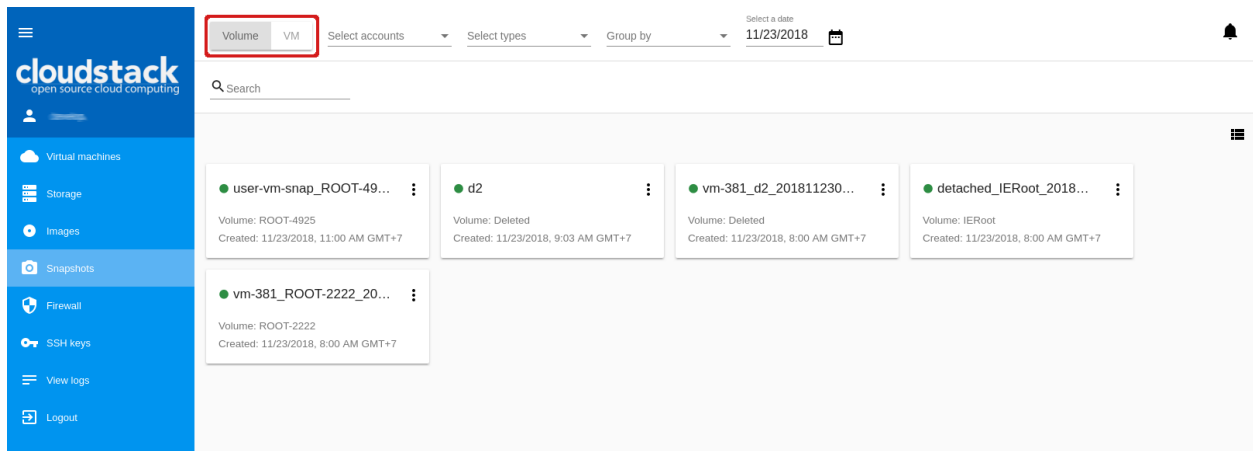
Virtual Machine snapshots allow users to preserve the VM data volumes and its CPU/memory state. Currently we support VM snapshots for the KVM hypervisor only. For more information about Virtual Machine snapshots check out the [official documentation](#).





Warning: Virtual Machine snapshots are currently under development!


2.5.1 Snapshots List

All snapshots existing in the system are presented in the list format. There are two lists in the section - Volume snapshots and Virtual Machine snapshots. To move between lists use the switch button at the top.



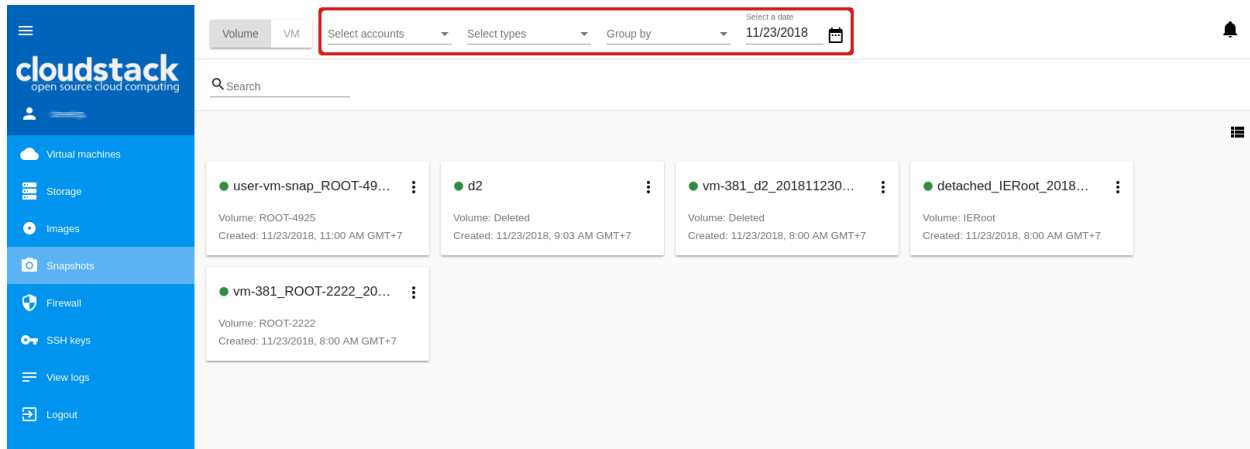
The list of snapshots can be presented in the box view or in the list view. Change the view using  /  button.

For each snapshot in the list the following information is presented:

- State bullet - green for a backed up snapshot, red for any error behavior, yellow for a snapshot being created, grey for allocated.
- Name of the snapshot.
- Volume/VM name the snapshot is created for.
- Date and time of creation.
- Actions button .

Filtering of Snapshots

Filtering of snapshots is available above the list.



You can filter the list by the following parameters:

- by Accounts (available to Administrators).
- by Type - Hourly, Daily, Weekly, Monthly, Manual depending on the schedule of snapshotting (available for Volume snapshots).
- by Virtual Machine (available for VM snapshots).
- by creation date - Select a date using a date picker to filter the list for the snapshots created within the specified period.

You can group snapshots:

- by Accounts (available for Administrators) and/or
- by Type (for Volume snapshots) or
- by VM (for VM snapshots).


The searching tool allows to find a snapshot by:

- its name or a part of the name;
- snapshot description.

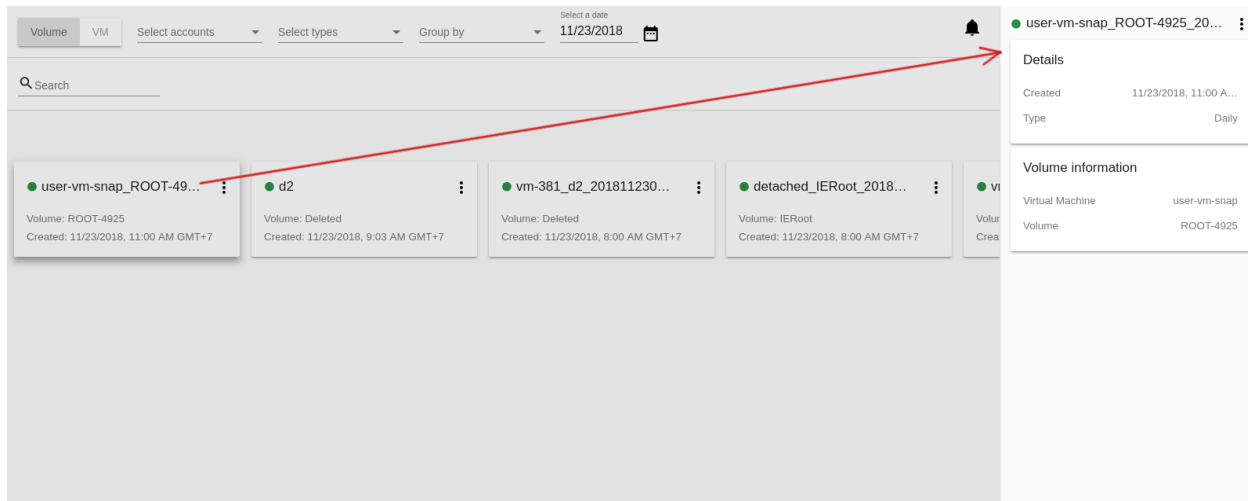
2.5.2 Snapshot Details Sidebar


A details sidebar presents the information on a snapshot. It appears to the right by clicking a snapshot in the list.

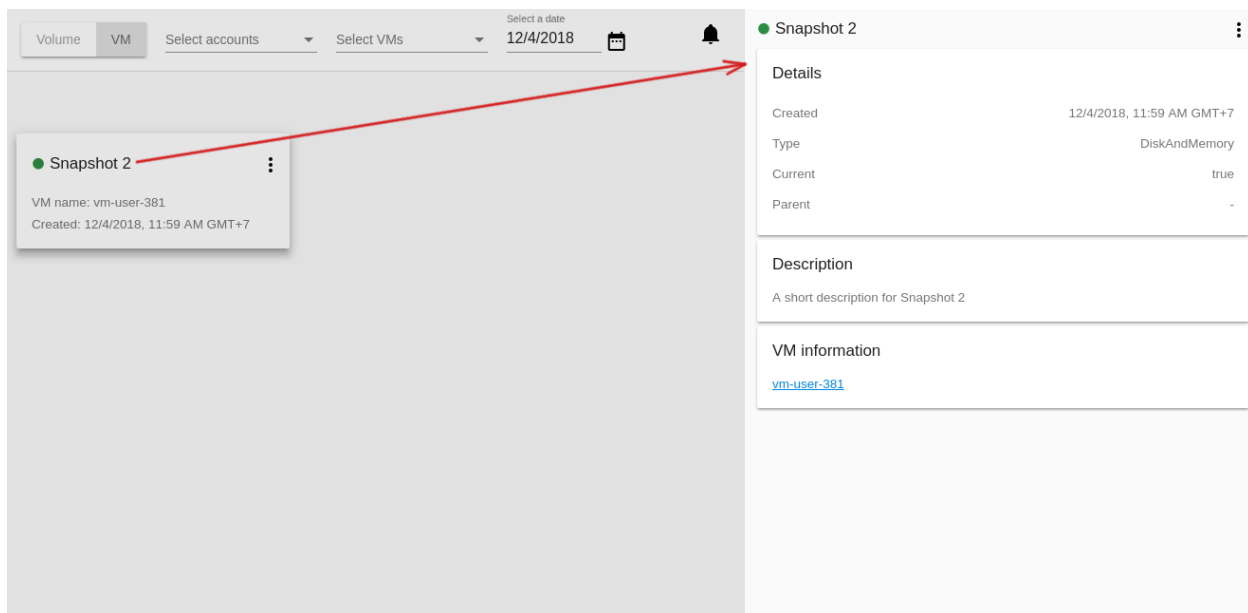
For a Volume snapshot the following information is presented in the details sidebar:

- Snapshot name, a state bullet and actions under the  button;
- Date and time of creation;
- Type - Presents the snapshot type - Hourly, Daily, Weekly, Monthly, Manual;
- Volume information and a virtual machine it is assigned to.

For a VM snapshot the following information is presented in the details sidebar:



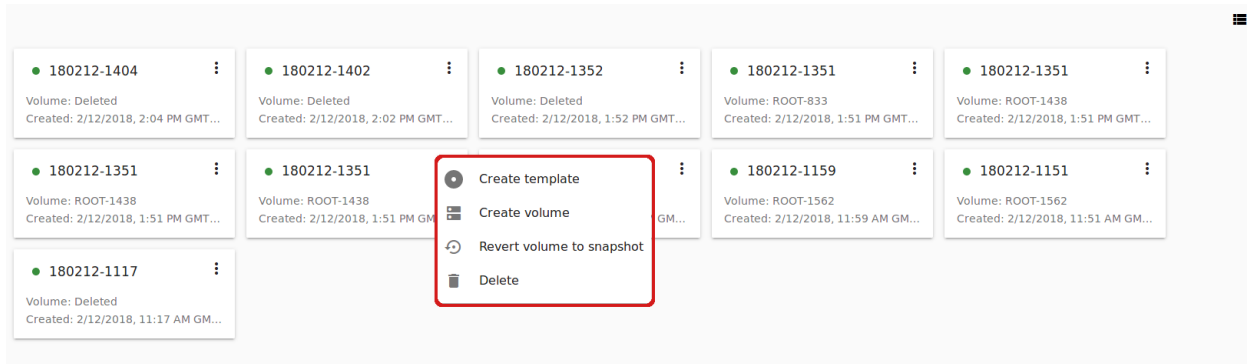
- Snapshot name, a state bullet and actions under the  button;
- Date and time of creation;
- Type - Presents the snapshot type, e.g. *DiskAndMemory*;
- Current - Defines if the snapshot refers to the most recent snapshot compared to the current state of the VM;
- Parent - Shows a parent snapshot (if any exists) of this snapshot;
- Description for the snapshot provided at creation;
- The name of a virtual machine the snapshot belongs to. It is a link that opens details of the VM for more information.



2.5.3 Snapshot Actions Box

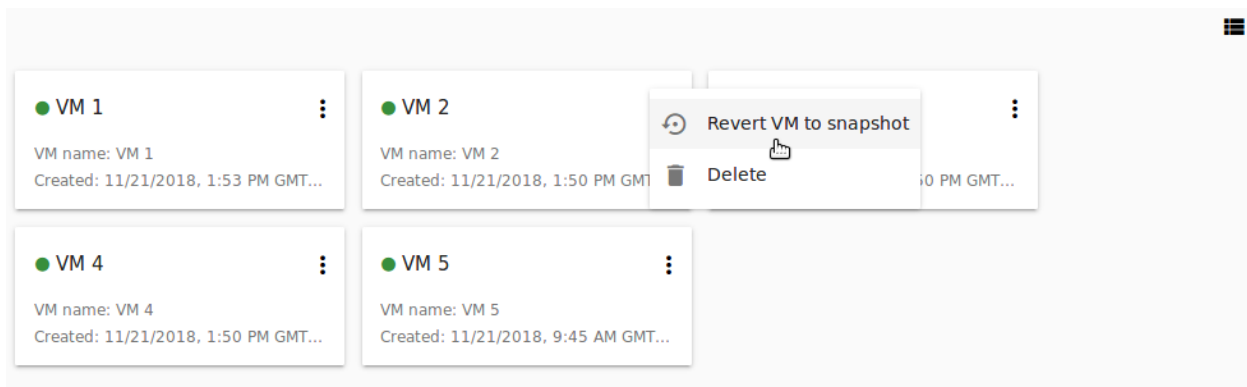
The following actions are available for Volume snapshots:

- Create template;
- Create volume;
- Revert volume to snapshot;
- Delete.



The following actions are available for Virtual Machine snapshots:

- Revert VM to snapshot;
- Delete.



Note: For a newly created snapshot the “Delete” action is available only till the snapshot is backed up to the Secondary Storage that may take some time. Once it is backed up (marked with a green state icon), a full range of actions is available to a user.

Below you will find details for each action.

Create Template

Open a creation form to register a new template from a Volume snapshot.

Fill in the fields:

Note: Required fields are marked with an asterisk (*).

- Name * - Enter a name of the new template.
- Description * - Provide a short description of the template.

- OS type * - Select an OS type from the drop-down list.
- Group - Select a group from the drop-down list.
- Password enabled - Tick this option if your template has the CloudStack password change script installed. That means the VM created on the base of this template will be accessed by a password, and this password can be reset.
- Dynamically scalable - Tick this option if the template contains XS/VM Ware tools to support dynamic scaling of VM CPU/memory.

Click “Show additional fields” to expand the list of optional settings. It allows creating a template that requires HVM. Tick this option in this case.

Once all fields are filled in click “Create” to create the new template.


Register a new template

<p>Name *</p> <p>Template 1</p> <hr/> <p>Description *</p> <p>Description for template 1</p> <hr/>	<p>OS type *</p> <p>Apple Mac OS X 10.6 (32-bit) ▼</p> <hr/> <p>Group</p> <p>High CPU ▼</p> <hr/> <p><input checked="" type="checkbox"/> Password enabled</p> <p><input type="checkbox"/> Dynamically scalable</p>
--	--

HIDE ADDITIONAL FIELDS

☒ Requires HVM

CANCEL

CREATE 

Click “Cancel” to cancel the template creation.

Create Volume

This action allows creating a volume from a Volume snapshot.

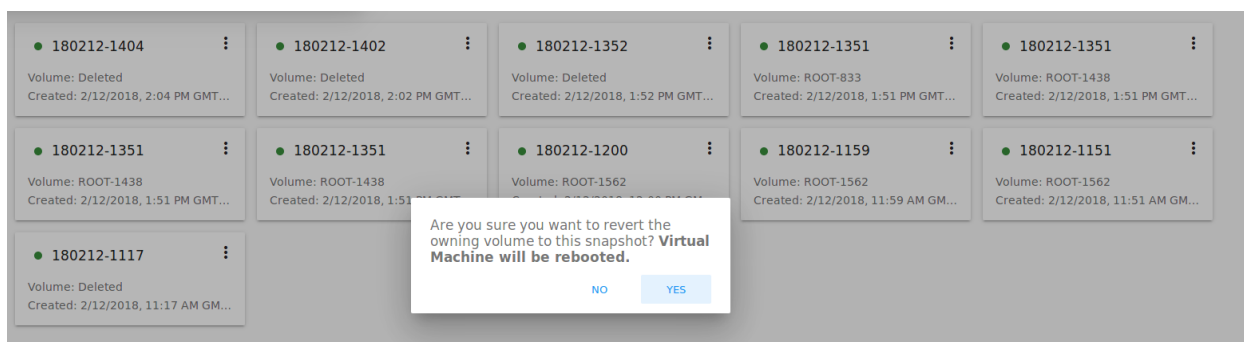
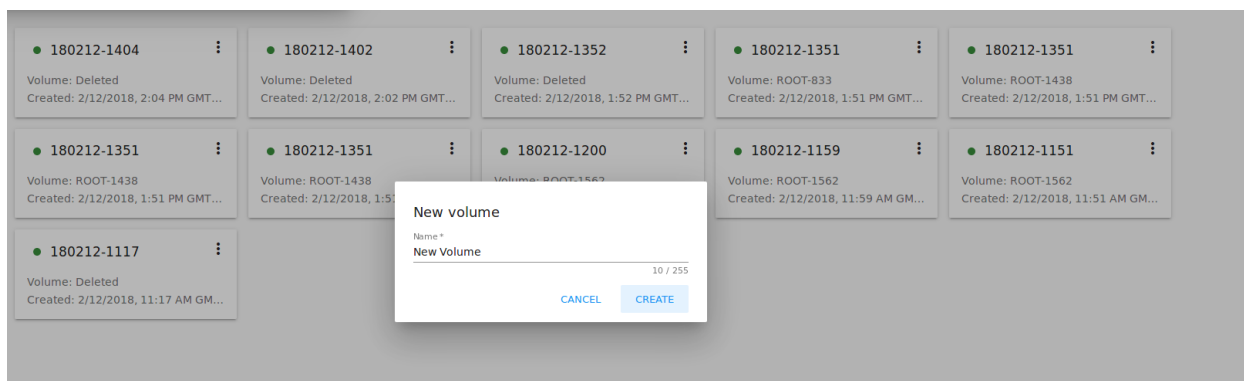
Type a name for a new volume into the Name field in the modal window. Click “CREATE” to register a new volume.

Click “CANCEL” to cancel the volume creation.

Revert Volume to Snapshot

This action is available for Volume snapshots. It allows turning the volume back to the state of the snapshot. It is available to those snapshots that have a volume.

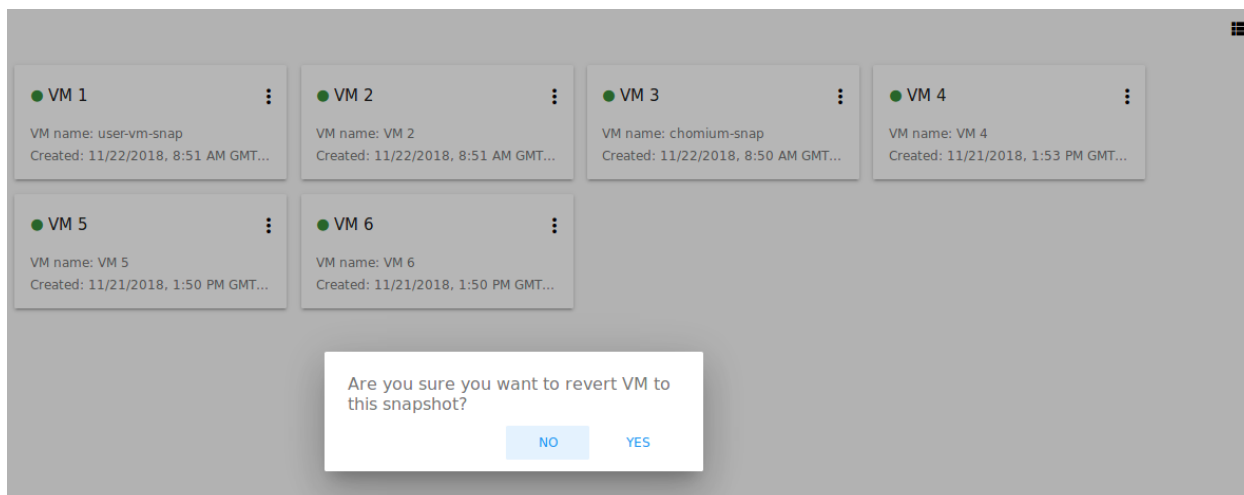
In the dialog window confirm your action. Please, note, the virtual machine the volume is assigned to will be rebooted.



Revert VM to Snapshot

This action is available for Virtual Machine snapshots. It allows turning the VM back to the state of the snapshot. It is useful if you implemented any changes to the VM and they went wrong so this action allows quick restoring of a VM to its previous state.

Select “Revert VM to Snapshot” from the actions list and confirm your action in the dialog window. The VM state will be reverted to the snapshot.

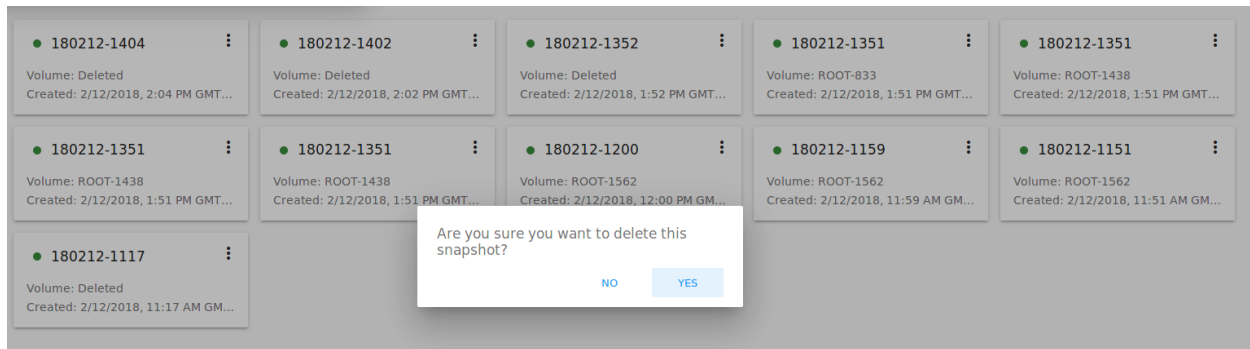


Note: It is not allowed to revert a machine to snapshot if the current Service Offering of the VM differs from that used at the moment the snapshot was taken.

Delete

This action allows deleting a snapshot from the system.

Click “Delete” in the Action box and confirm your action in modal window. The snapshot will be deleted.



Click “NO” to cancel the snapshot deleting.

2.6 Firewall

Contents

- *Firewall*
 - *Firewall List*
 - *Create a Security Group Template*
 - *Create a Shared Security Group*
 - *Private Security Groups*
 - *Security Group Details Sidebar*
 - *Security Group Action Box*
 - * *Edit a Firewall Template/Security Group*
 - * *“Convert to Shared” Action for Private Security Groups*

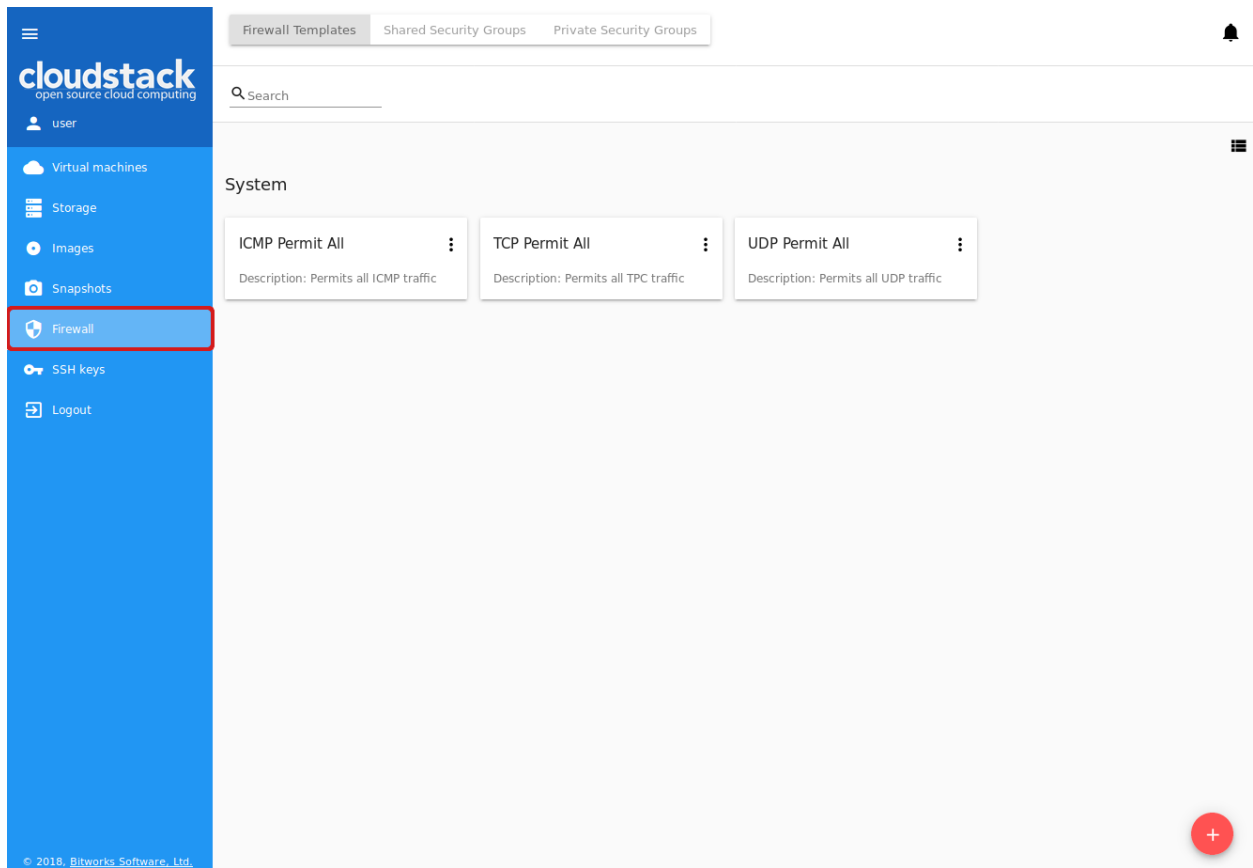
The *Virtual Machines -> Firewall* section contains templates to create a security group for a virtual machine and shared security groups used for virtual machines of other users.

Firewall templates are presets of rules that can be system or developed by a user (custom). Administrators can specify default presets during the interface deployment via the JSON configuration file (find more in [configurations guide](#)). These presets will be used when creating a new security group.

A custom security group template can be created via the UI. Find more information on how to create a custom security group template at [Create a Security Group Template](#).

Upon VM creation the system creates a new security group for a VM on the base of templates (if they exist). Next, when the user changes the rules for a certain virtual machine, it does not affect other machines. These changed rules make a **private security group** used for that virtual machine only.

The second way is to use a **shared security group** for your virtual machine. Shared groups are used by several VMs. Changes of rules in them may affect other VMs.





Users can manage security group rules in two modes: a “view” mode with filtering by types and protocols and an “edit” mode. Security groups editing is available when switching from “view” mode to “editing” mode. If the group is shared, the user is warned that changes will affect other VMs using this group. This behavior allows avoiding undesirable changes for other VMs.

Templates, shared and private security groups are placed in different tabs of the *Firewall* section. You can switch from templates to shared or private security groups using the tool above the list.

A user can see security groups of his/her user only. An Administrator can observe security groups of all accounts in the domain.

2.6.1 Firewall List

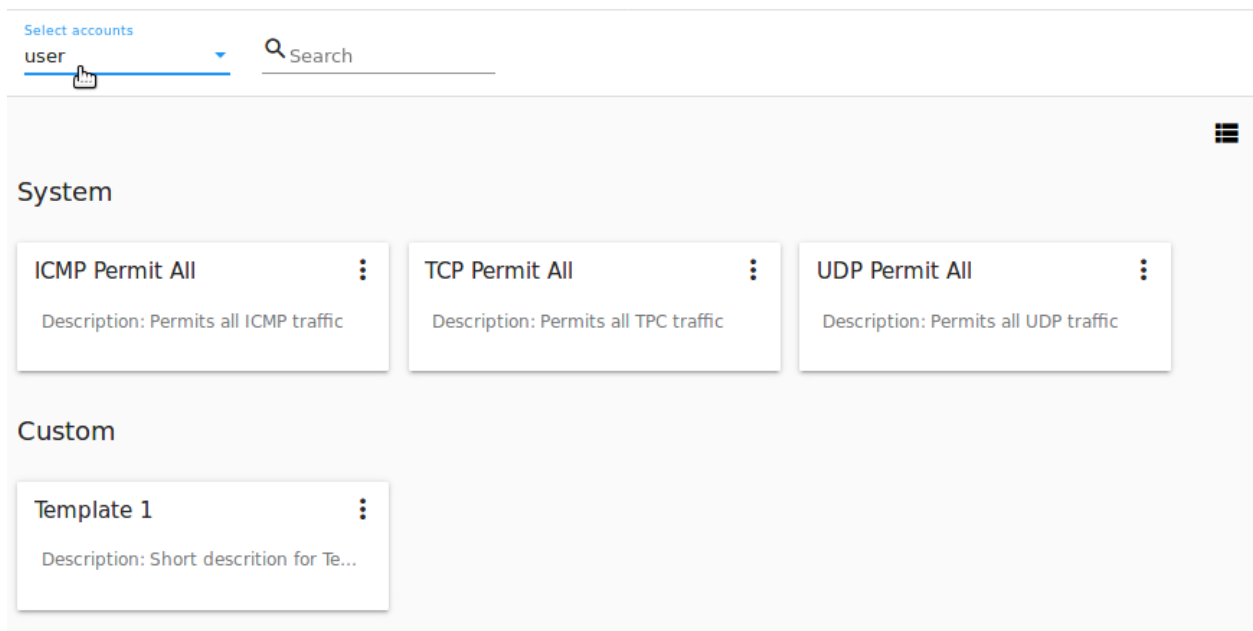
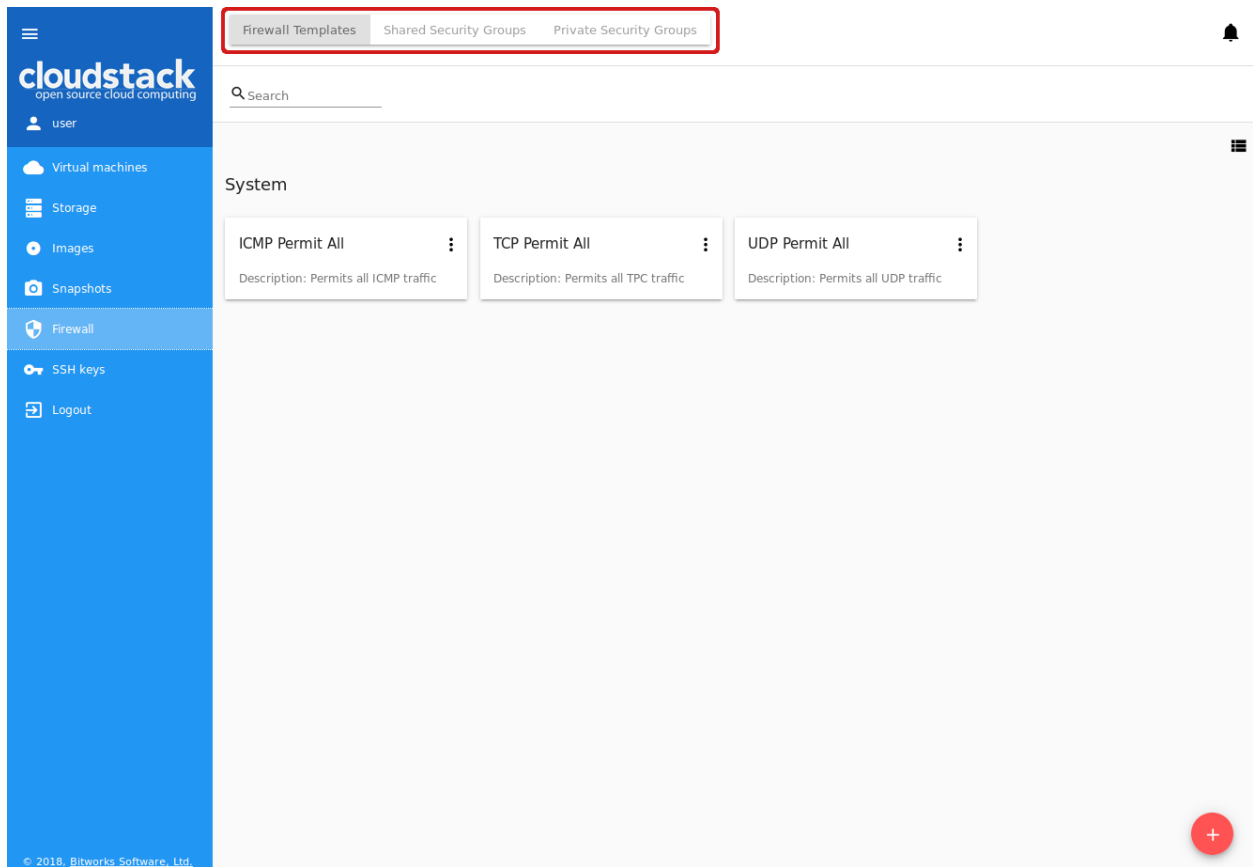
The security groups are presented in a list format. You can change the view from list to cards clicking the switch view icon  /  in the upper-right corner.

To quickly find the security group you need, please, use the search tool above the list. Enter a name or a part of the name of the template/security group and see the immediate result.


Administrators can filter the list of templates/shared groups by accounts.

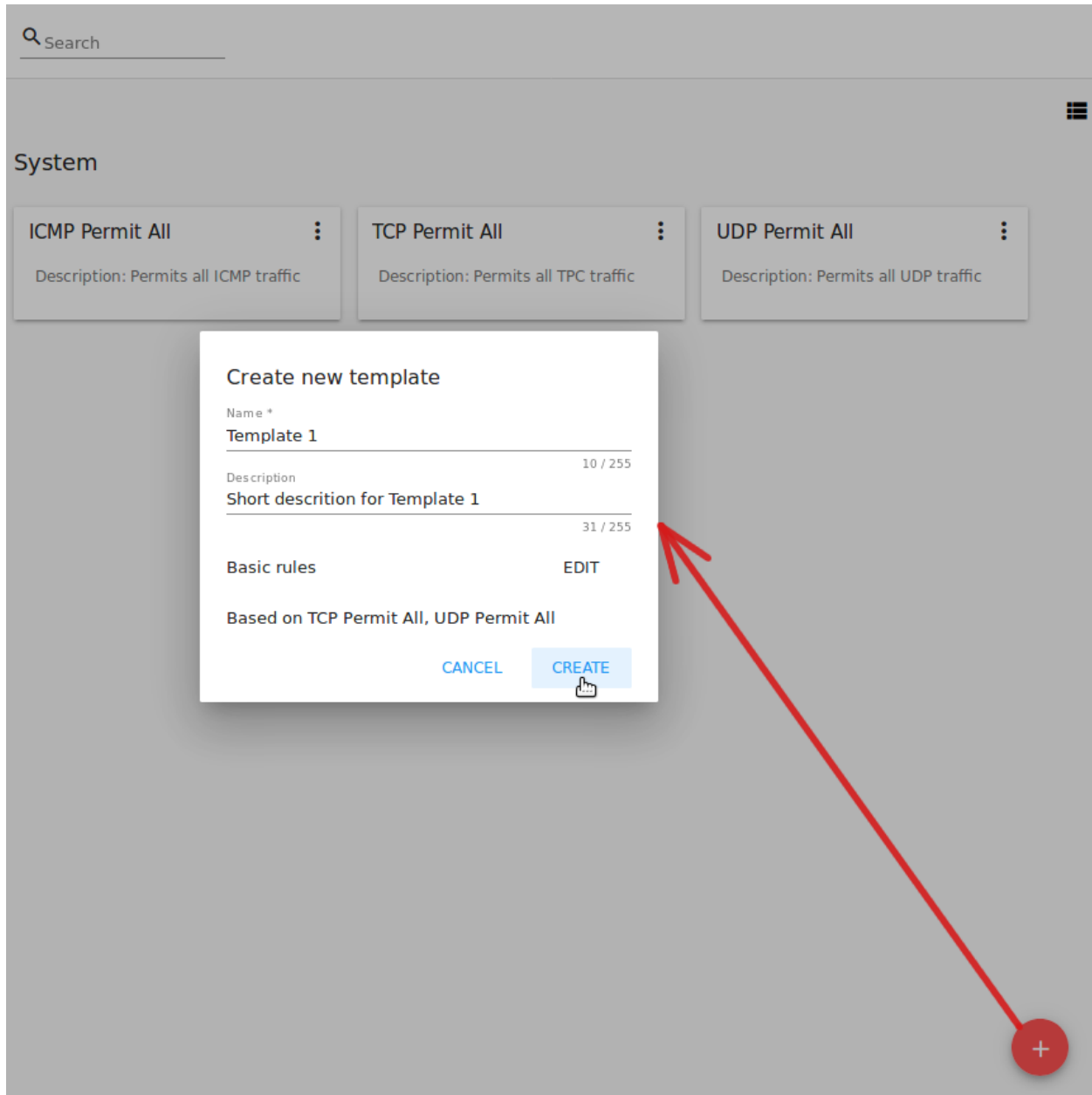
2.6.2 Create a Security Group Template

You can create your own template. It will be available as a base at a new private security group creation for VM.



A new security group template is created on the base of existing templates. This security group will be created as a custom template (with a `custom-template` type).

If you would like to create a new security group template, click “Create”  in the bottom-right corner and fill in the form:



The screenshot shows the CSUI interface with a 'System' section containing three templates: 'ICMP Permit All', 'TCP Permit All', and 'UDP Permit All'. A 'Create new template' dialog box is open in the center. The dialog box has the following fields and buttons:

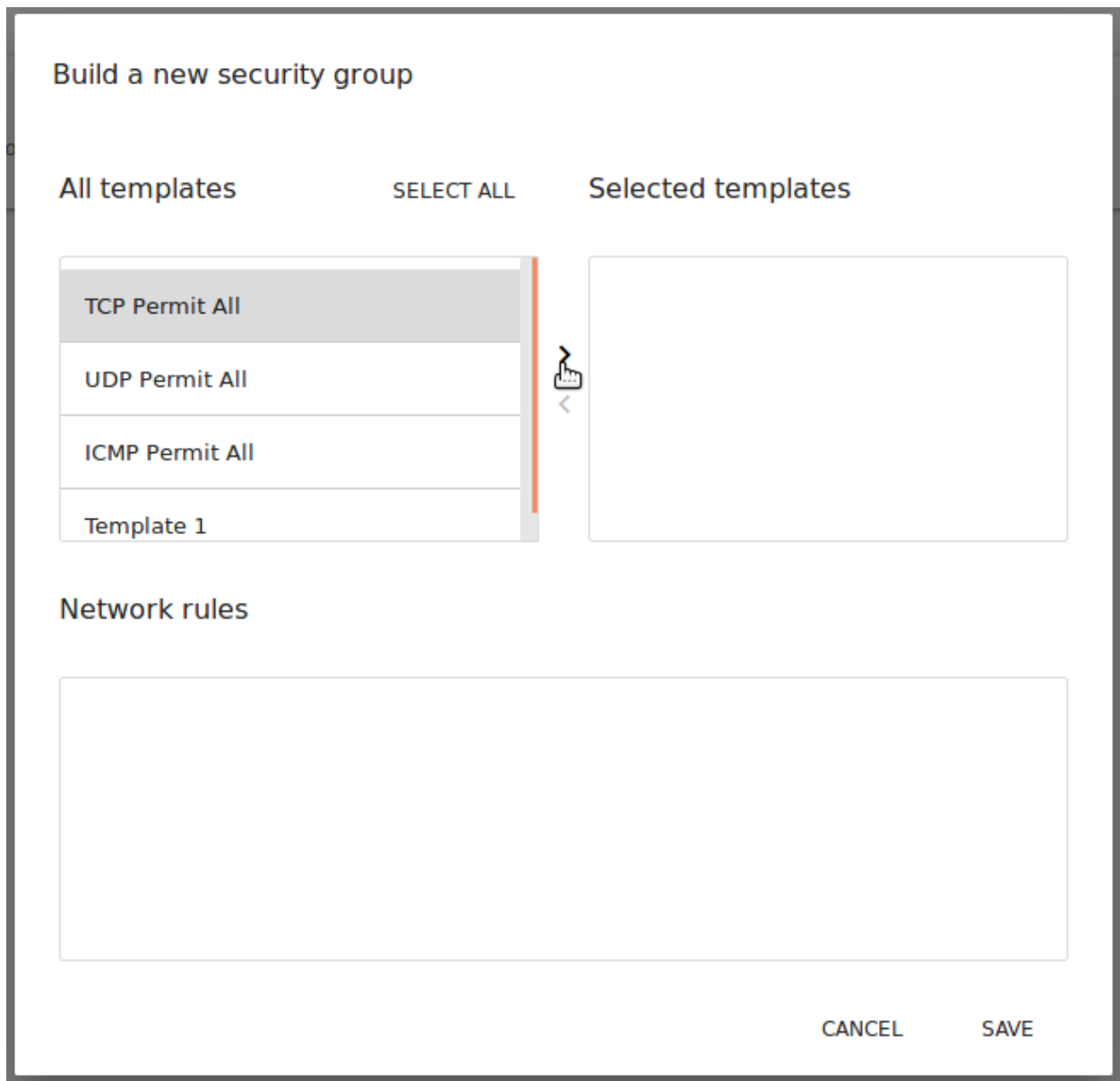
- Name ***: Template 1 (10 / 255 characters)
- Description**: Short description for Template 1 (31 / 255 characters)
- Basic rules**: EDIT
- Based on**: TCP Permit All, UDP Permit All
- Buttons**: CANCEL, CREATE (with a thumbs up icon)

A red arrow points from a red circle with a plus sign in the bottom right corner of the interface to the 'CREATE' button in the dialog box.

Note: Required fields are marked with an asterisk (*).

- Name * - Enter a name for the template.
- Description - Provide a short description for the firewall template.

- Basic rules - Click “ADD” to open the list of rules to assign them to the template. In the appeared window select a template in the “All templates” list at the left and move it to the “Selected templates” list at the right by clicking the arrow icon:



Click “SELECT ALL” to move all templates from left to right at once.

Click “RESET” to drop all selected templates.

In the list below you will see the rules corresponding to the selected templates. All of them are checked as selected. Uncheck those you do not wish to add to your firewall template.

Click “SAVE” to apply the selected rules to your security group template.

Click “CANCEL” to drop the selected options. No rules will be assigned to the template. You will return to the “Create a new security group” window.

When all fields are completed, click “CREATE” to create the new firewall template. The template will appear in the list of firewall templates as *Custom*:

Build a new security group

All templates

SELECT ALL

Selected templates

RESET

UDP Permit All

ICMP Permit All

Template 1

TCP Permit All

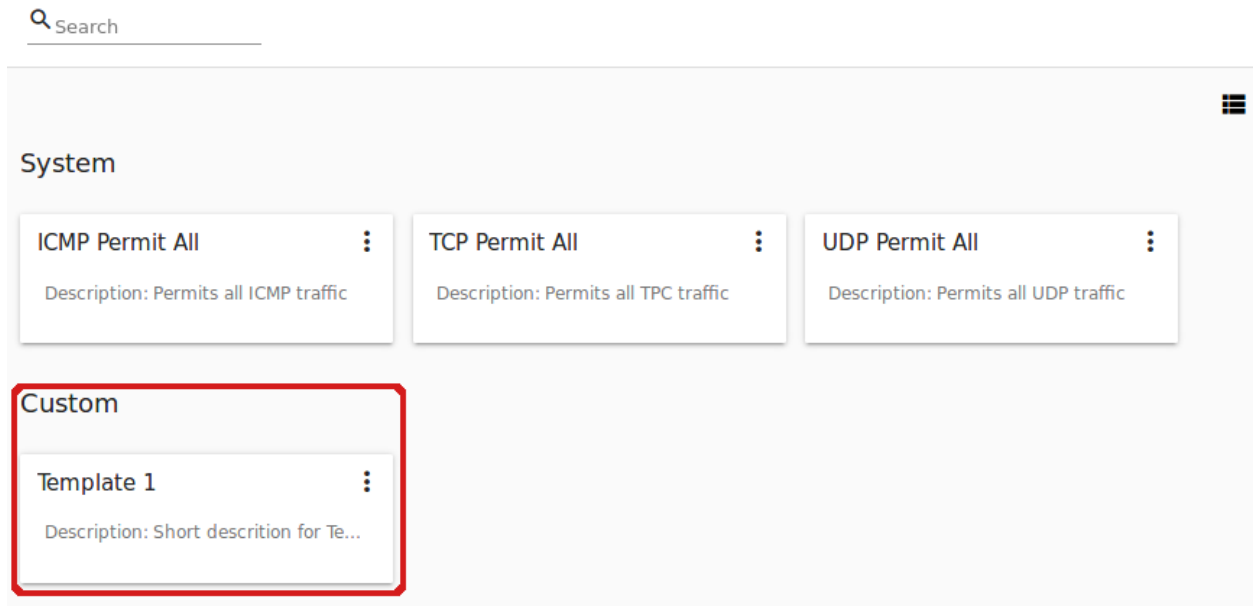
Network rules

Incoming **TCP** traffic to ip **0.0.0.0/0** to port range **1-65535**

Outgoing **TCP** traffic to ip **0.0.0.0/0** to port range **1-65535**

CANCEL

SAVE



Click “CANCEL” to cancel the template creation process. No firewall templates will be created then. All fields will be cleared in the form.

2.6.3 Create a Shared Security Group

You can create a shared security group and it will be available for creating virtual machines of other users.

A new shared security group is created on the base of existing templates. This security group will be created with a shared type.

If you would like to create a new shared security group, navigate to the Shared Security Group section and click “Create” in the bottom-right corner. Then, fill in the form:

Note: Required fields are marked with an asterisk (*).

- Name * - Enter a name for the group.
- Description - Provide a short description for the group.
- Basic rules - Click “ADD” to open the list of rules to assign them to the group. In the appeared window select a template in the “All templates” list at the left and move it to the “Selected templates” list at the right by clicking the arrow icon:

Click “SELECT ALL” to move all templates from left to right at once.

Click “RESET” to drop all selected templates.

In the list below you will see the rules corresponding to the selected templates. Check those you wish to add to your shared security group.

Click “SAVE” to apply the selected rules to your security group template.

Click “CANCEL” to drop the selected options. No rules will be assigned to the security group. You will return to the “Create a new security group” window.

Click “CREATE” to create the new shared security group. The group will appear in the list of shared security groups.

Build a new security group

All templates

SELECT ALL


Selected templates

TCP Permit All

UDP Permit All

ICMP Permit All

Template 1



Network rules

CANCEL

SAVE

Build a new security group

All templates

SELECT ALL

Selected templates

RESET

UDP Permit All

ICMP Permit All

Template 1

TCP Permit All

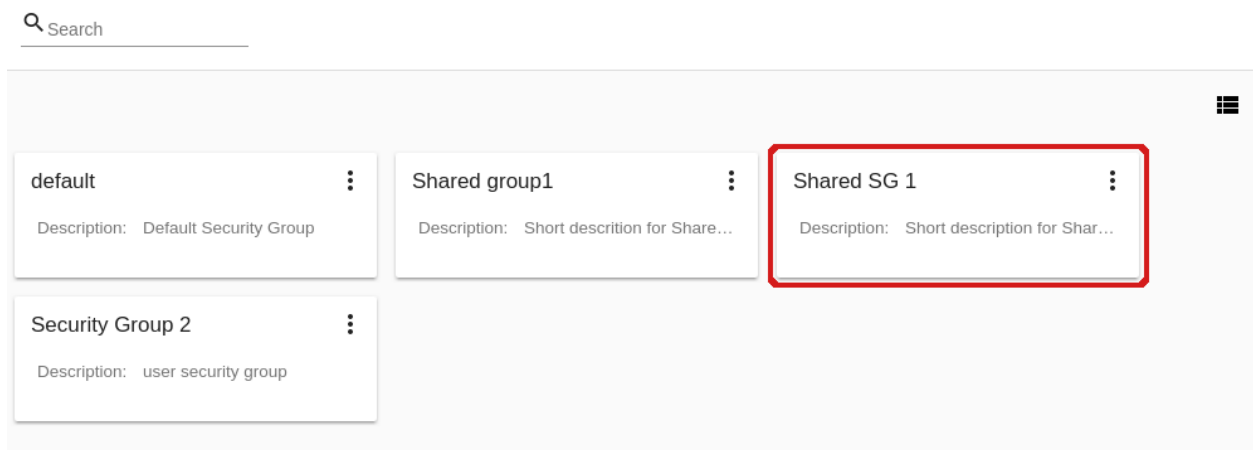
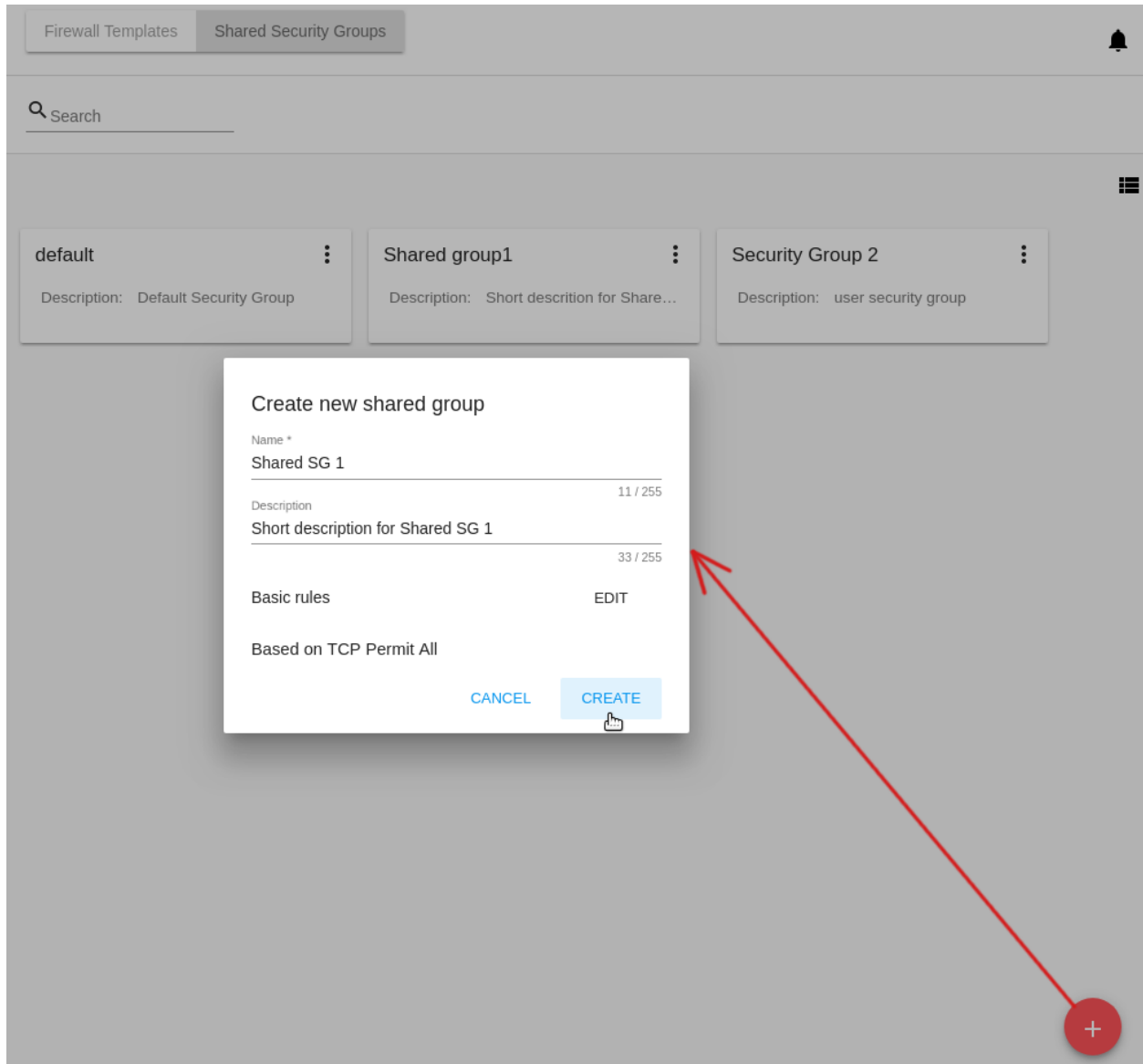
Network rules

Incoming **TCP** traffic to ip **0.0.0.0/0** to port range **1-65535**

Outgoing **TCP** traffic to ip **0.0.0.0/0** to port range **1-65535**

CANCEL

SAVE



Click “CANCEL” to cancel the group creation process. No group will be created then. All fields will be cleared in the form.

2.6.4 Private Security Groups

Private security groups are listed in the *Private Security Groups* section.

Security groups appear in this section once they are created for a virtual machine (see [Create a Virtual Machine](#)). A private security group name has the following format - sg-{{ virtual machine name }} - containing the name of the virtual machine it is created for.

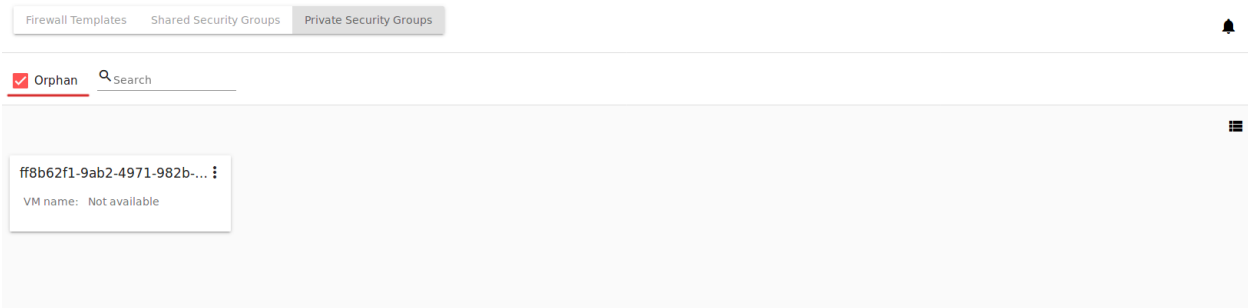
You can quickly find a group by its name or a part of the name using the searching tool above the list.

The screenshot shows the 'Private Security Groups' tab selected. At the top, there are three tabs: 'Firewall Templates', 'Shared Security Groups', and 'Private Security Groups'. Below the tabs is a search bar with a magnifying glass icon and the text 'Search 12|'. To the left of the search bar is a checkbox labeled 'Orphan'. Below the search bar, a single result is displayed in a white box with a shadow. The result shows a UUID '8a385460-985f-4812-83f6-...' where '12' is highlighted in yellow, followed by a vertical ellipsis. Below the UUID, it says 'VM name: Not available'.

Besides, Administrators can filter the list by accounts.

The screenshot shows the 'Private Security Groups' tab selected. At the top, there are three tabs: 'Firewall Templates', 'Shared Security Groups', and 'Private Security Groups'. Below the tabs is a filter dropdown labeled 'Select accounts' with a downward arrow. To the right of the dropdown is a checkbox labeled 'Orphan'. Further right is a search bar with a magnifying glass icon and the text 'Search'. Below the filter and search bar, two results are displayed in white boxes with shadows. The first result shows a UUID 'ff8b62f1-9ab2-4971-982b-...' followed by a vertical ellipsis, and below it, 'VM name: Not available'. The second result shows a UUID 'c59ee72d-8183-40cf-b845-...' followed by a vertical ellipsis, and below it, 'VM name: vm-develop-337'.

You can filter the list by ticking the “Orphan” checkbox above. It allows displaying only the security groups that are not used by any machine.




The “Orphan” option appears above the list in case the security groups that are not used by any VM exist in the list. This might happen in case a VM has been deleted but a group has been not (because of an error or incorrect behavior).

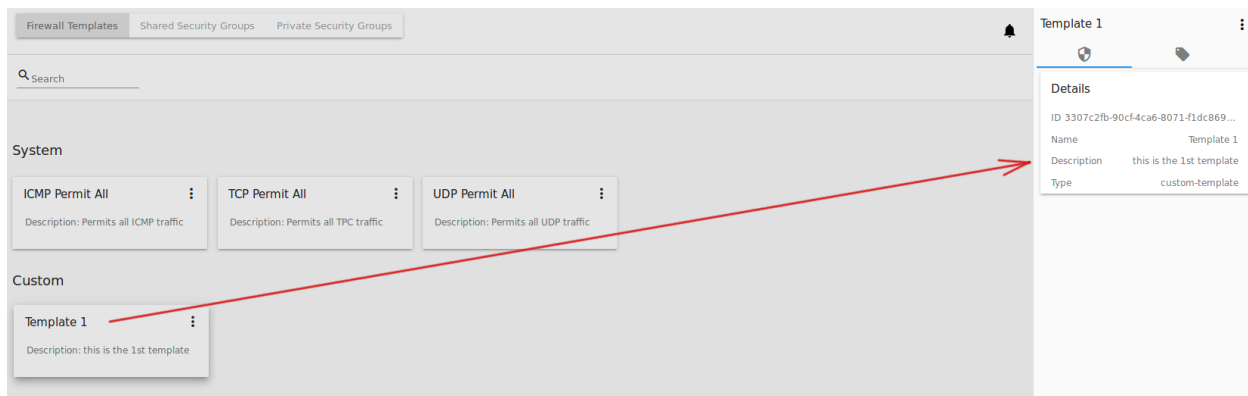
2.6.5 Security Group Details Sidebar

You can see the firewall rules details in the sidebar to the right.

Click the template/shared/private security group in the list and open the sidebar. You will see two tabs there - Details and Tags.

The **Details** tab contains the following information:



- Name of the security group;
- *Security Group Action Box* under ;
- ID of the security group;
- Description giving an idea what the security group contains (not available for private security groups);
- Type - Defines the security group types. For firewall templates it can be `custom-template` for custom templates, or `predefined-template` for system templates. For shared security groups it is `shared`. For private security groups you will see `private`.



For shared security groups you also can see what virtual machines are assigned to this group. The machine name in the list is active. You can move to the virtual machine details bar by clicking it.

For private security groups a VM name is also displayed in the details sidebar, but it is not active.

default



Details

ID 33bde2cb-c13a-434d-958b-3b410...

Name

default

Description


Default Security Group

Type

shared

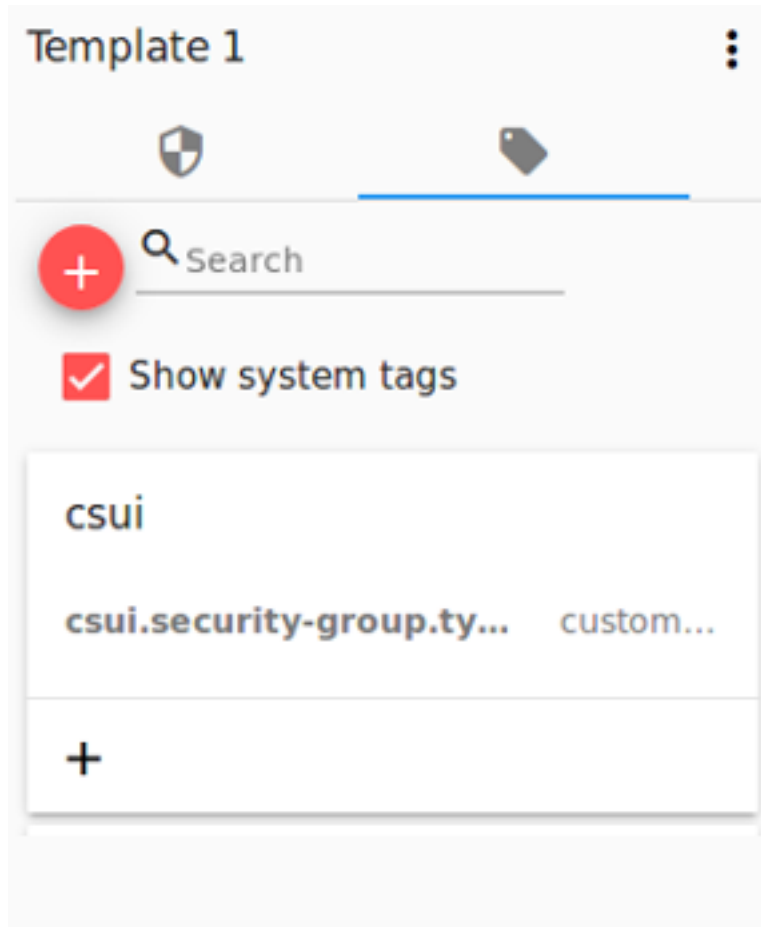
VMs using the group


VM2



The **Tags** tab presents the list of tags assigned to the security group. Using the search tool above you can quickly find a tag by its name.

System tags are listed in a separate card.



lick  to add a tag. Enter a key and a value.


Note: Both fields are required. The input values for both fields cannot start with a space.

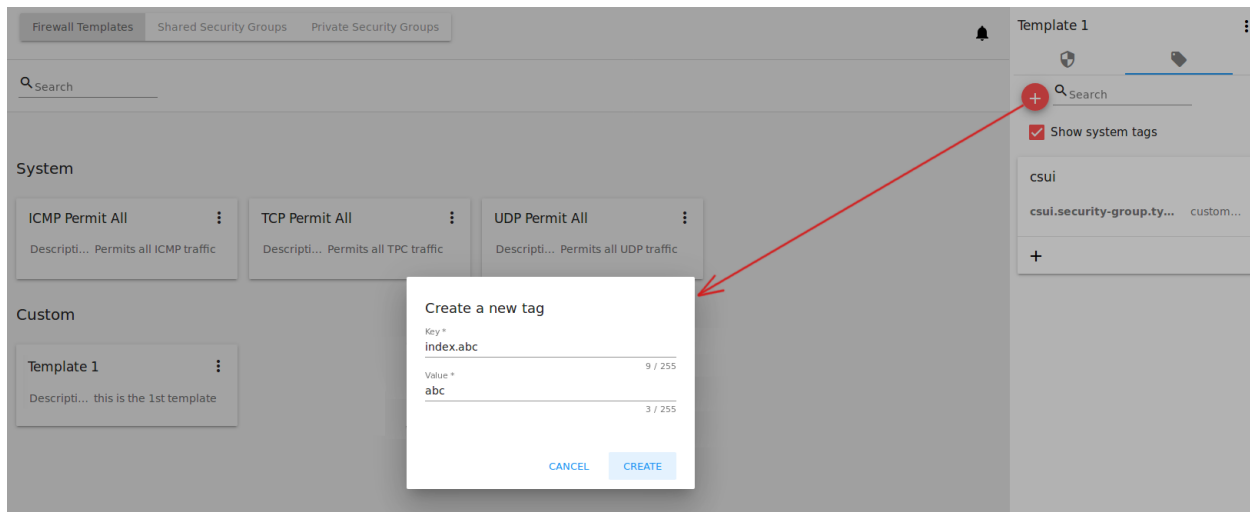
Click “CREATE” to create the new tag. It will be saved in a separate card.

An existing tag can be edited or deleted by clicking a correspondent icon next to the tag’s name.

2.6.6 Security Group Action Box


Firewall templates, shared and private security groups have an Action box with the following actions in it:

- View - Allows viewing the rules in the group/template. Click “Rules”  to open the rules implemented to the template.
- Delete - Allows deleting the group or the template from the system.



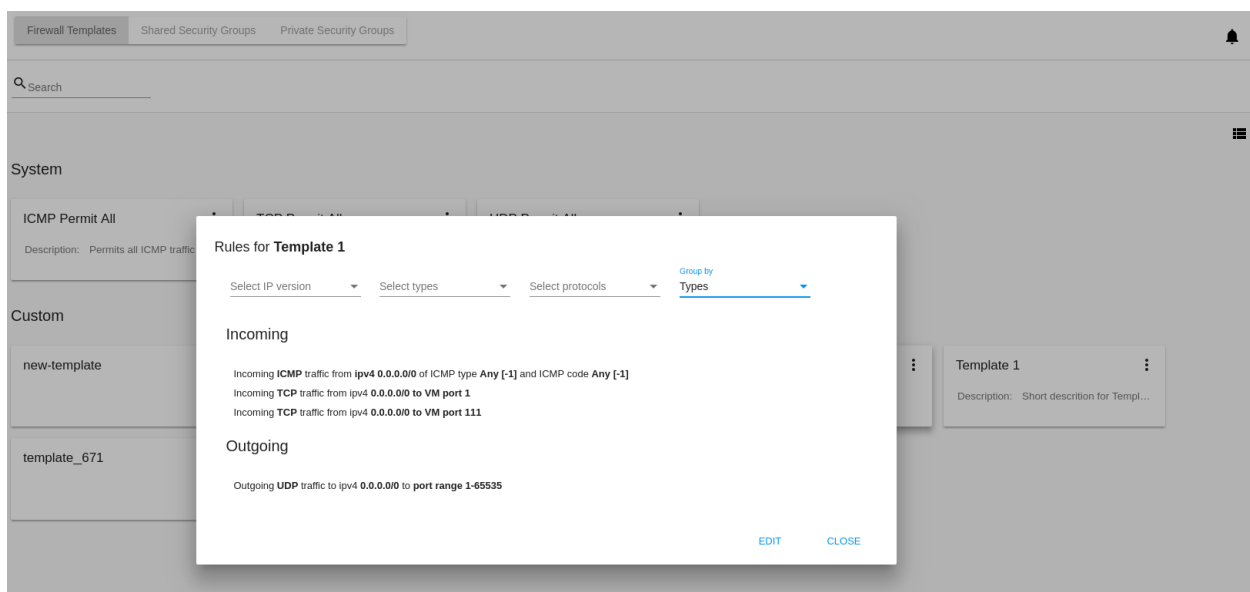
Note: A template/security group cannot be deleted if it is used for a virtual machine, or it belongs to another user. Deleting action is not available for system firewall templates.

Edit a Firewall Template/Security Group

When clicking “Rules”  in the Action box you open a modal window where the rules of the template/security group are listed. The list of rules can be filtered by:

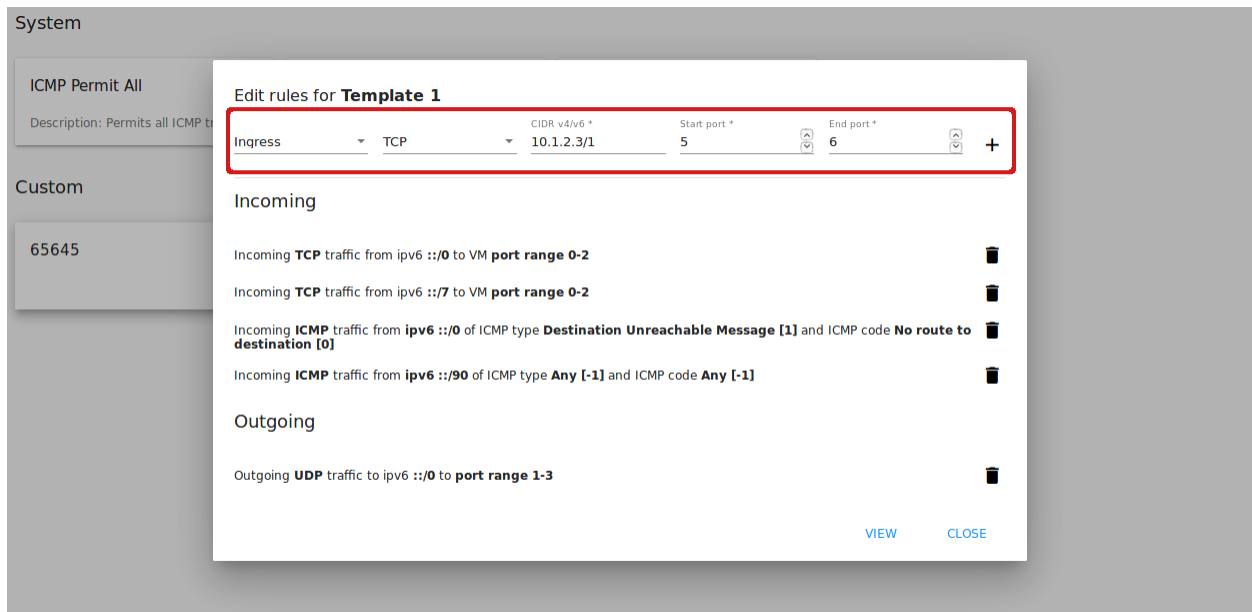
- IP versions - IPv4 and/or IPv6;
- Types - Ingress and/or Egress;
- Protocols - TCP and/or UDP and/or ICMP.

Besides, you can group the rules by types and/or protocols.



You can edit the implemented rules right in this modal window by clicking “EDIT” below the list. When switching to the edit mode you are enabled to add rules or delete the selected ones from the list.

To add rules, please, fill in the fields in the panel above the list and click “+”:



Validation

Please, make sure you enter valid values for Start and End ports:

- Start port can be less or equal to End port. For more convenience, we added the autocomplete, that is, when entering a Start port value, the End port field is prepopulated with an equal value.
- The values in these fields cannot be greater/less than maximum/minimum allowed values (for TCP/UDP max port is 65535, for ICMP - 255).
- The fields cannot be empty.

For ICMP type make sure you input a valid CIDR, ICMP type and code.

- You will not be able to enter an ICMP type and a code until a valid CIDR is specified. Likewise, you will not be able to enter an ICMP code until a valid ICMP type is specified.
- CIDR allows entering IP addresses in both IPv4 and IPv6 formats.
- ICMP IPv6 the “[-1] Any” value is supported for type and code.
- ICMP type and code fields cannot be empty.

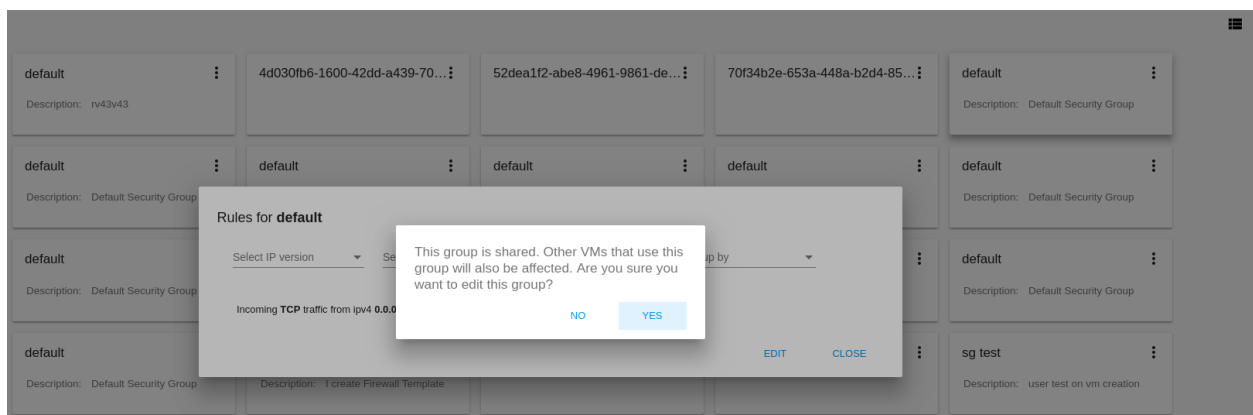
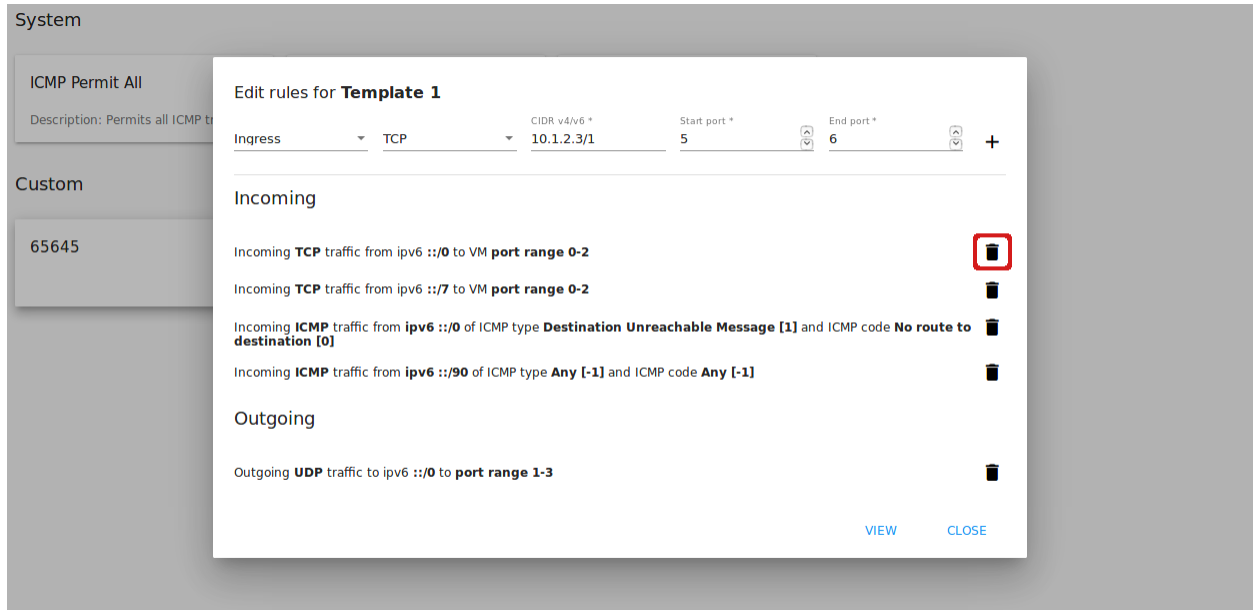
For invalid values the add button “+” is disabled.

To delete rules, please, click the Delete icon in the list. The rule will be deleted from the security group.

Then you can move back to the view mode, or close the window. You will see the rules are edited.

Please, note, when editing shared security groups, a warning message appears:

Click “Yes” if you still want to edit a shared security group. You will be switched to the “Edit” mode. Change the security group as you need following the instructions above.



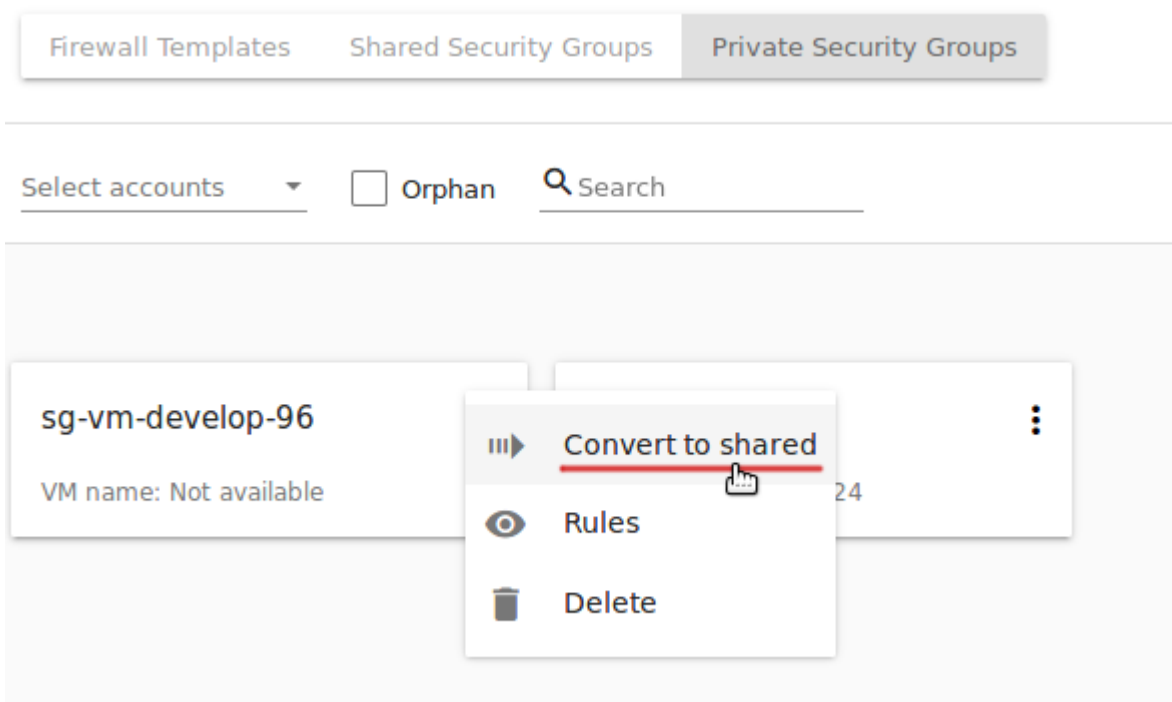
Note: Editing is not available for system firewall templates and security groups of other users. You can view the rules only.

“Convert to Shared” Action for Private Security Groups

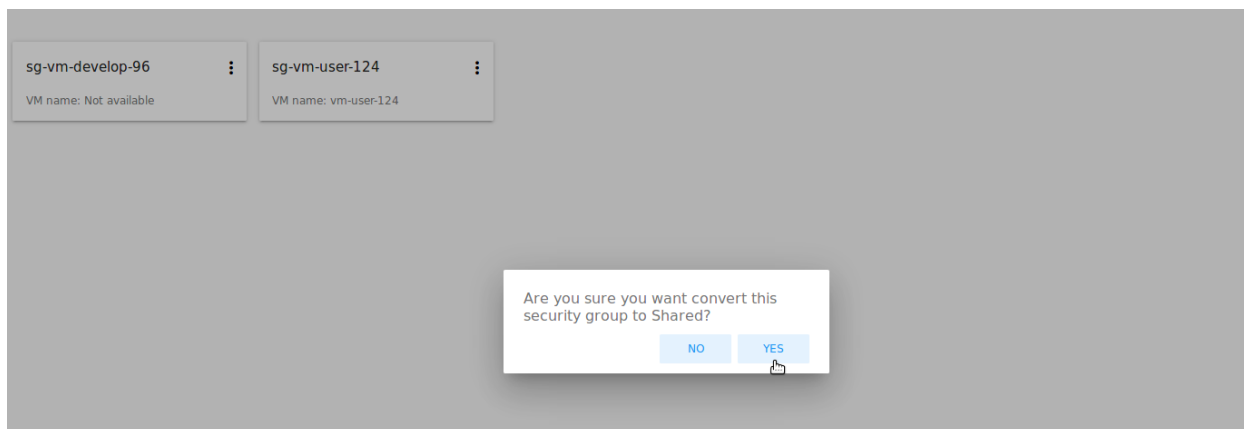
For private security groups you can find a “Convert to shared” action in the Action box. It allows making a shared SG from a private SG so that it can be used for VMs by other users.

To convert a private security group into a shared one, please, follow the steps:

1. Move to the list of Private Security groups,
2. Select “Convert to shared” option in action box for a security group,



3. A warning dialog appears. Click “YES” to confirm your action.



The security group will be moved to the list of “Shared Security Groups”. The tag “is private” will be removed for this security group.

Click “NO” to cancel the conversion, the security group will stay private.

2.7 SSH Keys

Contents

- *SSH Keys*
 - *SSH Key List*
 - * *Filtering of SSH Keys*
 - *Create an SSH Key*
 - *SSH Key Details Sidebar*
 - *SSH Key Action Box*

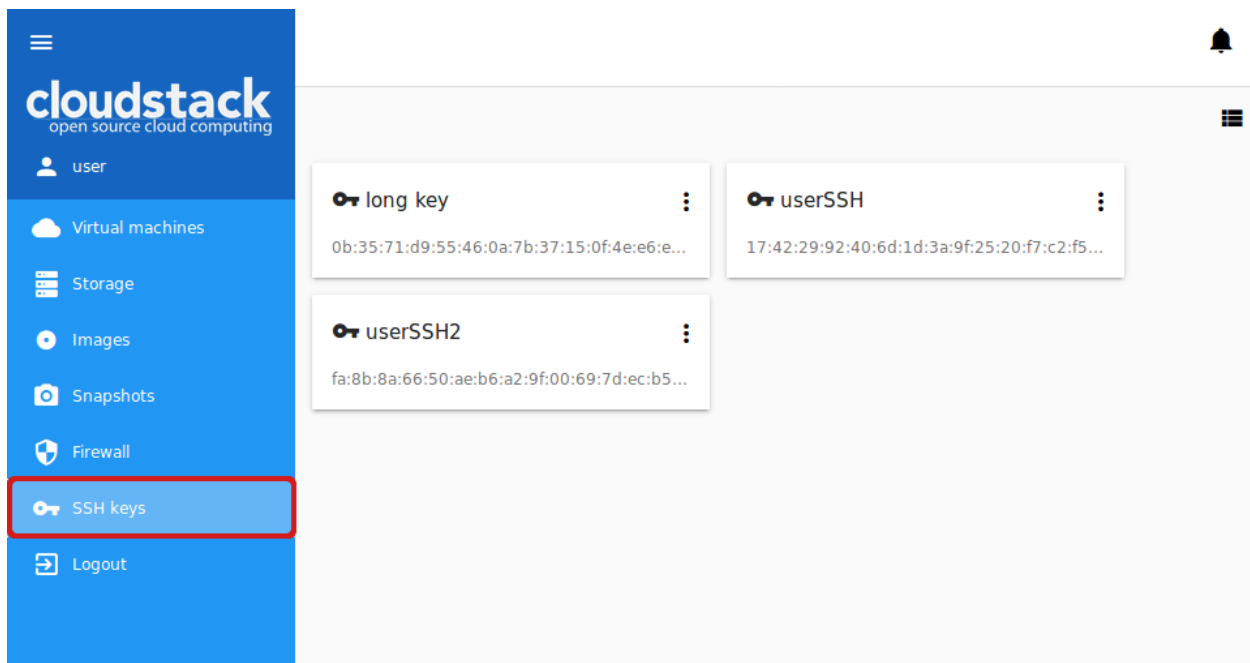
In the *Virtual Machines* -> *SSH keys* section you can create and manage SSH keys.

In addition to the username and password authentication, CloudStack supports using SSH keys to log in to the cloud infrastructure for additional security. Find more information in the [official documentation](#).



CloudStack-UI allows managing SSH key in a separate section which is more convenient for a user.

2.7.1 SSH Key List

SSH keys existing in the account are presented in this section. A user can see and manage SSH keys for his/her user only.



Administrators can see and manage keys for all accounts in the domain.

You can switch the view from a list mode to a card mode using the switch tool  /  in the upper-right corner.

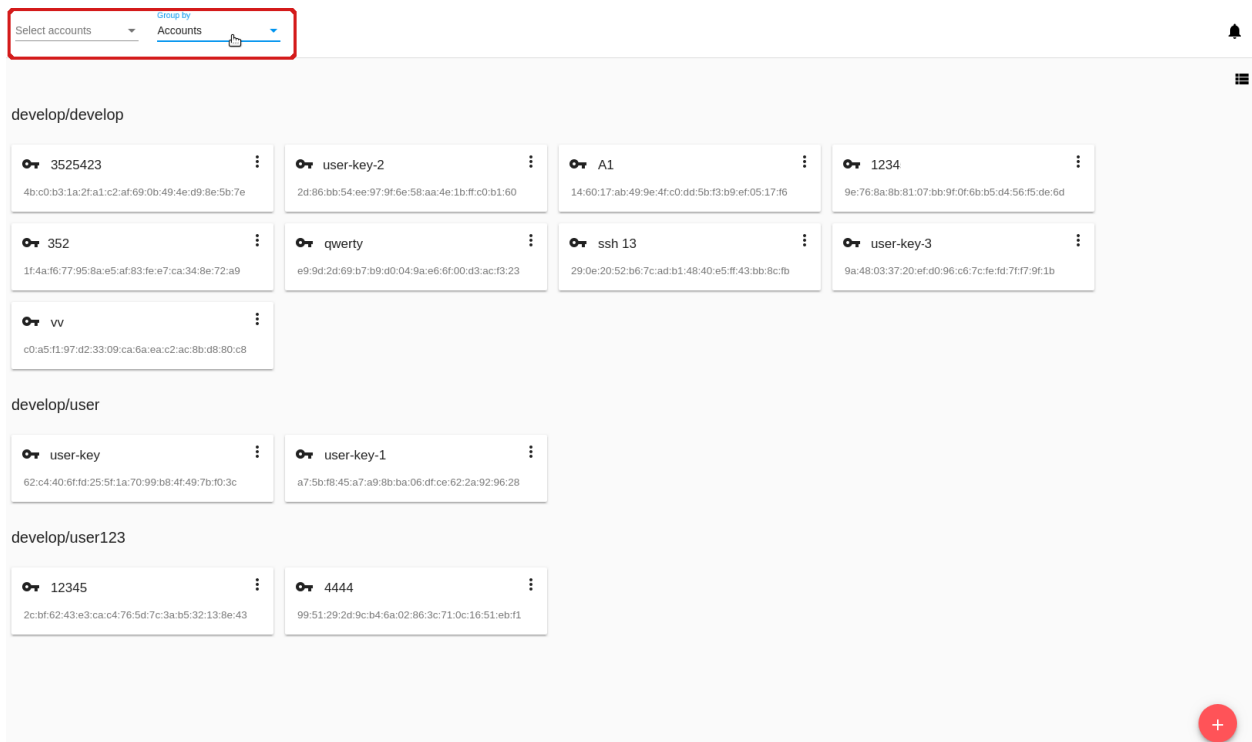
For every key the following information is displayed:

- Key name;
- SSH public key;
- Action box - Allows deleting a key from the system.

Filtering of SSH Keys

The filtering tool is available to Administrators. It is placed above the list of keys and allows filtering keys by accounts.

Besides, the keys can be grouped by accounts that may be convenient for list viewing.



Group by
Select accounts Accounts

develop/develop

- 3525423
4b:c0:b3:1a:2f:a1:c2:af:69:0b:49:4e:d9:8e:5b:7e
- user-key-2
2d:86:bb:54:ee:97:9f:6e:58:aa:4e:1b:ff:c0:b1:60
- A1
14:60:17:ab:49:9e:4f:c0:dd:5b:f3:b9:ef:05:17:f6
- 1234
9e:76:8a:8b:81:07:bb:9f:0f:6b:b5:d4:56:f5:de:6d
- 352
1f:4a:f6:77:95:8a:e5:af:83:fe:e7:ca:34:8e:72:a9
- qwerty
e9:9d:2d:69:b7:b9:d0:04:9a:e6:6f:00:d3:ac:f3:23
- ssh 13
29:0e:20:52:b6:7c:ad:b1:48:40:e5:ff:43:bb:8c:fb
- user-key-3
9a:48:03:37:20:ef:d0:96:c6:7c:fe:fd:7f:f7:9f:1b
- vv
c0:a5:f1:97:d2:33:09:ca:6a:ea:c2:ac:8b:d8:80:c8

develop/user

- user-key
62:c4:40:6f:fd:25:5f:1a:70:99:b8:4f:49:7b:0:3c
- user-key-1
a7:5b:f8:45:a7:a9:8b:ba:06:df:ce:62:2a:92:96:28


develop/user123

- 12345
2c:bf:62:43:e3:ca:c4:76:5d:7c:3a:b5:32:13:8e:43
- 4444
99:51:29:2d:9c:b4:6a:02:86:3c:71:0c:16:51:eb:f1

+

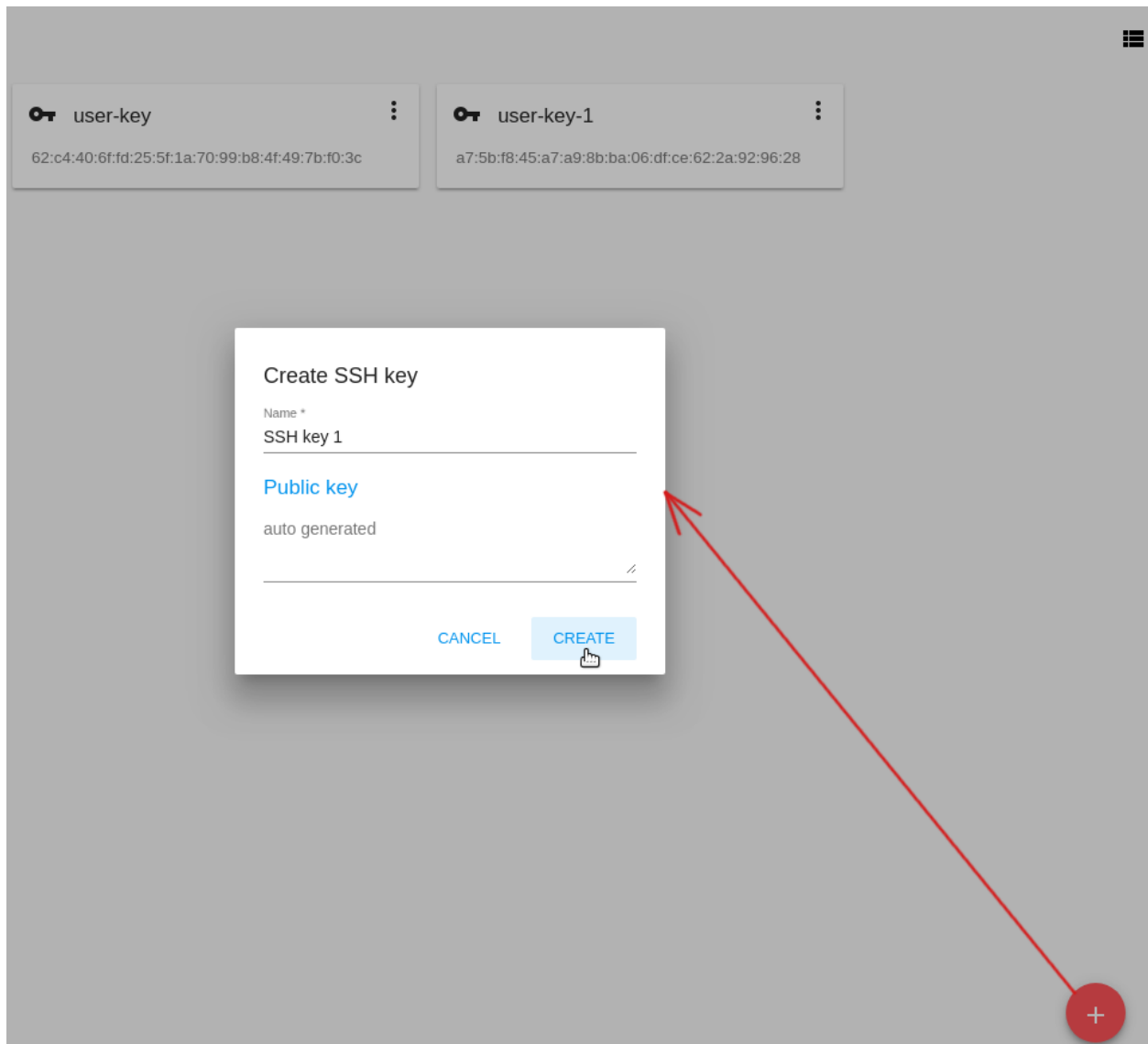
2.7.2 Create an SSH Key

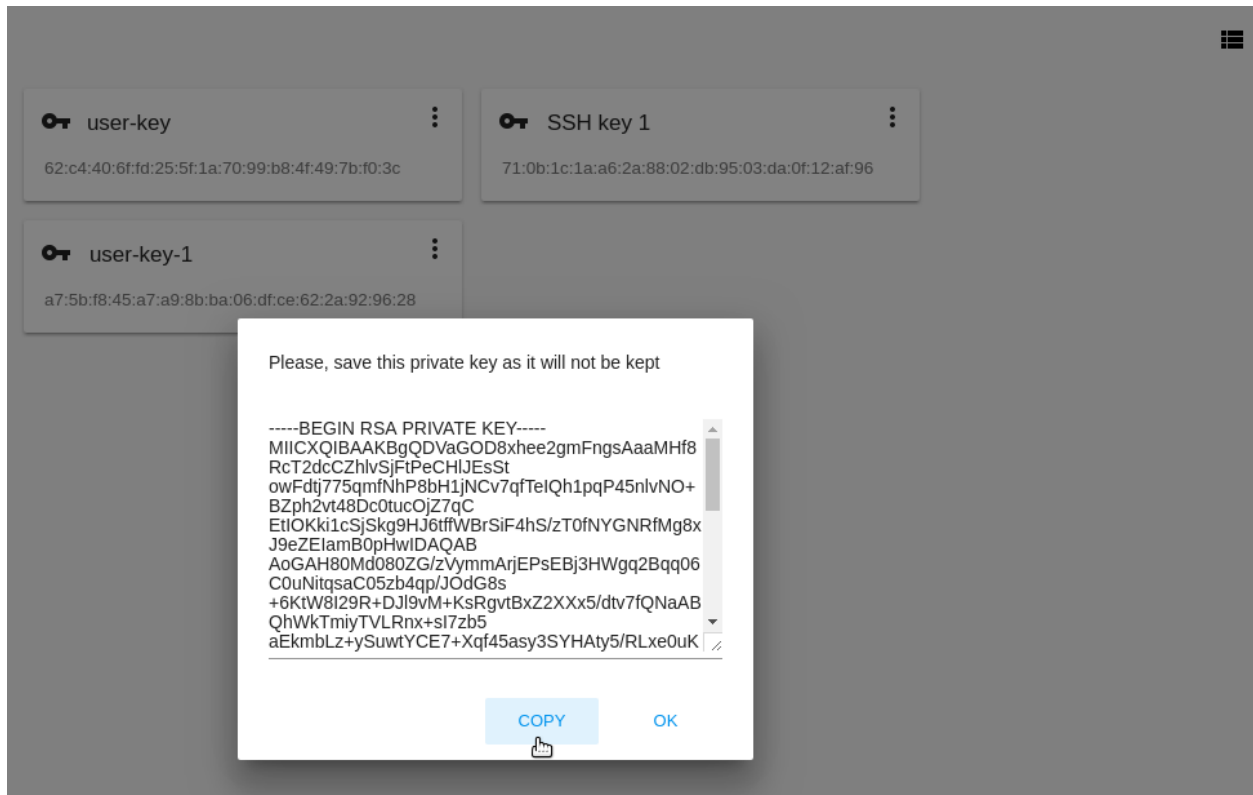
You can generate a new SSH key to use for authentication.

By clicking “Create”  in the bottom-right corner you will open a form where you should specify a key name:

Then click “CREATE”. The SSH key will be auto-generated. The public key will appear in the list of SSH keys with a fingerprint. In the modal window, you will see the private key. This private key is not saved in the system. You should save it for yourself. Click “COPY” to correctly copy it and save it locally.

Then click “OK” to close the window.





You can specify an SSH public key entering its value in the field. It should start from `ssh-rsa` followed by one space and at least one symbol. Then click “CREATE”. The key will be saved. No private key is required in this case.

The created SSH key is available to assign to VMs now.


2.7.3 SSH Key Details Sidebar

By clicking an SSH key in the list you will open a details sidebar to the right.


It contains the following information:

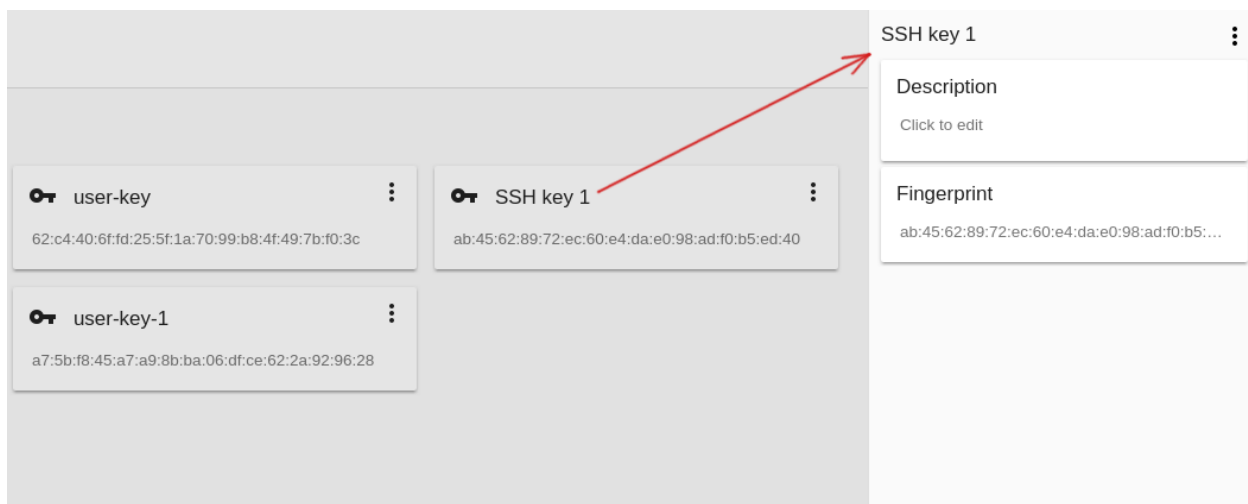
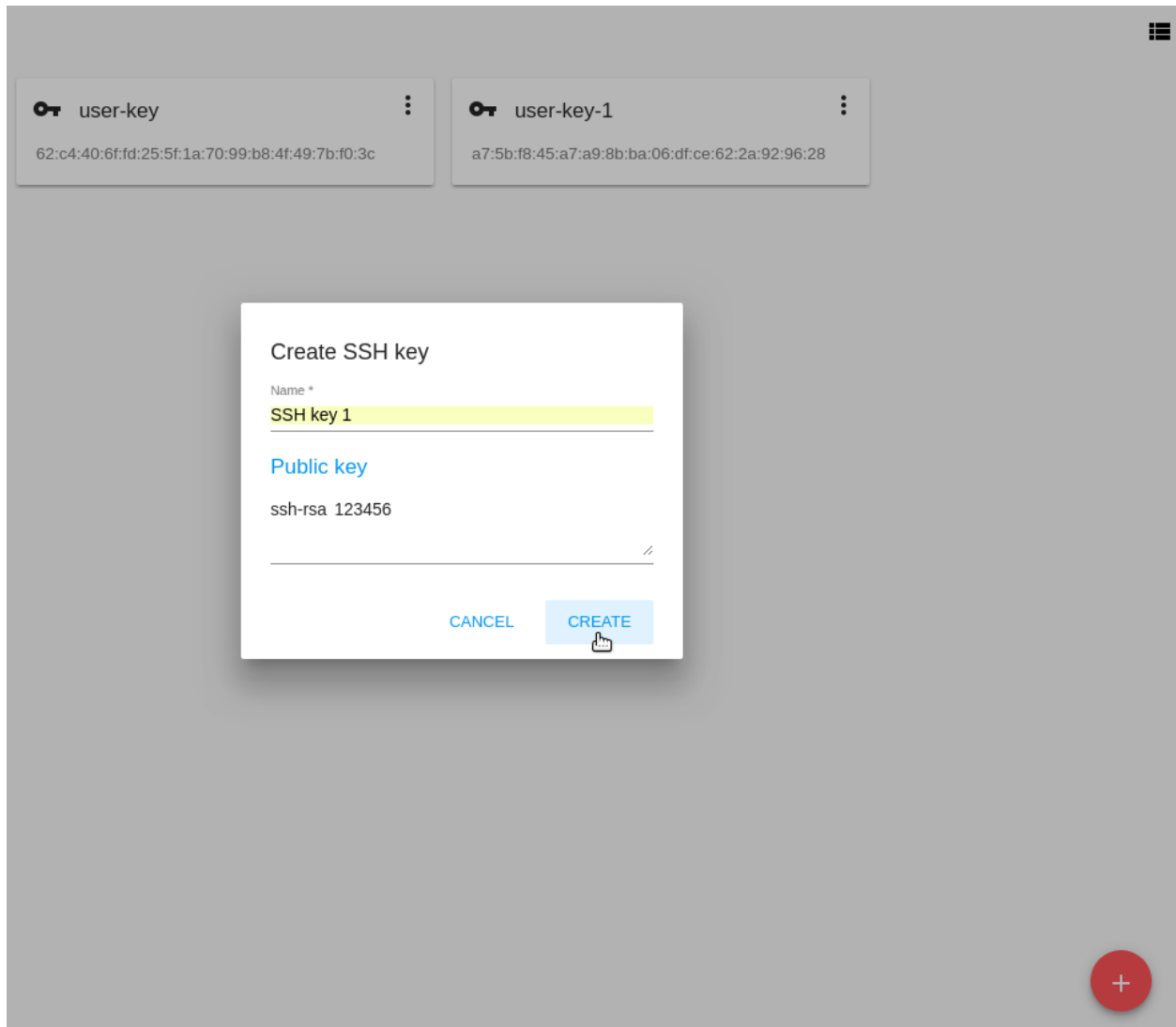
- SSH key name;
- Key action box allowing key deleting;
- SSH public key fingerprint;
- SSH key description - In this block a description can be added to understand better what this key is for. Click the block and enter a short description in the text field. Then click “SAVE” to save it.

Click “CANCEL” to drop adding a description.

You can edit the description of an SSH key by clicking . Change the existing description in the text field and save the edits. The description is saved to account tags.

2.7.4 SSH Key Action Box

By clicking “Actions”  you can expand the list of actions for those SSH keys that belong to your user only. The deleting action is available here.



SSH key 1

Description

Enter text

Description for SSH key 1

CANCEL

SAVE

Fingerprint

ab:45:62:89:72:ec:60:e4:da:e0:98:ad:f0:b5:...

key

SSH key 1

Delete

ser-key-1

62:c4:40:6f:fd:25:5f:1a:70:99:b8:4f:49:7b:f0:3c

71:0b:1c:1a:a6:2a:88:02:db:95:03:da:0f:12:af:9

45:a7:a9:8b:ba:06:df:ce:62:2a:92:96:28

Click “Delete” to delete a key and then confirm your action in the dialog box. The key will be deleted. Click “Cancel” to close the window without deleting a key.

2.8 Accounts

Contents

- *Accounts*
 - *Account List*
 - * *Filtering of Accounts*
 - *Create an Account*
 - *Account Details Sidebar*
 - * *Create a User*
 - * *User Action Box*
 - *Account Action Box*



In the *Accounts* section Administrators can manage accounts and users in them, as well as user settings and activity logs. For an account, details and resource limits can be viewed. Please, note that the account limits are shared by all users in the account. If you are facing the problem of the lack of resources, contact your Administrator. Administrators are able to edit the limits of an account. Besides, they can monitor resource usage having access to the resource statistics for each account.

Administrators can see the list of accounts for the whole domain. They can create new users for an account, edit or delete a user.

If you are a User, you can view but not manage your account and users in it. For each user in the account, you can see the settings.

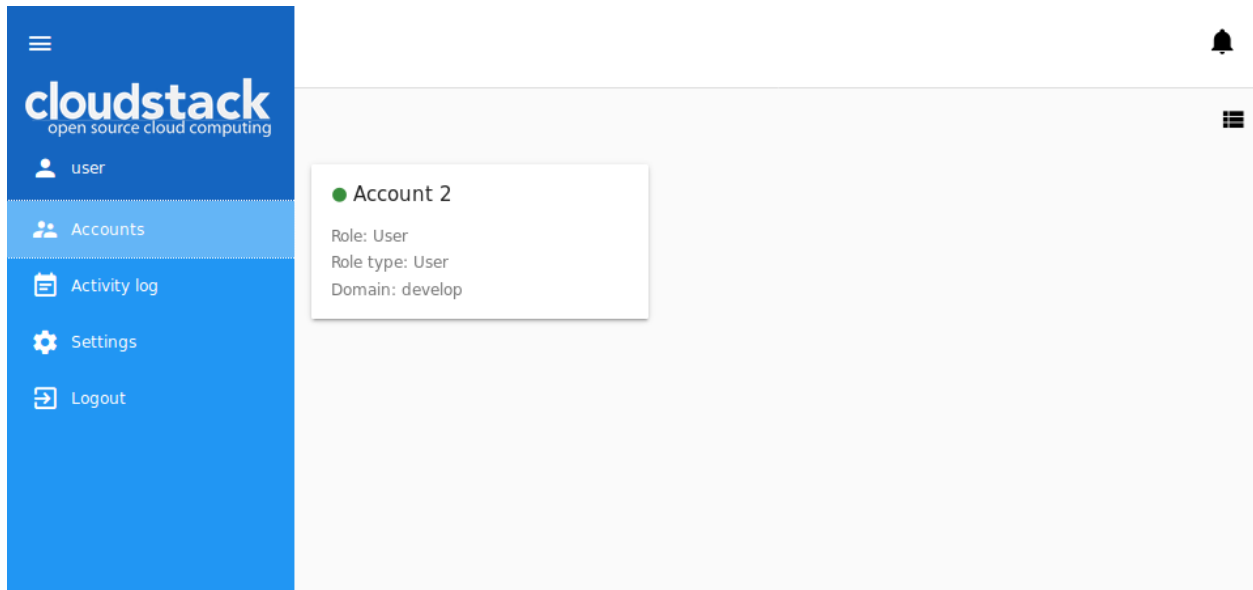
2.8.1 Account List

Clicking *Accounts* in the left-side navigation bar you open the *Accounts* section. It presents the list of accounts. Administrators can see accounts for the whole domain. A user can see his/her account only, that is the account his/her user belongs to.

You can switch the view from list to box using the switch tool  /  in the upper-right corner.

For each account in the list you can see the following information:

- Account name;
- State - Shows the account state by color spot: green for Enabled, red for Disabled statuses;
- Role - A role assigned to the account - Root Administrator, Resource Administrator, Domain Administrator, User. Find more information on roles in CloudStack in the [official documentation](#).
- Role type - A role type connected to the role.
- Domain - The domain which the account belongs to.
- Action list - Allows an Administrator to manage the account - to disable or delete it. Find more details at [Account Action Box](#).



Filtering of Accounts

If you are an Administrator, filtering and search tools will help you to find an account in the list.


You can filter the list by:

- Domains - Select a domain/domains available to you from the drop-down list.
- Roles - Select a role - Root Administrator, Resource Administrator, Domain Administrator and/or User -from the drop-down list.
- Role types - Select a role type/types from the drop-down list.
- States - Select a state/states - Enabled and/or Disabled - from the drop-down list.



Besides, accounts can be grouped by the parameters mentioned above.

2.8.2 Create an Account

An Administrator can create a new account in the domain.

By clicking “Create”  in the bottom-right corner you will open a form where the following fields should be completed:

Note: Required fields are marked with an asterisk (*).

- Name * - Enter any desired login ID for the account name. It should be unique within the domain.
- Email * - Enter the accounts email address.
- Password * - Enter any password you like. You can view the password that you are entering by clicking  to the right. Hide the password under dots by clicking .

Select domains ▼

Select roles ▼

Select role types ▼

Select states ▼

Group by ▼

● develop

Role: Domain Admin
Role type: DomainAdmin
Domain: develop

● Account 1

Role: User
Role type: User
Domain: develop

● newAccount

Role: User
Role type: User
Domain: develop

● TestAdmin

Role: Domain Admin
Role type: DomainAdmin
Domain: develop

● user

Role: User
Role type: User
Domain: develop

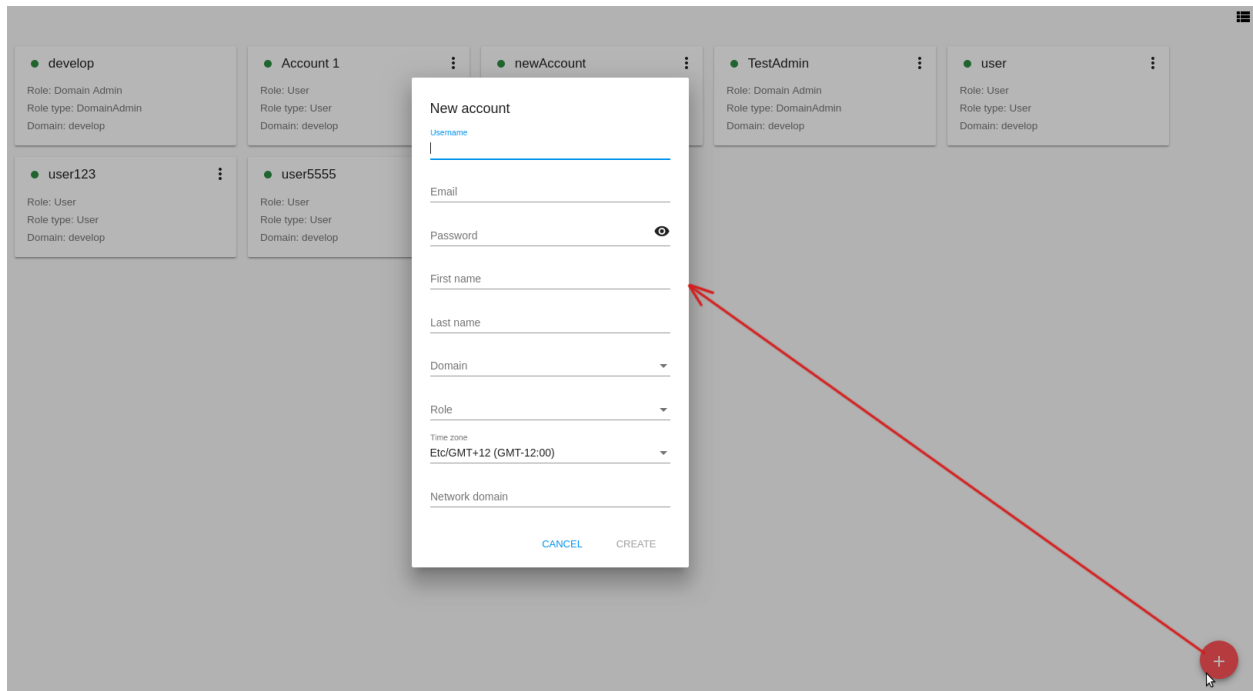
● user123

Role: User
Role type: User
Domain: develop

● user5555

Role: User
Role type: User
Domain: develop

+



- First name * - Enter the first name of a person or the first part of the entity represented by the account. It can be a department or a customer.
- Last name * - Enter the last name of a person or the second part of the entity represented by the account (a customer or a department).
- Domain * - Select a domain in which the account is to be created.
- Role * - Select the role for the account.
- Time zone - Set the time zone that corresponds to the account locale.
- Network domain - If you want to assign a special domain name to the account's guest VM network, specify the DNS suffix.

Click “CREATE” to create the new account. Make sure it has appeared in the list of accounts.

A user is created automatically for the new account. User's name corresponds to the first and the last name specified in the account creation form. This user inherits account's email and time zone.


Click “CANCEL” to leave the account creation form. No account will be created then.


2.8.3 Account Details Sidebar

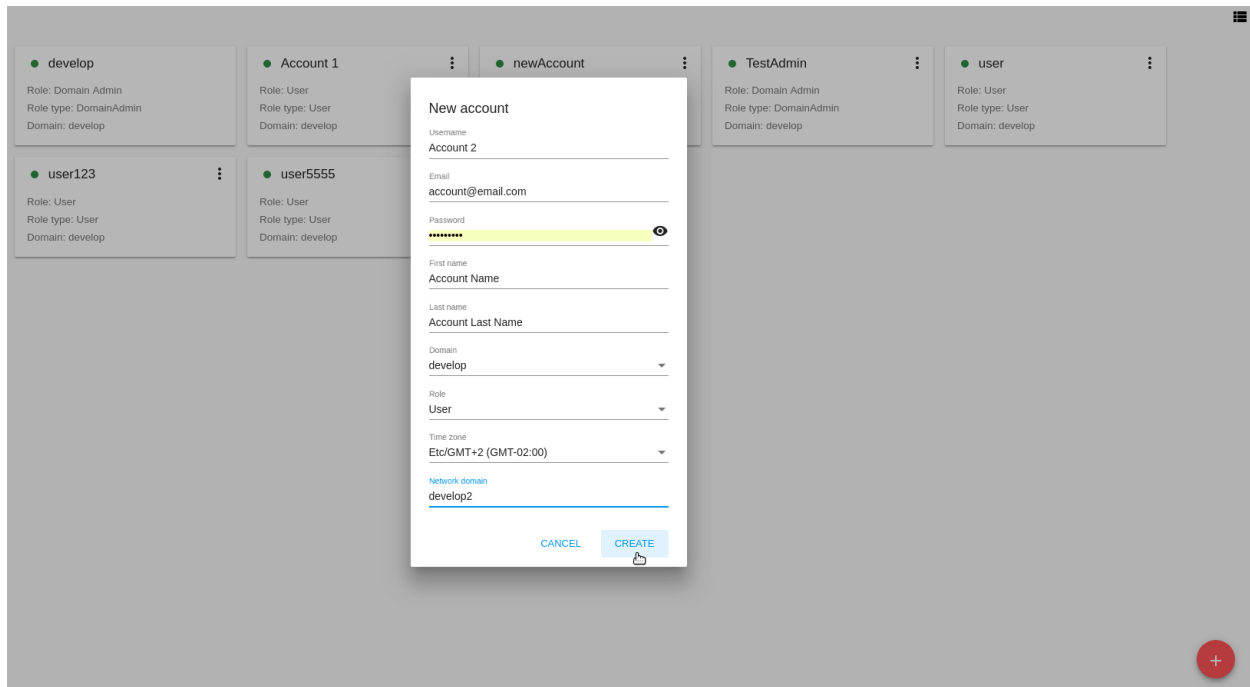
For each account, the information is available in the details sidebar to the right. Click the account in the list to open the sidebar:

There are two tabs in the sidebar: General and Users.



The *General* tab contains the general information on the account: details, limits for resources.


Administrators can edit the limits. Click “Edit”  in the Limits block and change the values right in the block.

Administrators can see the statistics on resource usage at the bottom. Refresh the data by clicking .



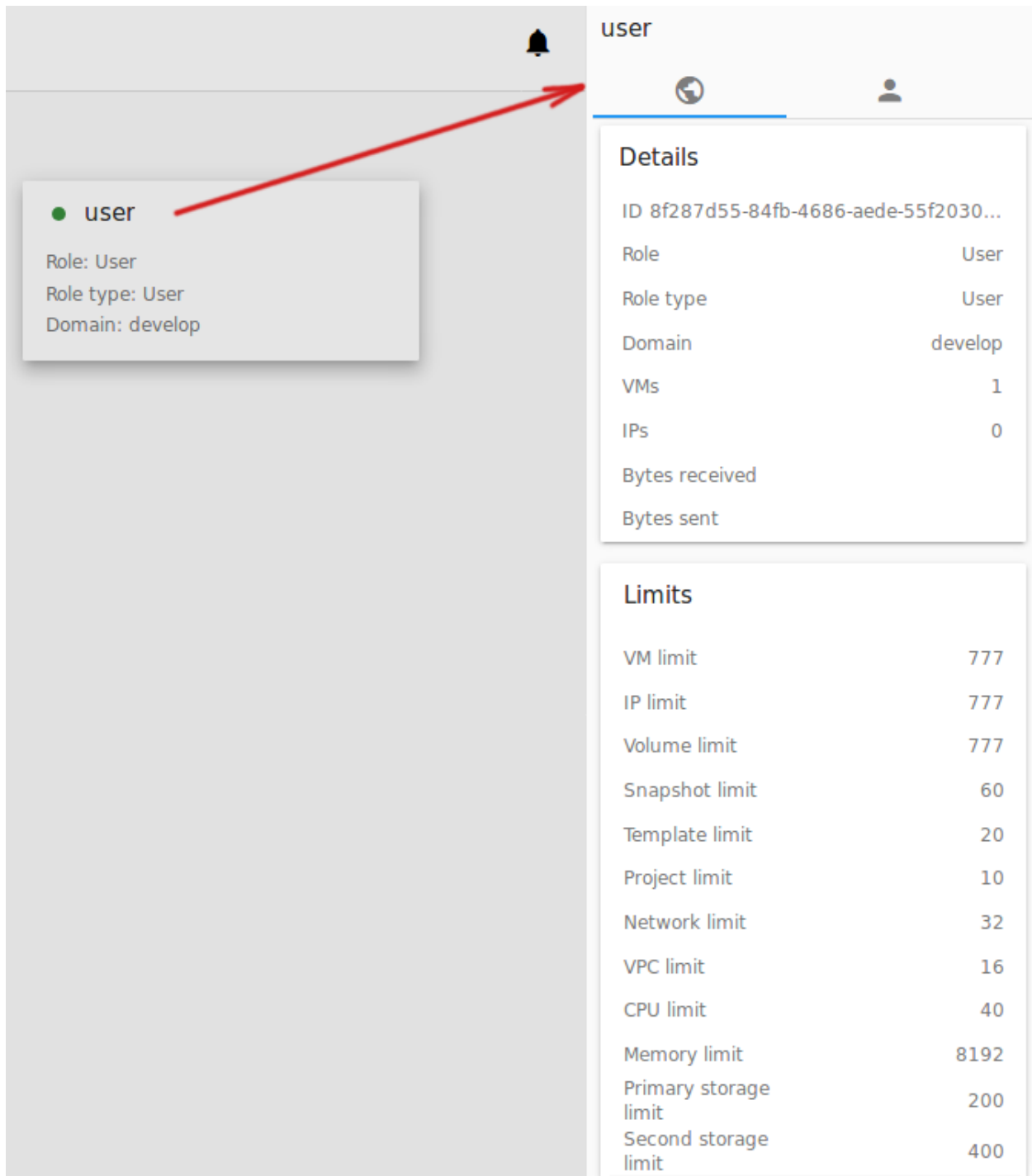
The *Users* tab contains the list of users in the account. For each user you can expand the information card where the following information is listed:

- Username;
- First and Last name;
- Timezone;
- Email;
- Secret key - The key generated for a user by clicking “Regenerate key” in the Action box. You can copy it to the buffer by clicking .
- API key - The key generated for a user by clicking “Regenerate key” in the Action box. You can copy it to the buffer by clicking .

An Administrator has a list of actions available for each user. A user can manage his/her user only. A list of actions is available under the  button. It contains the following actions:

- Edit user;
- Change password;
- Regenerate key;
- Delete user (available for Administrators).

Find more about actions for users in the [User Action Box](#) section.



The screenshot displays the CloudStack User Interface. On the left, a sidebar shows a list of roles, with 'user' selected. A red arrow points from this role to the main content area. The main content area has a header 'user' and a bell icon. Below the header, there are two tabs: a globe icon and a user icon. The 'Details' tab is active, showing the following information:

Details	
ID	8f287d55-84fb-4686-aede-55f2030...
Role	User
Role type	User
Domain	develop
VMs	1
IPs	0
Bytes received	
Bytes sent	


Below the details, there is a 'Limits' section with the following information:


Limits	
VM limit	777
IP limit	777
Volume limit	777
Snapshot limit	60
Template limit	20
Project limit	10
Network limit	32
VPC limit	16
CPU limit	40
Memory limit	8192
Primary storage limit	200
Second storage limit	400

Limits

VM limit	<input type="text" value="30"/>
IP limit	<input type="text" value="20"/>
Volume limit	<input type="text" value="20"/>
Snapshot limit	<input type="text" value="60"/>
Template limit	<input type="text" value="20"/>
Project limit	<input type="text" value="-1"/>
Network limit	<input type="text" value="32"/>
VPC limit	<input type="text" value="16"/>
CPU limit	<input type="text" value="40"/>
Memory limit	<input type="text" value="8192"/>
Primary storage limit	<input type="text" value="200"/>
Second storage limit	<input type="text" value="400"/>

CANCELSAVE

Statistic		Refresh	
VM count		3	
IP count		0	
Volume count		5	
Snapshot count		12	
Template count		18	
Project count		0	
Network count		0	
VPC count		0	
CPU count		3	
Memory count		2048	
Primary storage count		57982058496	
Second storage count		112731157504	

 Account 1
 Role: User
 Role type: User
 Domain: develop

Account 1

User 1

John Smith

Username User 2

First name John

Last name Smith

Timezone Etc/GMT 12


Email user@bw-sw.com

Secret key rQYNpvYWmSO6Jw6DNf

API key 6h6kh-MiFZu_X2jn03MHt



User 3

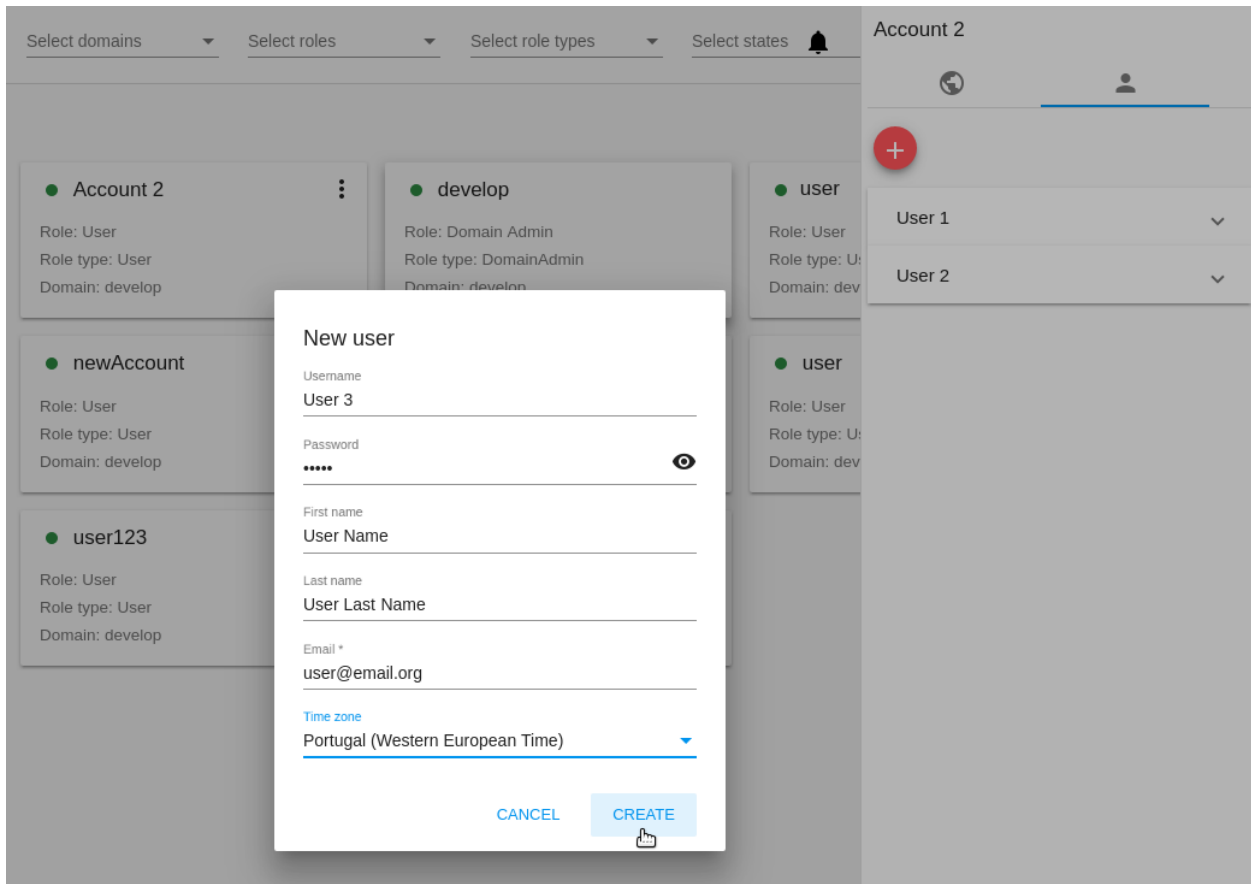
Create a User

Administrators can create a new user from the *Users* tab of the Account Details sidebar by clicking “Create” .

In the appeared form fill in the following fields:

Note: Required fields are marked with asterisks (*).

- Username * - Enter any desired user ID. It should be unique within the domain.
- Password * - Enter any password you like. You can view the password that you are entering by clicking  to the right. Hide the password under dots by clicking .
- First name * - User’s first name.
- Last name * - User’s last name.
- Email * - Enter the user’s email address.
- Time zone * - Set the timezone that corresponds to the user’s locale. Select an option from the drop-down list.



The screenshot shows the 'New user' form in the CSUI interface. The form is a modal dialog with the following fields and values:

- Username:** User 3
- Password:** Masked with dots (•••••)
- First name:** User Name
- Last name:** User Last Name
- Email:** user@email.org
- Time zone:** Portugal (Western European Time)

At the bottom of the form are two buttons: **CANCEL** and **CREATE**. The background shows a list of accounts and users, including 'Account 2', 'develop', 'user', 'newAccount', and 'user123'.


Click “CREATE” to create the new user. It will appear in the list of users for this account.

Click “CANCEL” to cancel the user creation.


User Action Box

Administrators can manage a user via the Action box.

The list of actions allows an Administrator to:

- Edit user - Opens a form to edit user's settings (name, email, timezone). Edit the information and click "SAVE" to save the edits.
- Change password - Opens a modal window with two fields for you to enter a new password and confirm it. Use the view tool  to view or hide a password while entering. Click "SAVE" to save the new password.
- Regenerate key - Allows changing the keys - secret and API - for the user. Confirm your action in the dialog window, and the keys will be changed.
- Delete a user - Allows deleting a user from the system. Confirm your action in the dialog window, and the user will be deleted.

2.8.4 Account Action Box

Administrators can manage an account via the Action box under .

The list of actions allows an Administrator to:

- Disable account - Allows disabling an account. By disabling the account all users for this account will no longer have access to their cloud resources. All running VMs will be immediately shut down. Click "Disable account" and confirm your action in the dialog window. The account will be inactive.
- Enable account - Allows activating a disabled account. Click "Enable account" and confirm your action in the dialog window. The account will be activated.
- Delete account - Allows an Administrator to delete an account from the system. Confirm your action in the dialog window, and the account will be deleted.

2.9 Activity Log

Contents

- *Activity Log*
 - *Events List*
 - * *Filtering of Events*

In the *Accounts* -> *Activity log* section you can see user activity in the account. Event search by main parameters - date and keywords - is supported to make it easier to find a necessary event for a specific date or type.



2.9.1 Events List


Events in the Activity log are listed in a chronological order from the latest till the earliest. It represents the full list of events for a selected day.


A user can view activities for his/her user only. An Administrator can see events for all accounts in the domain.

The following information for each event is presented in the list:

develop



User 1 


Username User 1


First name User

Last name 1

Timezone Etc/GMT 12


Email user1@email.com


Secret key EnSrES7RBZl4PuxhRS7r 


API key yf9fFLIYSWYBG2MYB_B 


User 2

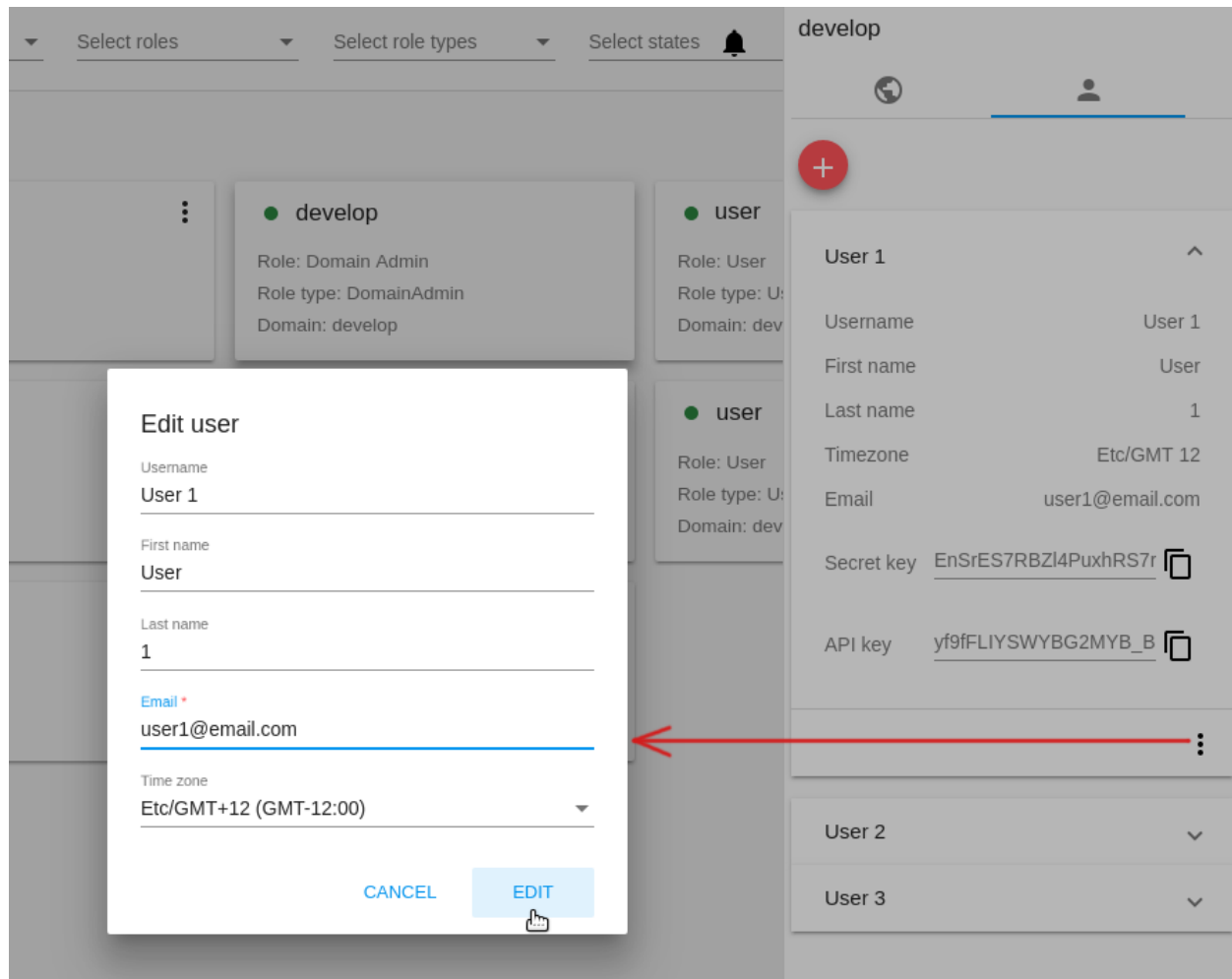
User 3

 Edit user

 Change password

 Regenerate key

 Delete user



Select domains ▼ Select roles ▼ Select role types ▼ Select states 🔔

develop

Account 2
Role: User
Role type: User
Domain: develop

develop
Role: Domain Admin
Role type: DomainAdmin
Domain: develop

user
Role: User
Role type: U
Domain: dev

newAccount
Role: User
Role type: User
Domain: develop

TestAdmin
Role: Domain Admin

user
Role: User
Role type: U
Domain: dev

user123
Role: User
Role type: User
Domain: develop

Change password

Password *
.....

Confirm password *
.....

CANCEL SAVE

User 1
Username User 1
First name User
Last name 1
Timezone Etc/GMT 12
Email user1@email.com
Secret key EnSrES7RBZl4PuxhRS7r
API key yf9fFLIYSWYBG2MYB_B

User 2
User 3

Select domains ▼ Select roles ▼ Select role types ▼ Select states ▼ Group by ▼ 🔔

Account 2
Role: User
Role type: User
Domain: develop

User2
Role: User
Role type: User
Domain: develop

Disable account
Delete account

User1
Role: User
Role type: User
Domain: develop

AdminAccount
Role: Domain Admin
Role type: DomainAdmin
Domain: develop

User3
Role: Domain Admin
Role type: DomainAdmin
Domain: develop

User4
Role: User
Role type: User
Domain: develop

cloudstack
open source cloud computing

user

Accounts

Activity log

Settings

Logout

Select a date
10/24/2018

Select levels ▼ Select types ▼ 🔍 Search 🔔


Description	Level	Type	Time
user has logged in from IP Address /176.120.29.181	INFO	USER.LOGIN	10:08:17 GMT+7
user has logged out	INFO	USER.LOGOUT	10:08:13 GMT+7
user has logged in from IP Address /176.120.29.181	INFO	USER.LOGIN	10:07:57 GMT+7
Successfully completed taking snapshot	INFO	SNAPSHOT.CREATE	08:02:08 GMT+7
Successfully deleted oldest snapshot: 4150	INFO	SNAPSHOT.DELETE	08:02:08 GMT+7
taking snapshot	INFO	SNAPSHOT.CREATE	08:01:53 GMT+7
creating snapshot for volume Id:11260	INFO	SNAPSHOT.CREATE	08:01:52 GMT+7

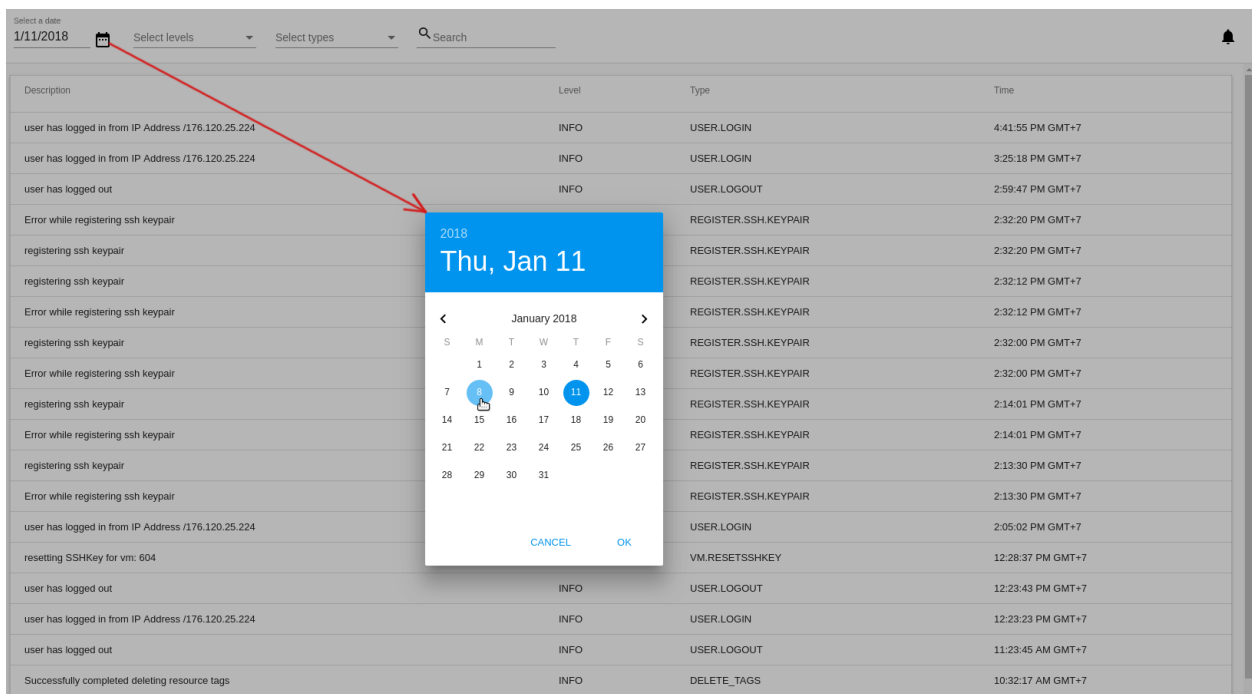
- Event description.
- Level - A kind of a category the event belongs to. It can show:
 - INFO - For regular activities, for example, logging in, creating a VM, attaching a disk.
 - WARN - For any warnings occurred.
 - ERROR - For any errors occurred, for example, an error while registering an SSH key pair.
- Type - Displays in what aspect of the system the event has taken place, for example: USER.LOGIN - for events happened at user authentication to the system; VOLUME.RESIZE - for events at disk size change.
- Time of the event.

Filtering of Events

To easily find an event in the list use the filtering tool above.

Any user can filter events by:

- Date - Allows selecting events for a specific date. By default, the today's date is selected. Click  and in the appeared calendar change the date for the day you wish to see activities for.



The screenshot shows the CSUI Events interface. At the top, there is a header bar with a date selector (1/11/2018), a calendar icon, and dropdown menus for 'Select levels' and 'Select types'. A search bar is also present. Below the header is a table of events with columns: Description, Level, Type, and Time. A red arrow points from the calendar icon in the header to a date filter calendar that is open. The calendar shows January 2018, with the 11th (Thursday) selected. The calendar has 'CANCEL' and 'OK' buttons at the bottom. The table below contains various events, including user logins, SSH keypair registrations, and VM resets.

Description	Level	Type	Time
user has logged in from IP Address /176.120.25.224	INFO	USER.LOGIN	4:41:55 PM GMT+7
user has logged in from IP Address /176.120.25.224	INFO	USER.LOGIN	3:25:18 PM GMT+7
user has logged out	INFO	USER.LOGOUT	2:59:47 PM GMT+7
Error while registering ssh keypair		REGISTER.SSH.KEYPAIR	2:32:20 PM GMT+7
registering ssh keypair		REGISTER.SSH.KEYPAIR	2:32:20 PM GMT+7
registering ssh keypair		REGISTER.SSH.KEYPAIR	2:32:12 PM GMT+7
Error while registering ssh keypair		REGISTER.SSH.KEYPAIR	2:32:12 PM GMT+7
registering ssh keypair		REGISTER.SSH.KEYPAIR	2:32:00 PM GMT+7
Error while registering ssh keypair		REGISTER.SSH.KEYPAIR	2:32:00 PM GMT+7
registering ssh keypair		REGISTER.SSH.KEYPAIR	2:14:01 PM GMT+7
Error while registering ssh keypair		REGISTER.SSH.KEYPAIR	2:14:01 PM GMT+7
registering ssh keypair		REGISTER.SSH.KEYPAIR	2:13:30 PM GMT+7
Error while registering ssh keypair		REGISTER.SSH.KEYPAIR	2:13:30 PM GMT+7
user has logged in from IP Address /176.120.25.224		USER.LOGIN	2:05:02 PM GMT+7
resetting SSHKey for vm: 604		VM.RESETSSHKEY	12:28:37 PM GMT+7
user has logged out	INFO	USER.LOGOUT	12:23:43 PM GMT+7
user has logged in from IP Address /176.120.25.224	INFO	USER.LOGIN	12:23:23 PM GMT+7
user has logged out	INFO	USER.LOGOUT	11:23:45 AM GMT+7
Successfully completed deleting resource tags	INFO	DELETE.TAGS	10:32:17 AM GMT+7

Click “OK” to filter the list. The events will be selected in accordance with the chosen date.

Click “CANCEL” to drop the selection.

- Levels - Allows selecting events by levels. Choose the level/levels you wish from the drop-down list.
- Types - Allows selecting events by types. Choose the type/types from the drop-down list.

An Administrator has an additional filtering parameter - accounts.

Use the search tool to find an event by keywords or a part of a word.

Select a date
1/11/2018

Select levels

Select types

Select accounts
user

Search

Description	Level	Type	Time
user has logged out	INFO	USER.LOGOUT	4:51:50 PM GMT+7
user has logged in from IP Address /176.120.25.224	INFO	USER.LOGIN	4:41:55 PM GMT+7
user has logged in from IP Address /176.120.25.224	INFO	USER.LOGIN	3:25:18 PM GMT+7
user has logged out	INFO	USER.LOGOUT	2:59:47 PM GMT+7
Error while registering ssh keypair	ERROR	REGISTER.SSH.KEYPAIR	2:32:20 PM GMT+7
registering ssh keypair	INFO	REGISTER.SSH.KEYPAIR	2:32:20 PM GMT+7
Error while registering ssh keypair	ERROR	REGISTER.SSH.KEYPAIR	2:32:12 PM GMT+7
registering ssh keypair	INFO	REGISTER.SSH.KEYPAIR	2:32:12 PM GMT+7
Error while registering ssh keypair	ERROR	REGISTER.SSH.KEYPAIR	2:32:00 PM GMT+7
registering ssh keypair	INFO	REGISTER.SSH.KEYPAIR	2:32:00 PM GMT+7
Error while registering ssh keypair	ERROR	REGISTER.SSH.KEYPAIR	2:14:01 PM GMT+7
registering ssh keypair	INFO	REGISTER.SSH.KEYPAIR	2:14:01 PM GMT+7
Error while registering ssh keypair	ERROR	REGISTER.SSH.KEYPAIR	2:13:30 PM GMT+7
registering ssh keypair	INFO	REGISTER.SSH.KEYPAIR	2:13:30 PM GMT+7
user has logged in from IP Address /176.120.25.224	INFO	USER.LOGIN	2:05:02 PM GMT+7
resetting SSHKey for vm: 604	INFO	VM.RESETSSHKEY	12:28:37 PM GMT+7
user has logged out	INFO	USER.LOGOUT	12:23:43 PM GMT+7
user has logged in from IP Address /176.120.25.224	INFO	USER.LOGIN	12:23:23 PM GMT+7
user has logged out	INFO	USER.LOGOUT	11:23:45 AM GMT+7

Select a date
12/27/2017

Select levels

Select types

Search
destr

Description	Level	Type	Time
Successfully completed destr oying Vm. Vm Id: 640	INFO	VM. DESTR OY	4:04:51 PM GMT+7
destr oying vm: 640	INFO	VM. DESTR OY	4:04:48 PM GMT+7
destr oying Vm. Vm Id: 640	INFO	VM. DESTR OY	4:04:48 PM GMT+7
Successfully completed destr oying Vm. Vm Id: 640	INFO	VM. DESTR OY	4:04:05 PM GMT+7
destr oying vm: 640	INFO	VM. DESTR OY	4:04:01 PM GMT+7
destr oying Vm. Vm Id: 640	INFO	VM. DESTR OY	4:04:01 PM GMT+7

2.10 Settings

Contents

- *Settings*
 - *Security*
 - * *Change Password*
 - * *Session Timeout*
 - * *Save VM passwords by default*
 - *API Configuration*
 - *VM preferences*
 - * *Keyboard layout*
 - *Look and Feel*
 - * *Interface Language*
 - * *First Day of Week*
 - * *Time Format*
 - * *Theme Color*
 - *Log View (real-time mode)*

In the *Accounts* -> *Settings* section a user can modify the interface by changing settings.

2.10.1 Security

A user can manage the following security settings:

- Change password;
- Set the session timeout interval;
- the “Save VM passwords by default” option.

Change Password

Here you can change the password provided by your Administrator to the one you like. This will improve the account security.

Enter a new password and re-enter it in the next field to confirm it:


Click “UPDATE” to save the new password.


In case you have lost or forgotten your password, contact your Administrator.


Session Timeout


Here you can specify the maximum amount of time that an active session can be idle (without user activity) before it automatically closes. The default interval is 30 minutes.


<



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Welcome, 


 Virtual machines


 Storage


 Images


 Firewall


 Activity log

 SSH keys

 Accounts

 Settings

 Logout



Security

Change password

New password *

Repeat password *

UPDATE


Session timeout (in minutes)

30


UPDATE

☐ Save VM passwords by default


API configuration



API Key

6h6kh-MiFZu_X2jn03MHuVcgmbDL\ 

Secret key

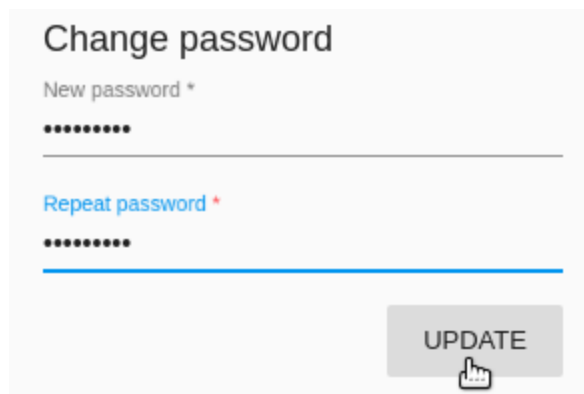
rQYNpvYWmSO6Jw6DNGDmS6YW 


Connection URL

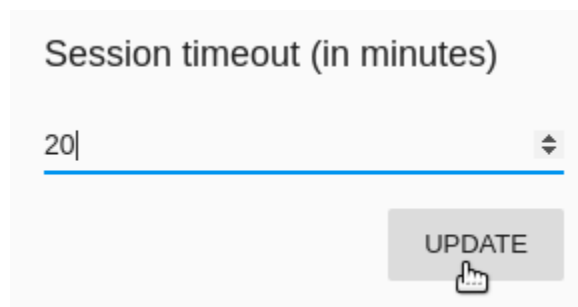
<http://cs-ui-ci.z1.netpoint-dc.com:8...>

Documentation

<https://cloudstack.apache.org/api/...>

A screenshot of a 'Change password' form. It has a title 'Change password' at the top. Below it are two input fields: 'New password *' and 'Repeat password *'. Both fields contain masked text represented by dots. To the right of the 'Repeat password *' field is a red asterisk. At the bottom right of the form is a grey button labeled 'UPDATE' with a hand cursor icon.

Set the desired time limit in minutes using the switch button  to the right or typing it just into the field. Then click “UPDATE” to save the changes.

A screenshot of a 'Session timeout (in minutes)' form. It has a title 'Session timeout (in minutes)' at the top. Below it is a text input field containing the number '20'. To the right of the input field is a switch button with an up/down arrow icon. At the bottom right of the form is a grey button labeled 'UPDATE' with a hand cursor icon.

The value is stored in user’s tags.

The maximum allowed value is 300 minutes. Please, note that a long time period of an idle session decreases the account security.

The session timeout can be set in the configuration file. You will find more information in the [configuration guide](#).

Save VM passwords by default

This checkbox allows saving passwords to VM tags automatically for all created virtual machines requiring passwords.

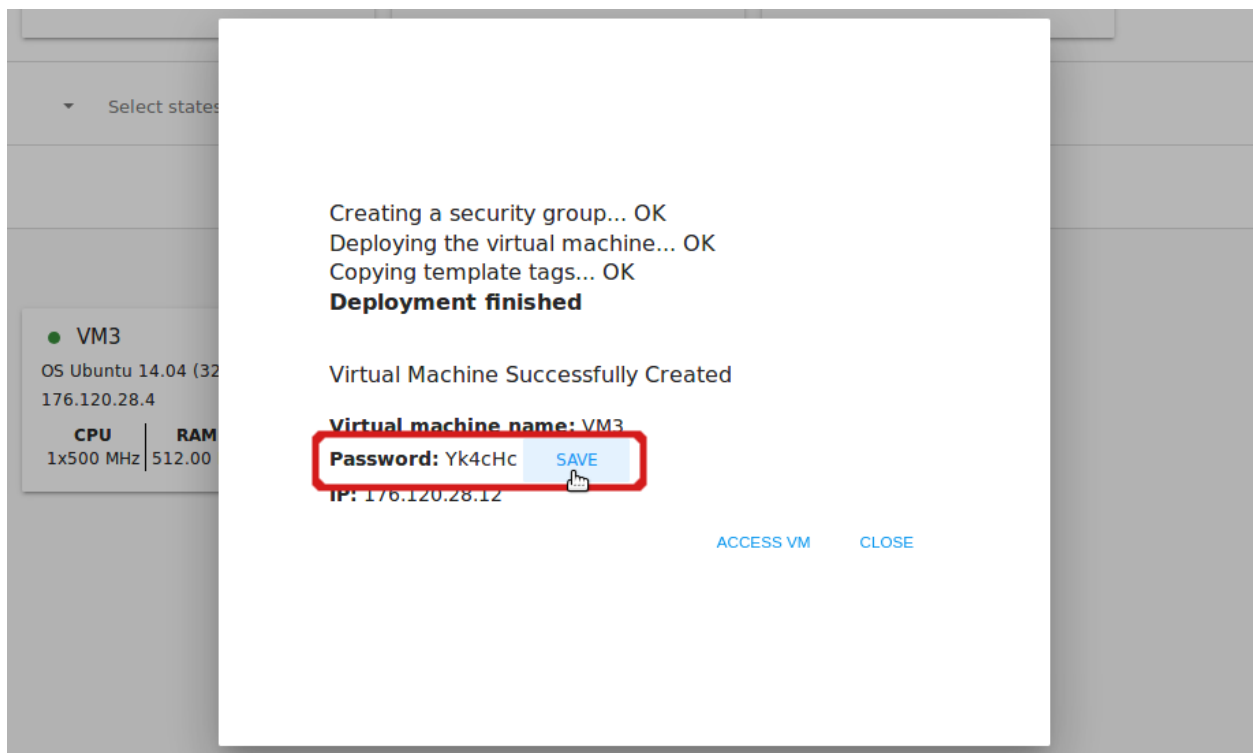
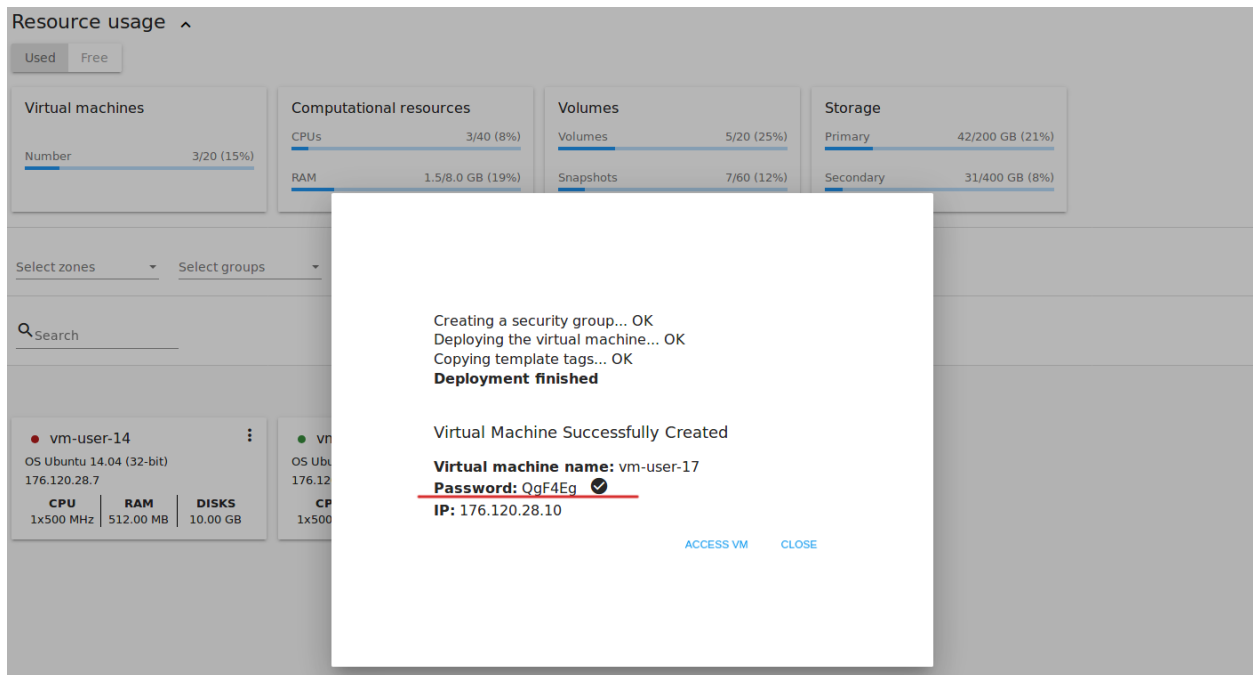
Tick this option here. The passwords will be saved to VM tags right at the moment VMs are created. You will see a password (if it is required for the VM) is marked as saved in a dialog window after the new VM is deployed:


If this option is not activated, every time when creating a machine the system will ask you to save the password by clicking “SAVE” next to it:


Then the system will ask you if you wish to save passwords to VM tags automatically. If you click “Yes”, the “Save VM passwords by default” option will be activated in *Settings*. You will find more information about VM creation in the [Create a Virtual Machine](#) section.

2.10.2 API Configuration


In this block of settings you can see and manage the API configurations: regenerate API keys, see the connection URL.




You can see an API key and a Secret key in corresponding fields. You can copy any of them clicking  to the right.

API configuration 

API Key

6h6kh-MiFZu_X2jn03MHuVcgmbDL\ 

Secret key


rQYNpvYWmSO6Jw6DNGDmS6YW 

Connection URL

<http://cs-ui-ci.z1.netpoint-dc.com:8...>

Documentation

<https://cloudstack.apache.org/api/...>

Regenerate the keys by clicking  above the fields. New keys will be generated.

Below you can view a connection URL which is used to send requests to CloudStack API. All requests are listed in the Apache CloudStack documentation available by the link.

2.10.3 VM preferences

In this block you may set up the keyboard layout.

Keyboard layout

Select a keyboard layout in the drop-down list.

The following options are available:

- Standard US keyboard (default value)
- UK keyboard
- Japanese keyboard
- Simplified Chinese keyboard.

API configuration



API Key

6h6kh-MiFZu_X2jn03MHuVcgmbDL\



Secret key

rQYNpvYWmSO6Jw6DNGDmS6YW



Connection URL

<http://cs-ui-ci.z1.netpoint-dc.com:8...>

Documentation

<https://cloudstack.apache.org/api/...>

API configuration



API Key

6h6kh-MiFZu_X2jn03MHuVcgmbDL\



Secret key

rQYNpvYWmSO6Jw6DNGDmS6YW



Connection URL

<http://cs-ui-ci.z1.netpoint-dc.com:8...>

Documentation


<https://cloudstack.apache.org/api/...>

API configuration

API Key

U0-4R0FFFU7O9jV-R2Jj-YpaBe1C 

Secret key

rDWhKv7DHXh3hDcqXvmq6pId 

Connection URL

<http://cs-ui-ci.bitworks.softwar...>

Documentation

<https://cloudstack.apache.org/...>

VM preferences

Keyboard layout

Standard (US) keyboard ▼

Look and Feel

Interface Language

English ▼

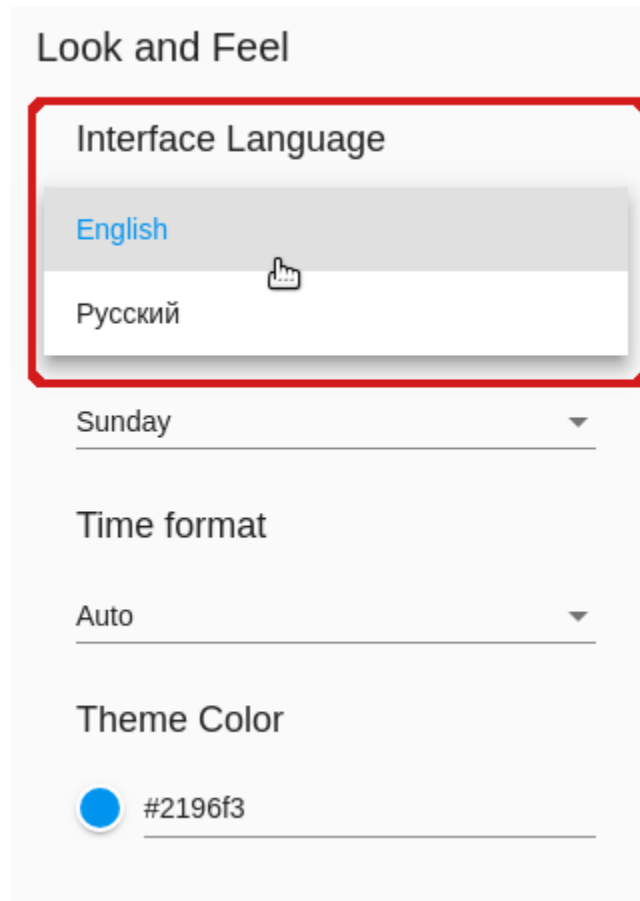
The selected option will appear in the VNC console keyboard layout parameter when accessing a VM via console. The selected option is also saved to user tags.

2.10.4 Look and Feel

In this block you can adjust the interface look.

Interface Language

Select the language of your interface. Currently two options are available in the drop-down list: Russian and English.



First Day of Week

In this block, you have the opportunity to choose between two types of weeks: Sunday - Saturday or Monday - Sunday. From the drop-down list select the day when a week starts: Monday or Sunday.

Time Format

Here you have the opportunity to switch the time format from AM/PM to 24H. You can set it to “Auto” and the time format will be set in correspondence to the interface language: AM/PM if you select English and 24H if you select Russian.

Look and Feel

Interface Language

English ▼


First day of the week

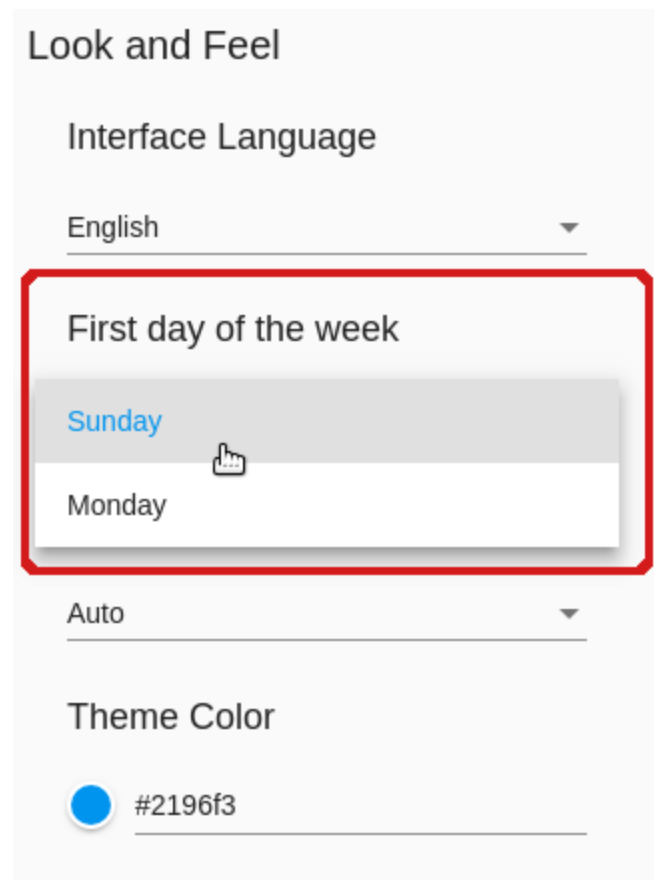
Sunday

Monday

Auto ▼

Theme Color

 #2196f3



Look and Feel

Interface Language

English

First day of the week

12-Hours Time



24-Hours Time

Auto

Theme Color

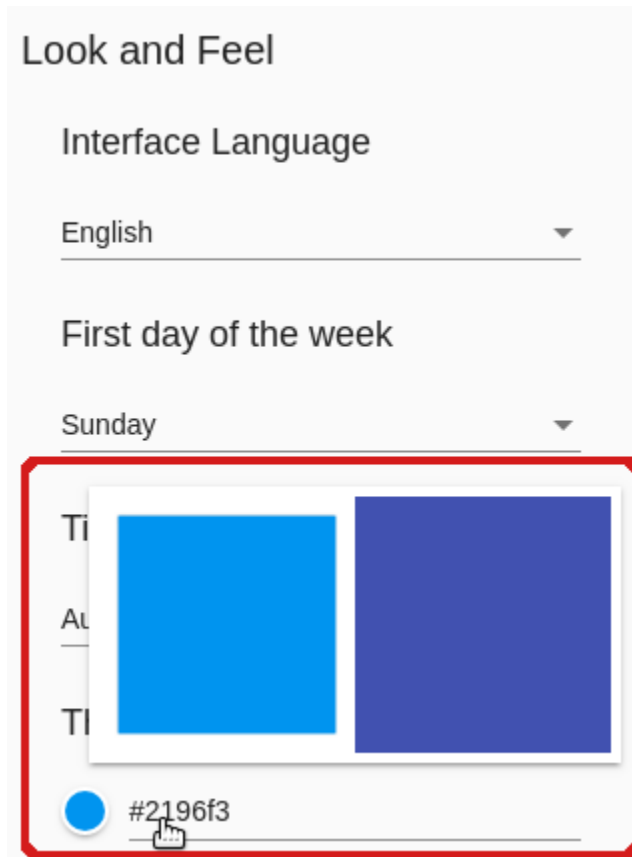


#2196f3

Theme Color

Select a preferred theme color. Currently two options are available: “blue-red” and “indigo-pink”. The blue-red one is used by default.

Click the field and select another color if you wish.



A theme color can be set in the configuration JSON file. You will find more information in the [configuration guide](#).

2.10.5 Log View (real-time mode)

This section is available if the LogView UI-plugin is activated. See the [plugin page](#) for installation instructions.


In this settings block you can configure viewing VM logs in a real-time mode. The following parameters can be set:

- Show last (minutes) - allows viewing logs for the last set period. You can set the number of minutes from 1 (default) to 10.
- Show last (messages) - allows setting a maximum amount of logs to display. You can set from 1 to any number of log records. By default, 1000 messages are shown.



Click “Update” to apply the set parameters.


2.11 Logout


Clicking *Logout* in the bottom of the navigation bar a user can logout from CloudStack.





cloudstack
open source cloud computing

 Accounts

 Activity log

 Settings

 Logout

Connection URL

<http://cs-ui-ci.bitworks.softwar...>

Documentation

<https://cloudstack.apache.org/...>

VM preferences

Keyboard layout

Standard (US) keyboard

Look and Feel

Interface Language

English


First day of the week

Sunday

Time format

12-Hours Time

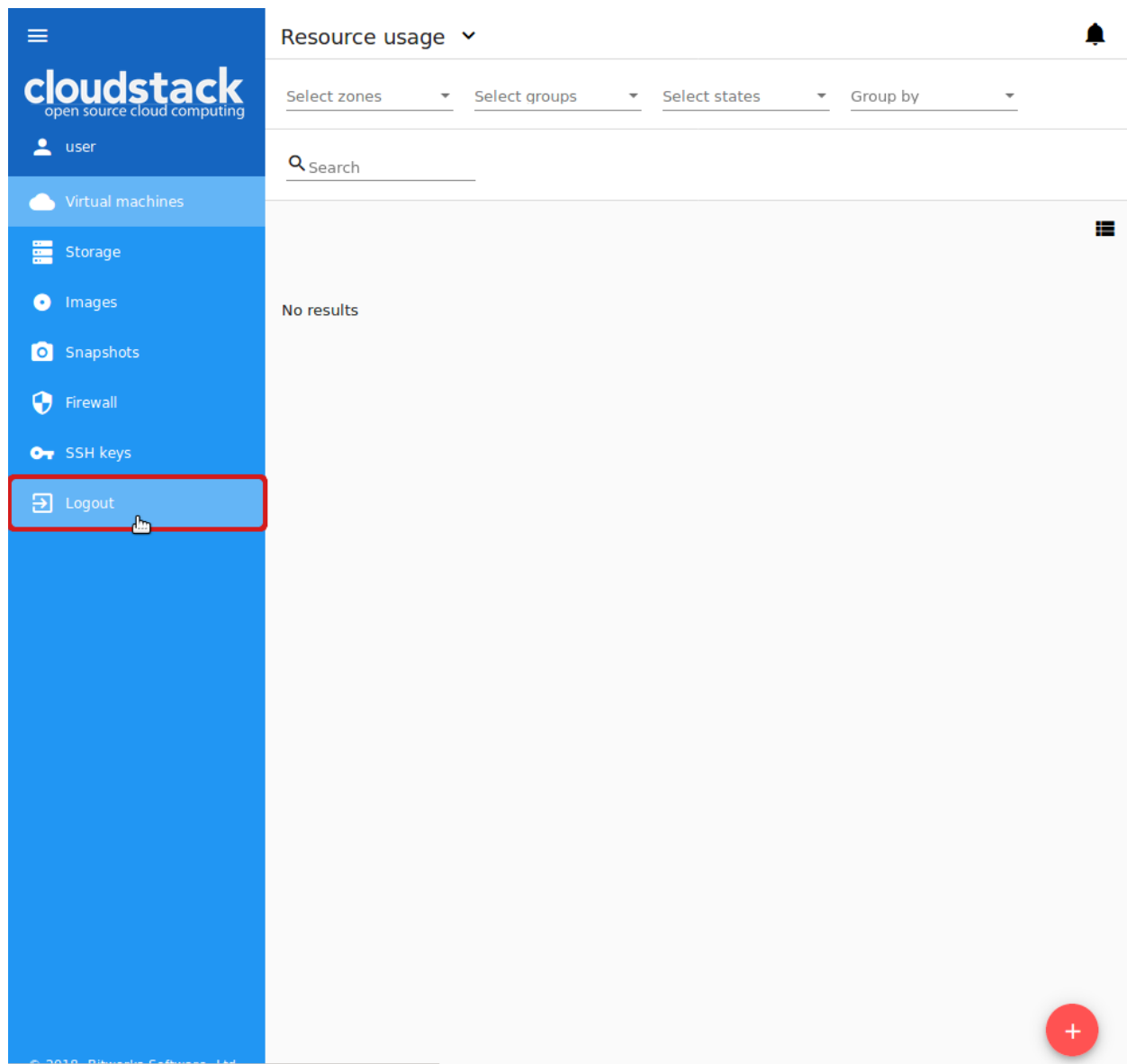
Theme Color

 #2196f3

Log View (real-time mode)

Show last (messages)

1000



It will move a user back to the Login form.

CHAPTER 3

Log View Plugin

Warning: The section is under development!

Contents

- *Log View Plugin*
 - *Overview*
 - *Deployment Instructions*
 - *View Logs*
 - * *Filtering Logs*
 - * *View Logs List*
 - *Sorting Logs*
 - *Searching Logs*
 - * *Following Logs*

3.1 Overview

In the *Virtual Machines-View Logs* section a user can see VM logs. This section appears if the UI-plugin - Log View - is activated. This UI-plugin works together with the backend API plugin developed to process and view virtual machine logs which are handled by ELK and delivered to the storage by Filebeat. The version of the backend API plugin matches Apache CloudStack version that it is built for. The plugin is developed and tested only with Apache CloudStack 4.11.1

To make the *View logs* section available, first deploy the backend API plugin and then activate the Log View UI-plugin via the `config.json` file. See deployment instructions below.

3.2 Deployment Instructions

Full instructions on the Log View plugin deployment is presented at the [plugin page](#).

To enable the Log View plugin you need to:

1. Install the backend API plugin into CloudStack.
2. Deploy the necessary components: ElasticSearch, Filebeat, Logstash, Curator.
3. Enable the UI extension via the `config.json` file.

3.3 View Logs


After successful deployment you can see the *View logs* section under the *Virtual Machines* menu in UI. In this section you can view the log files for a defined period of time or in a real-time mode. To view logs you should specify an account (for Administrators), a VM for which you wish to see the logs, and a log file to view the logs from. More details are provided below.

3.3.1 Filtering Logs

To view logs in the list, please, set up the filtering parameters.

Select the following parameters in the provided order from drop-down lists:

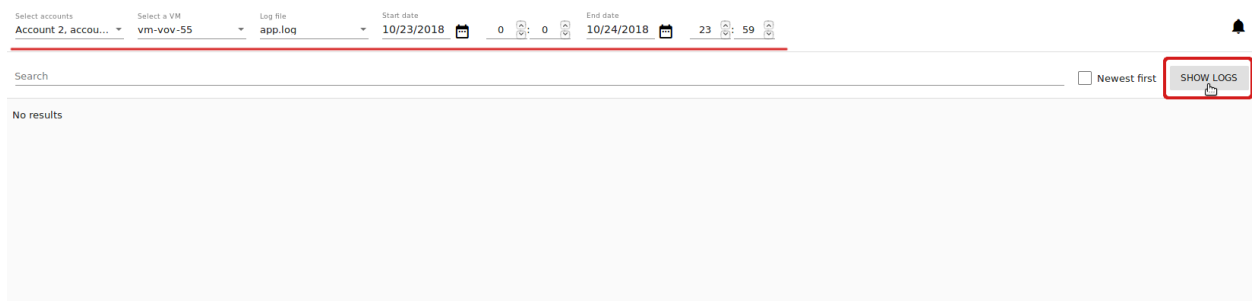
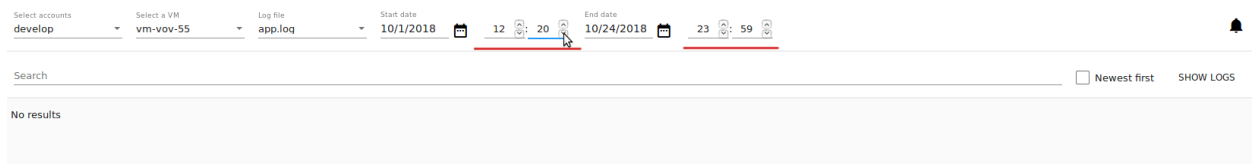
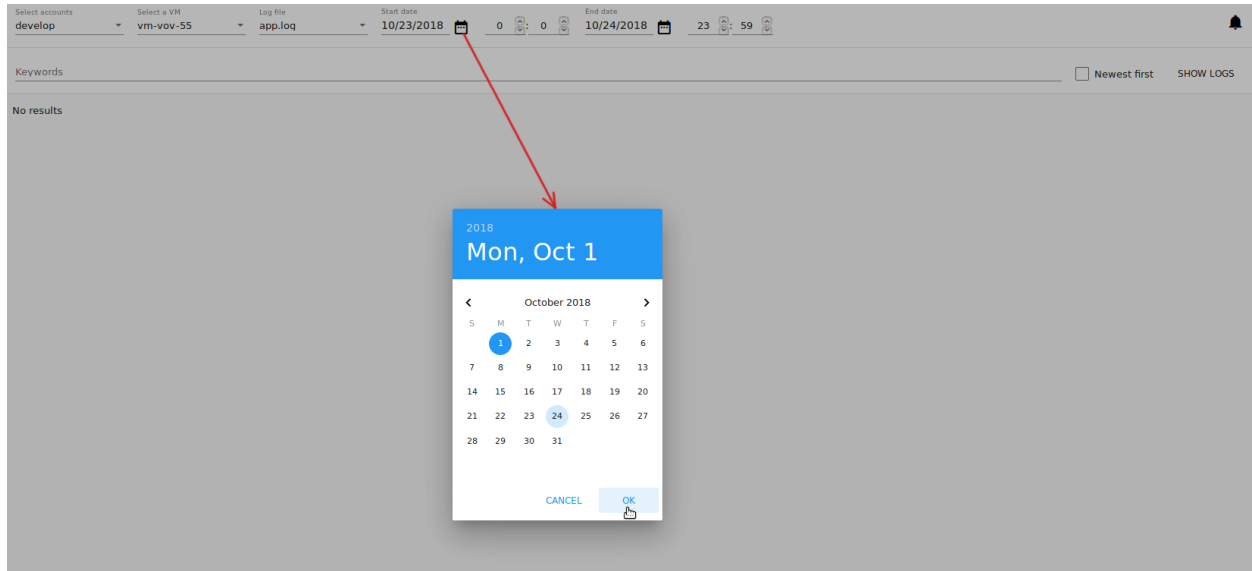
Note: Required fields are marked with an asterisk (*).

- Accounts * - Allows Administrators to further select a VM in a specific account/accounts. Select an account or a number of accounts in the drop-down list.
- VM * - Allows selecting logs for a specific VM. Choose a machine you wish in the drop-down list. The list of available VMs is determined by the account(s) selected at the previous step, if you are an Administrator. If you are a user, you can see the machines belonging to your user only.
- Log file - Allows viewing logs by a log file available for the selected VM. Choose a log file in the drop-down list. If no log file selected, all machine logs will display in the list.
- Date * - Allows selecting logs for a specific period. Click  and in the appeared calendar choose the start and end dates to see the logs for. By default, the system shows logs for the last day.
- Time - Allows filtering logs for a specific time period within the selected dates. The time format is determined by the time format setting specified under the “Settings” section. Enter start and end time you wish into the fields to set a custom time period.

Click “Show logs” to implement the filtering settings.

The logs will be displayed in accordance with the chosen period.

You can change filtering parameters and refresh the list of logs by clicking “SHOW LOGS”.



The set filtering parameters are saved to user tags. That means, if you log out of the system and then login again, you will continue to view logs with the previously set filtering parameters.

3.3.2 View Logs List

By clicking “SHOW LOGS”, a user can view log files corresponding to the filtering parameters. Logs are listed in a chronological order from the earliest till the latest.

By default, the system shows logs for the last day.

A user can view logs for his/her VMs only. An Administrator can see logs for all accounts in the domain.

Select accounts develop	Select a VM vm-vov-55	Log file app.log	Start date 10/1/2018	0	0	End date 10/24/2018	23	59	
Search									
<input type="checkbox"/> Newest first SHOW LOGS									
Date	Log file	Text							
2018-10-10 09:39:22	app.log	Oct 10 06:48:05 vm-vov-55 systemd[1]: Starting Daily apt upgrade and clean activities...							
2018-10-11 09:21:00	app.log	Oct 10 06:48:05 vm-vov-55 systemd[1]: Started Daily apt upgrade and clean activities.							
2018-10-15 10:35:56	app.log	Oct 11 01:49:32 vm-vov-55 systemd[1]: Starting Cleanup of Temporary Directories...							
2018-10-15 10:49:51	app.log	Oct 11 01:49:32 vm-vov-55 systemd-tmpfiles[18040]: [/usr/lib/tmpfiles.d/var.conf:14] Duplicate line for path "/var/log",							
2018-10-15 11:11:39	app.log	test log							
2018-10-15 11:12:53	app.log	93758365816518265							
2018-10-17 13:37:03	app.log	example							
2018-10-17 13:37:38	app.log	example							
		test							
		17 oct 2018 log							
		17 oct 2018 log							

The following information for each log file is presented in the list:

- Date
- File
- Text

You can change filtering parameters and refresh the list of logs by clicking “SHOW LOGS”.

Sorting Logs

The sorting tool allows viewing the newest logs first in the list. Enable the checkbox to the right and click on “Show logs” to refresh the list.

Searching Logs

Use the search tool to find logs by a word or a text. Enter the text in the search field above the list and click on “Show logs” to refresh the list.

3.3.3 Following Logs

After setting filtering parameters and clicking “Show logs”, a user can start following logs, in other words, start monitoring logs online.

Select accounts Account 2, accou... Select a VM vm-vov-55 Log file app.log Start date 10/1/2018 End date 10/24/2018 23:59

Search Newest first SHOW LOGS

Date	Log file	Text
2018-10-10 09:39:22	app.log	Oct 10 06:48:05 vm-vov-55 systemd[1]: Starting Daily apt upgrade and clean activities...
2018-10-11 09:21:00	app.log	Oct 10 06:48:05 vm-vov-55 systemd[1]: Started Daily apt upgrade and clean activities.
2018-10-15 10:35:56	app.log	Oct 11 01:49:32 vm-vov-55 systemd[1]: Starting Cleanup of Temporary Directories...
2018-10-15 10:49:51	app.log	Oct 11 01:49:32 vm-vov-55 systemd-tmpfiles[18040]: [/usr/lib/tmpfiles.d/var.conf:14] Duplicate line for path "/var/log",
2018-10-15 11:11:39	app.log	test log
2018-10-15 11:12:53	app.log	93758365816518265
2018-10-17 13:37:03	app.log	example
2018-10-17 13:37:38	app.log	example
		test
		17 oct 2018 log
		17 oct 2018 log

Select accounts Select a VM Log file Start date End date 11/2/2018 11/8/2018 23:59

Search Fri Nov 2 02:14:21 ☐ Newest first SHOW LOGS

Date	Log file	Text
2018-11-02 09:14:23	app.log	Fri Nov 2 02:14:21 UTC 2018 Fri Nov 2 02:14:22 UTC 2018 Fri Nov 2 02:14:23 UTC 2018

When the “Follow logs” option is activated, the Log View UI-plugin sends requests to get the latest logs with the defined frequency and for a period, defined in the configuration file. By default, once per 1 second the system requests logs for the last 30 seconds. A user can customize these parameters via the configuration file (see [details](#)).



To view logs in a real time-mode, click “Follow logs”. This button is available right after selecting a virtual machine in the filtering parameters or after setting all necessary filtering parameters and clicking “Show logs”. You will see the filtering options are got disabled and the log list is automatically getting refreshed per every second.

The “Follow logs” button changes its position depending on the applied sorting mode. If the “Newest first” option is disabled the button stands in the bottom-right corner, like at the screenshot above. If “Newest first” is enabled, the button goes to the upper-right corner and the latest logs will be displayed at the top of the list.

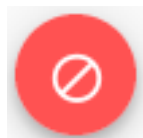
By default, the list contains up to 1000 log records showing logs for the last minute.

If too many entries are to be displayed in the list, the system loads them by parts when a user scrolls the list down.

You can set up parameters of log following in the “Log View Plugin Settings” section:

- **Show last (minutes)** - allows viewing logs for the last set period. You can set the number of minutes from 1 (default) to 10.
- **Show last (messages)** - allows setting a maximum amount of logs to display. You can set from 1 to any number of log records. By default, 1000 messages are shown.

Click “Update” to apply the settings.



To stop following logs click on .

Search
Tue Oct


☐ Newest first SHOW LOGS

Date	Log file	Text
2018-10-30 12:59:35	app.log	Tue Oct 30 05:59:31 UTC 2018 Tue Oct 30 05:59:31 UTC 2018 Tue Oct 30 05:59:31 UTC 2018 Tue Oct 30 05:59:31 UTC 2018 Tue Oct 30 05:59:31 UTC 2018
2018-10-30 13:05:00	app.log	Tue Oct 30 06:04:57 UTC 2018 Tue Oct 30 06:04:57 UTC 2018 Tue Oct 30 06:04:57 UTC 2018 Tue Oct 30 06:04:57 UTC 2018 Tue Oct 30 06:04:57 UTC 2018
2018-10-30 13:05:07	app.log	Tue Oct 30 06:05:03 UTC 2018 Tue Oct 30 06:05:03 UTC 2018 Tue Oct 30 06:05:03 UTC 2018 Tue Oct 30 06:05:03 UTC 2018 Tue Oct 30 06:05:03 UTC 2018
2018-10-30 13:06:32	app.log	Tue Oct 30 06:06:29 UTC 2018 Tue Oct 30 06:06:29 UTC 2018 Tue Oct 30 06:06:29 UTC 2018 Tue Oct 30 06:06:29 UTC 2018 Tue Oct 30 06:06:29 UTC 2018
2018-10-30 13:07:17	app.log	Tue Oct 30 06:07:12 UTC 2018 Tue Oct 30 06:07:18 UTC 2018 Tue Oct 30 06:07:21 UTC 2018
2018-10-30 13:07:58	app.log	Tue Oct 30 06:07:54 UTC 2018
2018-10-30 13:08:43	app.log	Tue Oct 30 06:08:33 UTC 2018 Tue Oct 30 06:08:38 UTC 2018 Tue Oct 30 06:08:44 UTC 2018 Tue Oct 30 06:08:46 UTC 2018
2018-10-30 13:09:12	app.log	Tue Oct 30 06:09:07 UTC 2018
2018-10-30 13:11:27	app.log	Tue Oct 30 06:11:20 UTC 2018
2018-10-30 13:47:15	app.log	Tue Oct 30 06:47:12 UTC 2018 Tue Oct 30 06:47:14 UTC 2018 Tue Oct 30 06:47:15 UTC 2018
2018-10-30 13:47:41	app.log	Tue Oct 30 06:47:39 UTC 2018
2018-10-30 13:48:06	app.log	Tue Oct 30 06:47:59 UTC 2018



Search


☒ Newest first SHOW LOGS


Date	Log file	Text
2018-11-07 16:27:58	app.log	Wed Nov 7 09:27:55 UTC 2018
2018-11-07 16:27:51	app.log	Wed Nov 7 09:27:42 UTC 2018 Wed Nov 7 09:27:48 UTC 2018 Wed Nov 7 09:27:51 UTC 2018
2018-11-07 16:27:15	app.log	Wed Nov 7 09:27:12 UTC 2018 Wed Nov 7 09:27:16 UTC 2018
2018-11-07 16:26:47	app.log	Wed Nov 7 09:26:39 UTC 2018 Wed Nov 7 09:26:49 UTC 2018
2018-11-07 16:25:32	app.log	Wed Nov 7 09:25:26 UTC 2018 Wed Nov 7 09:25:29 UTC 2018
2018-11-07 16:25:17	app.log	Wed Nov 7 09:25:11 UTC 2018 Wed Nov 7 09:25:16 UTC 2018
2018-11-07 16:25:02	app.log	Wed Nov 7 09:24:55 UTC 2018
2018-11-07 16:22:47	app.log	Wed Nov 7 09:22:44 UTC 2018 Wed Nov 7 09:22:45 UTC 2018
2018-11-07 16:21:32	app.log	Wed Nov 7 09:21:30 UTC 2018 Wed Nov 7 09:21:32 UTC 2018
2018-11-07 10:06:24	app.log	Wed Nov 7 03:06:18 UTC 2018 Wed Nov 7 03:06:19 UTC 2018





cloudstack
open source cloud computing



 Accounts

 Activity log

 Settings

 Logout

Connection URL

<http://cs-ui-ci.bitworks.softwar...>

Documentation

<https://cloudstack.apache.org/...>

VM preferences

Keyboard layout

Standard (US) keyboard

Look and Feel

Interface Language

English


First day of the week

Sunday

Time format

12-Hours Time

Theme Color

 #2196f3

Log View (real-time mode)

Show last (messages)

1000

Contents

- *Pulse Plugin*
 - *Overview*
 - *Deployment Instructions*
 - *Pulse configuration*
 - *Running cloudstack-ui docker container*

4.1 Overview

The Pulse plugin is designed for visualization of virtual machines performance statistics. Currently, this CloudStack-UI extension is only compatible with ACS clusters that use the KVM hypervisor. With help of sensors that collect virtual machines performance statistics via the Libvirt API and store them in an InfluxDB datastore and RESTful statistics server, CloudStack-UI is able to display CPU, RAM, disk IO and network traffic utilization in the form of convenient visual charts.

Pulse allows users of Apache CloudStack to monitor current and previous operational states of virtual machines. The plugin supports various view scales like minutes, hours, days and enables data overlays to monitor peak and average values.

We consider this plugin very important for the CloudStack ecosystem as currently there is no built-in functionality to track VM operational states, although it is vital for system administrators to successfully operate virtual servers.

Plugin deployment and configuration Instructions can be found below.

4.2 Deployment Instructions

Note: The Pulse plugin works only for KVM hypervisor right now.

Please, make sure that you have `cs-pulse-server` and `cs-pulse-sensor` to be able to work with the Pulse plugin.

To enable the Pulse plugin you need:

1. Configure plugin in `config.json`.
2. Run docker container with a correctly specified `cs-pulse-server` endpoint.

4.3 Pulse configuration

Please, enable pulse in the extensions section of the `config.json`:

```
"extensions": {  
  ...  
  "pulse": true  
}
```

4.4 Running cloudstack-ui docker container

```
docker run -d -p 80:80 --name cloudstack-ui \  
  ...  
  -e PULSE_PLUGIN_ENDPOINT=http://url/to/cs-pulse-server \  
  ...  
  -v /path/to/config.json:/static/config/config.json \  
  bsw/cloudstack-ui
```

WebShell Plugin

Contents

- *WebShell Plugin*
 - *Overview*
 - *Deployment Instructions*
 - *Starting WebShell Backend*
 - *WebShell configuration*
 - *Running `cloudstack-ui` docker container with WebShell*

In clouds the most commonly used operating systems nowadays are Unix or Linux based operating systems. To control Linux system administrators use standard SSH interface. Most system administrators or cloud users have SSH client installed on their machines.

First of all, it is more interactive, because it allows performing copy&paste operations. It is more performant if you need to work with text.

In addition to the UI inactivity interval, SSH plugin supports its own inactivity timeout so you should not worry leaving SSH opened when you go out for a cup of coffee. In comparison to a VNC console, if you open it in your browser, it will be opened forever.

This plugin is not required, but it is very helpful and easy to install and configure it. There is a docker webshell container that should be deployed. This container is a standalone shell proxy and can be used outside of the CloudStack UI, but there is an option to integrate them, Just specify the WebShell endpoint when you run the UI container. You can also disable the plugin in the UI configuration anytime you want.

Read more about it below.

5.1 Overview

WebShell is a CloudStack-UI extension designed to perform a clientless SSH connection to a virtual machine. The extension is activated in the CloudStack-UI configuration file and is supported by an additional Docker container. As for the way of WebShell usage, the plugin is similar to NoVNC interface provided by CloudStack. However, WebShell uses the SSH protocol and does not allow VM emergency management.

The need for this extension is determined by the shortcomings of the NoVNC interface, that obstructs its usage for everyday administrative purposes:

- Low interactivity and slow throughput of the terminal interface;
- Lack of possibility to copy/paste text from the user's local machine;
- Missing feature to complete the session by timeout;
- Access to the virtual machine in out-of-band mode, which allows performing a number of insecure operations.

WebShell plugin solves these problems:

- Provides high interactivity, which is especially useful when working with information that contains large amounts of text;
- Allows copying and pasting text from the workstation;
- Enables configuration of the session completion timeout, thereby improving the security of the system;
- Does not provide an access to the VM in out-of-band mode.

In future releases, this plugin will be extended with additional features such as integration with the VM access key store and dashboard for efficient work with many open SSH sessions.

This feature is not available in basic CloudStack UI and API.

Plugin deployment and configuration instructions can be found below.

5.2 Deployment Instructions

To enable [WebShell](#) CloudStack-UI Plugin it is required to:

1. Run WebShell container in the backend.
2. Enable and configure WebShell plugin in `config.json`.

5.3 Starting WebShell Backend

Please check [Usage](#) section in the [WebShell](#) repository.

5.4 WebShell configuration

Please configure `webShell` in the `extensions` section of the `config.json`:

```
"extensions": {  
  ...,  
  "webShell": true  
}
```


`webShell.address` is the address of a WebShell backend. WebShell will not be available unless an address is specified.

5.5 Running `cloudstack-ui` docker container with WebShell

```
docker run -d -p 80:80 --name cloudstack-ui \  
    ...  
    -e WEBSHELL_PLUGIN_ENDPOINT=http://url/to/webshell-server \  
    ...  
    -v /path/to/config.json:/static/config/config.json \  
    bsw/cloudstack-ui
```


CHAPTER 6

Indices and tables

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