



CloVER VTL Administrator's Guide



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Introduction to the CloVER VTL Platform

CLOVER VTL is a SaaS product that offers cloud based virtual training labs seamlessly integrated into learning platforms. It enables learners and instructors to access virtual lab environments anywhere including virtual desktops and servers (Linux and Windows), Docker-based applications and virtual networks hosted by cloud infrastructures (OpenStack) and platforms (Kubernetes).

Getting Started

CloVER Gateway users

There are three types of users in CloVER: Administrator, Teacher and Student.

Administrator:

- Sets the Cloud platform parameters
- Creates users, images and groups
- Desktop monitoring
- Sets the LTI parameters

Teacher:

- Creates images
- Manages its course's groups
- Manages the desktops of its course's groups

Student:

- Manages its desktops

Sign into CloVER

First sign into CloVER (as Administrator). The CloVER database contains one pre-configured user called Administrator (Username:admin, Password:admin).



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Configuring CloVER Settings

CloVER hosts and manages your desktops on external cloud infrastructures (OpenStack) and platforms (Kubernetes, Docker) via their APIs.

Cloud settings

Once you are logged in, you should firstly configure CloVER to use your Cloud platform. Actually, CloVER supports the OpenStack platform (settings in the **Settings > OpenStack settings** option).

The process to set the OpenStack parameters is:

1. Define the User/project parameters
 - **Username** : The OpenStack username used to log in to the Horizon dashboard (recommended to be the username for a non-Admin OpenStack user).
 - **Password**: The related password.
 - **Tenant ID** : find the tenant ID by logging into the Horizon dashboard (in the OpenStack RC File, OS_TENANT_ID field) under Access & Security > Identity > Download OpenStack RC File.
2. Define the endpoints configuration (Keystone, Nova, Glance, Cinder)
3. Define the access configuration (availability zone)

The screenshot shows the CloVER Gateway web interface. The top header includes the CloVER logo, a user profile icon labeled 'admin', and a 'Logout' button. The left sidebar is titled 'Management' and contains a 'Settings' menu with sub-items: 'OpenStack settings', 'Kubernetes settings', and 'Clover gateway settings'. Below this are other management options like 'Images', 'Courses', 'Users', 'Desktops', 'Monitoring', and 'LTI administration'. The main content area is titled 'Enter OpenStack Credentials' and features a file upload section for the 'OpenStack RC file' with 'Choose', 'Upload', and 'Cancel' buttons. Below this is the 'OpenStack settings' section with three tabs: 'User/Project Configuration' (active), 'Endpoint Configuration', and 'Access Configuration'. The active tab contains fields for 'Username' (filled with 'xbmp6mf7GtV3'), 'User password', and 'Tenant name' (filled with '0111297258209985'). At the bottom of this section are 'Save' and 'Verify Cloud Connectivity' buttons.

This screenshot shows the same CloVER Gateway interface but with the 'Endpoint Configuration' tab selected under 'OpenStack settings'. The 'User/Project Configuration' tab is now inactive. The 'Endpoint Configuration' tab contains four fields: 'Keystone Endpoint' (filled with 'https://auth.cloud.ovh.net/v2.0'), 'Nova Endpoint' (filled with 'https://compute.sbg1.cloud.ovh.net/v2'), 'Glance Endpoint' (filled with 'https://image.compute.sbg1.cloud.ovh.net/v1'), and 'Cinder Endpoint' (filled with 'https://volume.compute.sbg1.cloud.ovh.net/v1'). The 'Save' and 'Verify Cloud Connectivity' buttons remain at the bottom.

Kubernetes settings

The CloVER Gateway can use a Kubernetes platform.

The Kubernetes parameters to set are:

- **Master URL** : the Kubernetes's Master URL
- **Certificate**: the certificate to access the Kubernetes cluster
- **Username** : the login of the cluster's administrator
- **Password**: the password of cluster's administrator

The CloVER Gateway can also use a Docker plateform.

The Docker parameters to set are:

- **Master URL** : the Docker host URL
- **Certificate**: the certificate to access the Docker host
- **Username** : the login of the Docker Hub account
- **Password**: the password of the Docker Hub account

CloVER Gateway settings

The CloVER Gateway supports Guacamole 0.9.14 that offers HTML5 based display protocols like VNC and RDP. A dedicated Guacamole gateway is already installed, configured and associated to your CloVER Gateway for free. You can just start use it to access your desktops.

admin

Management

Settings

OpenStack settings
Kubernetes settings
Clover gateway settings

Images
Courses
Users
Desktops
Monitoring
LTI administration

Clover gateway settings

The CloVER Gateway supports Guacamole 0.9.14 that offers HTML5 based display protocols like VNC and RDP. A dedicated Guacamole gateway is already installed, configured and associated to your CloVER Gateway for free. You can just start use it to access your desktops.

DNS	Number of virtual machines	Actions
https://guacamole-mysql.procan-group.com	0	

If you want to use your own Guacamole gateway, Click the 'Edit' button to modify the DNS of Guacamole. For more information about the Clover and Guacamole compatibility and interfaces, visit the Clover-Guacamole GitHub project: <https://github.com/procangroup/clover-guacamole>

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admin

Management

Settings

OpenStack settings
Kubernetes settings
Clover gateway settings

Images
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Clover gateway settings

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Edit Guacamole VM

Edit Guacamole VM

Guacamole DNS : https://guacamole-mysql.procan-group.com

Yes Sure
Not Yet

CloVER-VTL Administrator's Guide



Managing the Images

To manage the Images, choose the Images option.

To create a new Image, click the **Images > Create Image** link to open the Create Image dialog. The opened form includes the following fields:

- **Image name:** the name of your new image
- **Image source:** select the Image source from existing Images.
 - in CloVER: Your images that you have already created
 - in the Cloud: The Images in the Cloud having the RDP feature (including the word "RDP" in their names)
- **Image OS:** select the OS of your new image
- **Flavor:** select the resource flavor for the Virtual Machine (VM) that will be created from the selected Image. The flavor's resources are displayed when a flavor is selected.

Management

- Settings
- Images**
 - + Create Image
 - Image list
- Courses
- Users
- Desktops
- Monitoring
- LTI administration

Create Image

Image name:

Description:

Image source: ☒ From CloVER ☐ From Cloud

Image's os:

Flavor:

VCPUs: 32 | RAM(MB): 120000 | Disque(Go): 800

Create

Once you click on the Create button, the following dialog appears, along with a Display Desktop button (to work on the Desktop) and a Confirm button.

Management

- Settings
- Images**
 - + Create Image
 - Image list
- Courses
- Users
- Desktops
- Monitoring
- LTI administration

Created Snapshot

Are you sure to confirm image testLTI ?

Image name: testLTI

Description:

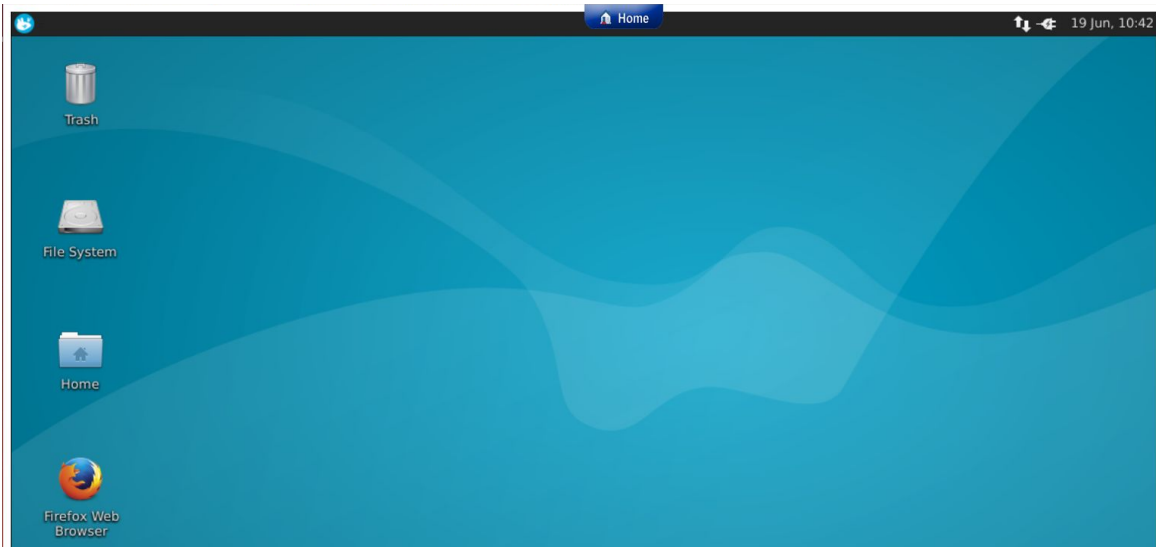
Flavor: vps-ssd-1 {VCPUs: 1 | RAM(MB): 2000 | Disque(Go): 10}

IP address: 167.114.239.105

Display Desktop:

Confirm

The following figure shows an example of a window opened when you click **Display Desktop**. To go back to the CloVER interface, click **Home**.



To display the characteristics of the Images, choose the **Images > Image list** option. You can also display all information about an Image or remove it.

Management

- Settings
- Images**
 - + Create Image
 - Image list
- Courses
- Users
- Desktops
- Monitoring
- LTI administration

Image list

Actions for multiple selection

Image list					
(1 of 1) 1 15					
	Name	Description	Status	Flavor	Actions
<input type="checkbox"/>	ubuntu-16.04-RDP	ubuntu-16.04	Active	vps-ssd-1	i x
<input type="checkbox"/>	Windows-Server-2012-r2-RDP	win7	Active	win-hg-7-ssd	i x

(1 of 1) 1 15

In total there are 2 images.

You can also confirm an Image (not yet confirmed).

Management

- Settings
- Images**
 - + Create Image
 - Image list
- Courses
- Users
- Desktops
- Monitoring
- LTI administration

Image list

Actions for multiple selection

Confirm Snapshot

Are you sure to confirm image testLTI ?

Image name: testLTI

Description:

Flavor: vps-ssd-1 (VCPU: 1 | RAM(MB): 2000 | Disque(Go): 10)

IP address: 167.114.239.105

Display Desktop:

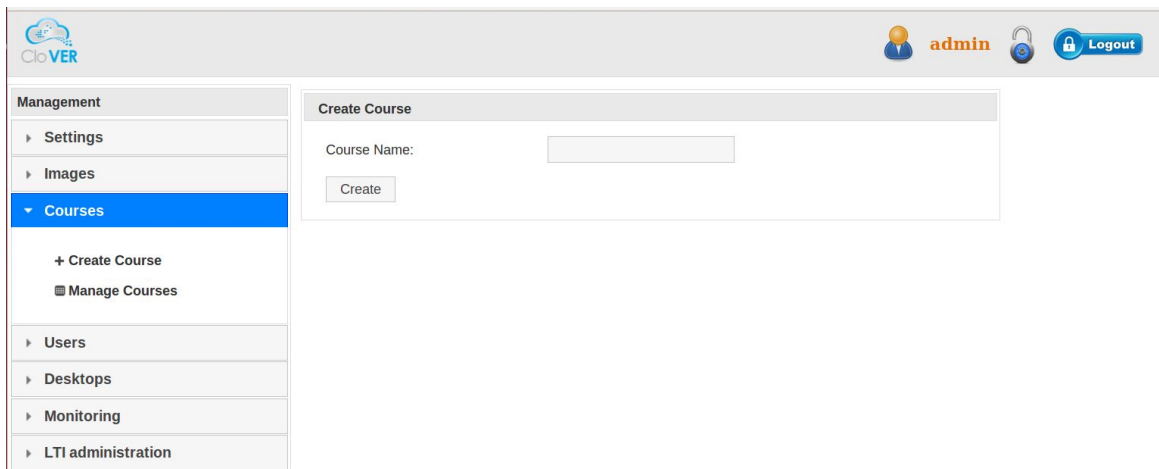
Confirm

refresh

Managing the Courses

A Course's group is a set of users sharing one or several Images.

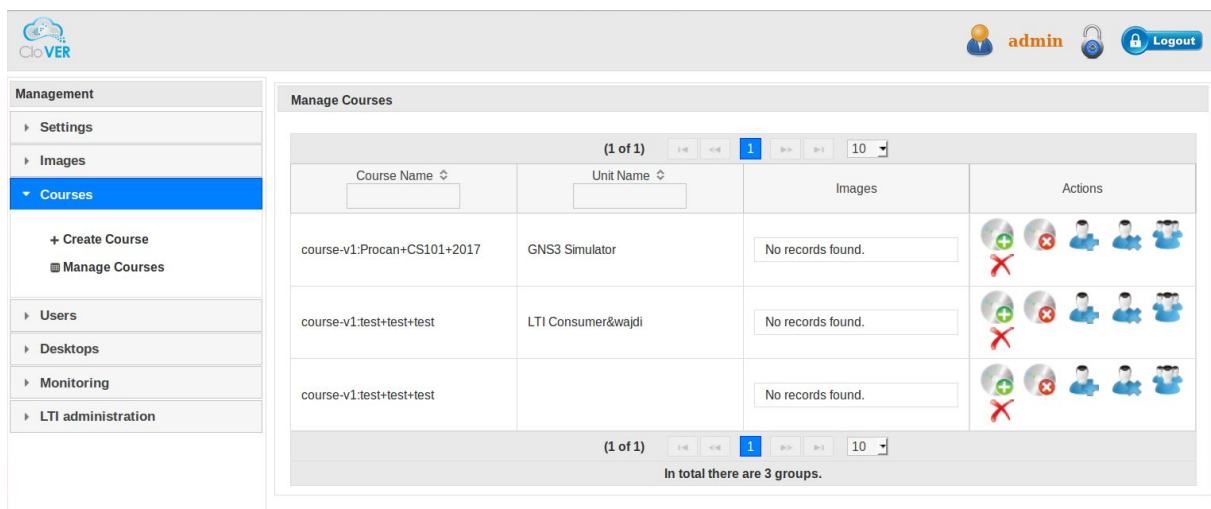
To create a Course, choose the **Courses > Create Course** option, then select a name for the new course.


















The screenshot shows the 'Create Course' form in the CloVER interface. The left sidebar contains a 'Management' menu with options: Settings, Images, Courses (selected), Users, Desktops, Monitoring, and LTI administration. Under 'Courses', there are links for '+ Create Course' and 'Manage Courses'. The main content area is titled 'Create Course' and contains a 'Course Name' input field and a 'Create' button. The top right of the interface shows the user 'admin' and a 'Logout' button.

To manage course group membership and images, choose the **Courses > Manage Courses** option. You can:

- Join/disjoin members to a course group
- Add/delete Images to/from a course group
- Display the course group members
- Delete a course group (but not the associated users and images)



The screenshot shows the 'Manage Courses' table in the CloVER interface. The left sidebar is the same as in the previous screenshot. The main content area is titled 'Manage Courses' and displays a table with 4 columns: Course Name, Unit Name, Images, and Actions. The table has 3 rows of data. The first row is for 'course-v1:Procan+CS101+2017' with unit 'GNS3 Simulator'. The second row is for 'course-v1:test+test+test' with unit 'LTI Consumer&wajdi'. The third row is for 'course-v1:test+test+test' with no unit. Each row has a 'No records found.' message in the 'Images' column. The 'Actions' column contains icons for adding, deleting, and managing members. The table is paginated with '(1 of 1)' and a page number '1'. Below the table, it says 'In total there are 3 groups.'

Course Name	Unit Name	Images	Actions
course-v1:Procan+CS101+2017	GNS3 Simulator	No records found.	    
course-v1:test+test+test	LTI Consumer&wajdi	No records found.	    
course-v1:test+test+test		No records found.	    

Managing the Users

Users are added in the CloVER gateway:

1. **Manually:** see “Manually entered users” subsection.
2. **Automatically:** When a user accesses the first time the CloVER Gateway through a learning platform (as LTI consumer for CloVER), the user is added automatically the the CloVER database.

Manually entered users

To manually enter a new user in the database, click the **Users > Create User** link to open the Create User dialog.

The opened form includes the following fields:

- **Login:** a Login name for the user.
- **Password and Confirm Password:** Note that the user can also choose to generate a random password.
- **First/Last names**
- **Email, Address, Phone**
- **Role** of the user (Admin, Teacher, Student).

The screenshot displays the CloVER gateway's 'Create User' form. The top header includes the CloVER logo and a user profile for 'admin' with a 'Logout' button. The left sidebar, titled 'Management', lists various system components: Settings, Images, Courses, Users (selected), Desktops, Monitoring, and LTI administration. Under 'Users', there are links for '+ Create User' and 'User list'. The main content area is the 'Create User' form, which contains the following fields: 'Login: *' (text input), 'Generate random password:' (checkbox), 'Password: *' (text input), 'Confirm Password: *' (text input), 'First name: *' (text input), 'Last name: *' (text input), 'E-mail: *' (text input), 'Address:' (text input), 'Phone:' (text input with '0' as a placeholder), and 'Role:' (radio buttons for Admin, Teacher, and Student, with Student selected). A 'Create' button is located at the bottom left of the form.

Displaying User information

The **Users > Users list** option lists all users entered into the CloVER gateway database.

The user information include:

Login : The login for user authentication.

Username : The user's name as entered in the First Name field on the Create User page, or the name received from a related learning platform.

Email : The user's email address.

Actions: Actions that can be performed on a user:

- **View:** display all user's information
- **Delete:** Delete the user (and the associated desktops)
- **Enable/disable:** Enable or disable the user account

Managing the Desktops

To manage desktops, choose the **Desktops > Desktop list** option. You can display and manage the list of Desktops (active and not yet active) for a given Unit.

You can delete a created Desktop or reset its state while its is not yet active.

The screenshot shows the 'Desktop list' interface in the CloVER management console. The left sidebar has 'Desktops' selected. The main area shows a table with one desktop entry. The status is 'building', and the actions menu is limited to 'Reset-state Desktop' and 'Delete Desktop'.

	User login	Username	Image name	IP address	Status	Actions
<input type="checkbox"/>	user_877df31725d77c	John	ubuntu-16.04-RDP		building	<ul style="list-style-type: none"> Reset-state Desktop Delete Desktop

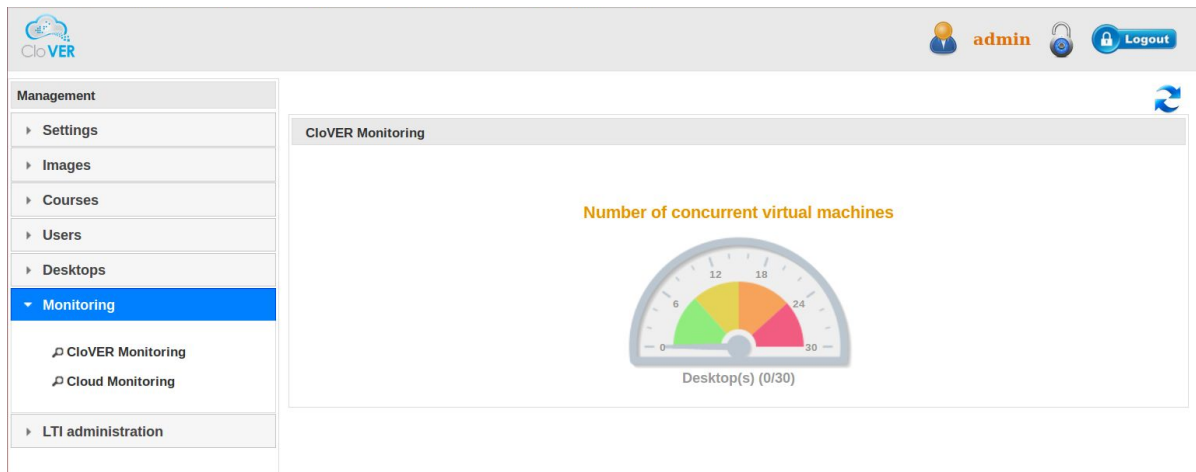
You can manage an active Desktop (stop, rebuild, reboot, reset-state, delete) or display it in a new window in order to work in.

The screenshot shows the 'Desktop list' interface with the desktop status changed to 'active'. The actions menu now includes a full range of management options: Stop Desktop, Rebuild Desktop, Reboot Desktop, Reset-state Desktop, Delete Desktop, Share Desktop, and Display Desktop.

	User login	Username	Image name	IP address	Status	Actions
<input type="checkbox"/>	user_877df31725d77c	John	ubuntu-16.04-RDP	167.114.242.110	active	<ul style="list-style-type: none"> Stop Desktop Rebuild Desktop Reboot Desktop Reset-state Desktop Delete Desktop Share Desktop Display Desktop

Monitoring

The **Monitoring > CloVER Monitoring** option allows administrators to know the number of active virtual machines compared to its quota.



The same, the **Monitoring > Cloud Monitoring** option allows administrators to the number of running instances, RAM and VCPUs compared to its quota.

