

# EduCloud Server User Guide

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## Overview

This document provides basic instructions for using the EduCloud Server Service. Instructions for network tasks are in a separate document. More detailed information is available through VMWare documentation (click the help icon from EduCloud).

## Getting Started with EduCloud Server

### Log In to the Web Interface

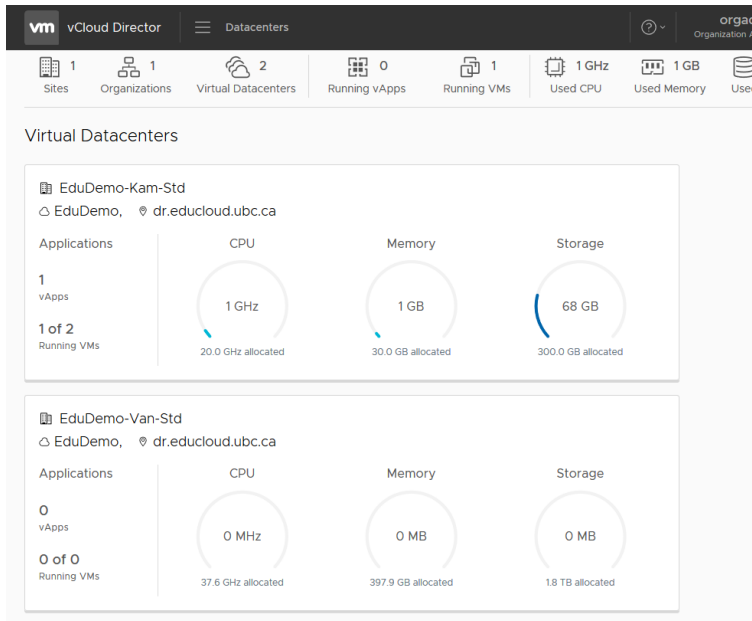
Access the EduCloud Server user interface using a web browser.

- **Note:** You must have an account in order to access the EduCloud Server service. This account was specified when you initially ordered the EduCloud Server service and/or provided by your Org Administrator
1. Open a Web browser and navigate to:  
<https://bcnet.educloud.ubc.ca/tenant/<OrganizationCode>>. The <OrganizationCode> was provided during the onboarding process. For example, the University of British Columbia IT department could have an access URL similar to:  
<https://bcnet.educloud.ubc.ca/tenant/ubc-it/>.
  2. Type the user name and password provided during onboarding and click **LOGIN**.

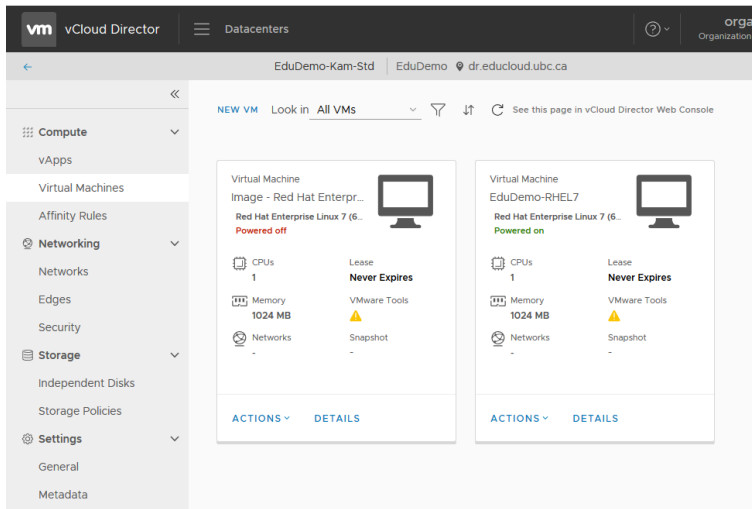
The Org you are logging in to will have one or more VDC's (Virtual Datacenters).

If you have more than one VDC, your landing page will be similar to the first screen below. If you only have one VDC, that page will be skipped and you will see something like the second screen

### Landing page – Multiple VDCs



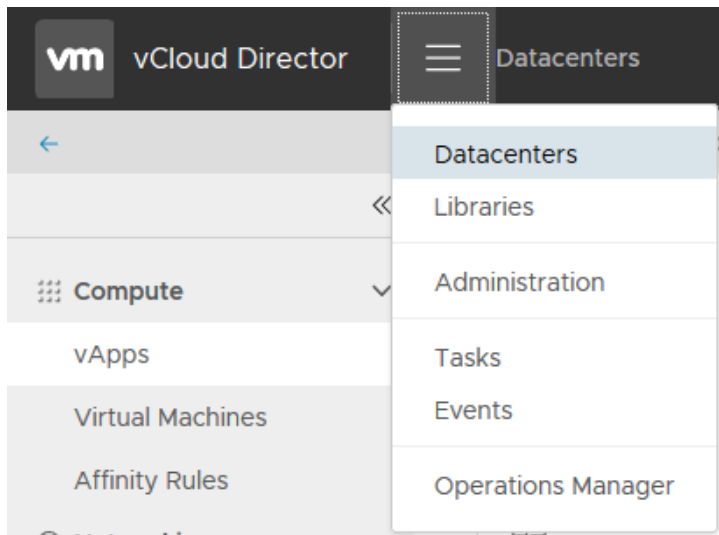
### Landing Page – Single VDC



Note that depending on the role(s) your user is assigned, you may not see some items.

## Navigation

From the main menu, navigate using the primary drop down menu.



### **Datacenters**

Virtual Data Centers, vApps, Virtual Machines and Networking

### **Libraries**

Managing Templates, Catalogues and Media (ISOs, etc)

### **Administration**

User and Group management

### **Tasks**

Displays EduCloud tasks

### **Events**

Displays EduCloud events

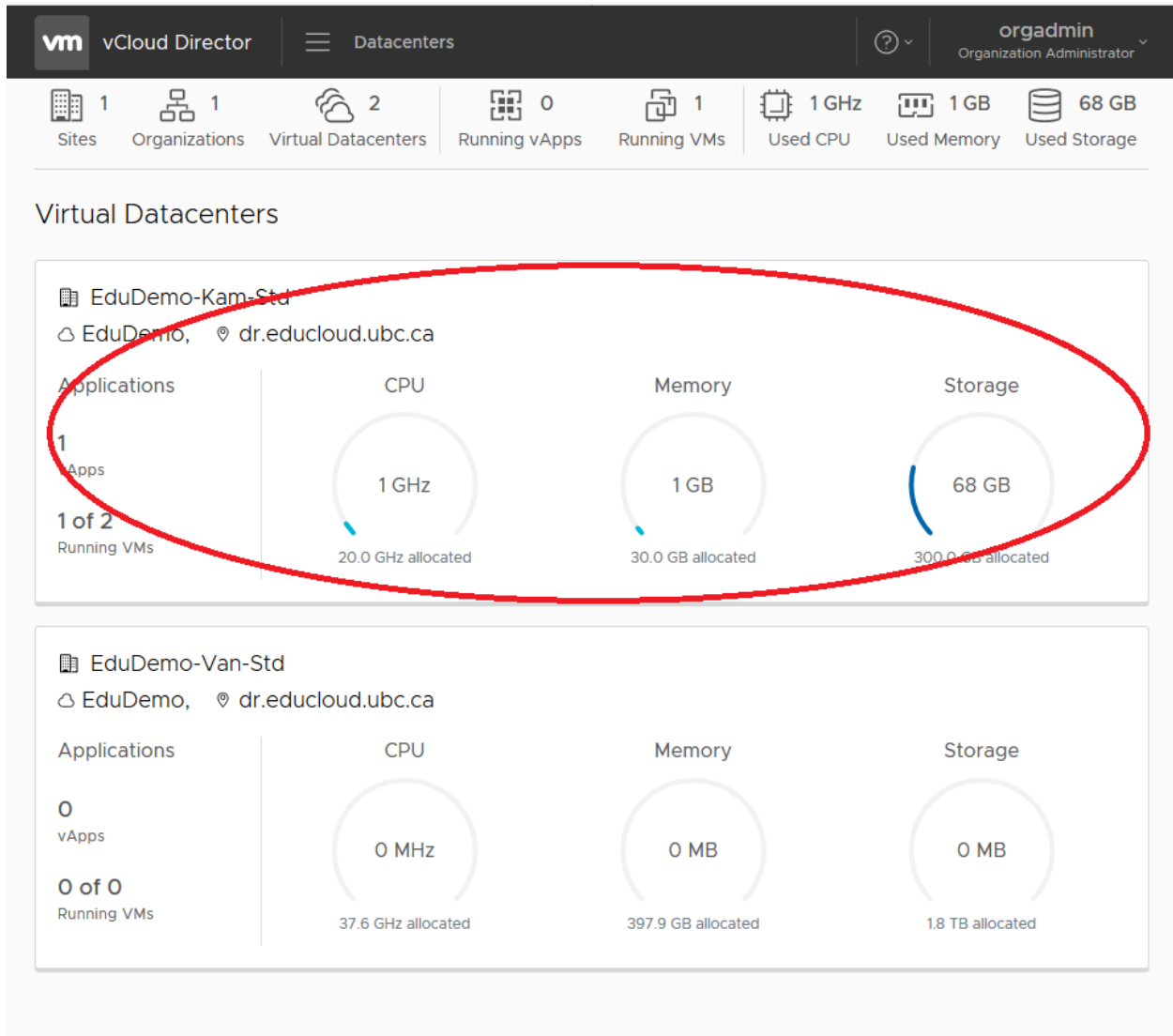
### **Operations Manager**

Dashboard view of health and performance

## Navigation – VDCs

When navigating to other menu items and returning to **Datacenters** you will see a list of VDCs. Even if you only have one VDC.

To bring up the side menu, click on the card for the Datacenter you are working with. If you only have one Datacenter, click on that one.



**vm vCloud Director** | **Datacenters** | **orgadmin**  
Organization Administrator

Sites: 1 | Organizations: 1 | Virtual Datacenters: 2 | Running vApps: 0 | Running VMs: 1 | Used CPU: 1 GHz | Used Memory: 1 GB | Used Storage: 68 GB

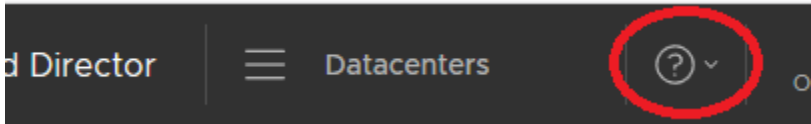
### Virtual Datacenters

VDC Name	Applications	Running VMs	CPU	Memory	Storage
EduDemo-Kam-Std	1 Apps	1 of 2	1 GHz (20.0 GHz allocated)	1 GB (30.0 GB allocated)	68 GB (300.0 GB allocated)
EduDemo-Van-Std	0 vApps	0 of 0	0 MHz (37.6 GHz allocated)	0 MB (397.9 GB allocated)	0 MB (1.8 TB allocated)

## Common Tasks

### Find Help


Use the Help Icon on the menu. This links to the vendor on-line vCloud Director Tenant Portal documentation




### Create vApp/VM from Template

 → Libraries → vApp Templates → ADD


### Create vApp/VM

 → Datacenters → Appropriate VDC Card (if applicable) → vApps → NEW VAPP

### Modify Virtual Machine Resources (CPU, RAM, Disks, NICs)

 → Datacenters → Appropriate VDC Card (if applicable) → Virtual Machines → Find VM → DETAILS → Hardware

### Snapshot a vApp/VM

 → Datacenters → Appropriate VDC Card (if applicable) → vApp/Virtual Machines → Find vApp/VM → ACTIONS → Create.....

Note that Snapshots should not be kept for more than a week. They may impact VM performance and backups. Network information is not captured by a Snapshot

### Upload an OVF or ISO

 → Libraries → Media & Other → ADD

### Restore a vApp or VM

Place a Service Request.



## vApps

A vApp is a collection of one or more virtual machines together with the associated networking. You can create a new vApp based on a vApp template from one of the Catalogs that you have access to, either standard EduCloud templates, or a catalog created in your Org. OR create from OVF or an Install Disk.

### vApp Creation

There are a number of ways to create a vApp. To create a vApp, ensure that the following items are configured:

- vApp Name
- VM Name
- VM Computer Name – this will be used as the host name
- Network information
- VM Stop Action
- vApp Sharing

### vApp Creation from Standard Template

#### Create vApp

- **Datacenters → vApps → NEW VAPP**
- Enter a vApp name. And if you wish a description
- 
- For the VM Enter:
  - Name – Enter a name for the VM
  - Computer Name – enter a name that will be used as the hostname for the VM

- Based on the OS and the Catalog, choose a template. Note the templates shown below are in a standard EduCloud Catalog in Kamloops (EduAdmin-Kam) and would be appropriate for creating a vApp in a Kamlops Virtual Data Center

#### New VM

Name \*

Computer Name \*

Description

Type \*  New  From Template

#### Templates

Template	OS	Compute
<input checked="" type="radio"/> Name: img-ults16-64 Catalog: EduAdmin-Kam	Ubuntu Linux (64-bit)	CPU: 1 Memory: 1024 MB
<input type="radio"/> Name: img-w2k16-64	Microsoft Windows Server 2016 (64-bit)	CPU: 2

- Click **OK**
- Back at the vApp Creation dialogue box, Click **CREATE**

Wait until the the vApp is created. You can close the dialogue box in the meantime.

- vApps → Find the vApp → DETAILS**
- Click on the **Networks** tab → **NEW**
- Select **OrgVDC Network** and choose the network to use

#### Add Network to New vApp

Type  OrgVDC Network  vApp Network

Status	Name	Org VDC	Gateway address	Routing	Connected To
✓	ACCESS-PROD	EduDemo-Kam-Std	137.82.164.190/26	Direct	DR-ACCESS-PROI
✓	UBC-IT	EduDemo-Kam-Std	10.10.3.1/24	Isolated	UBC-IT
✓	external-vcorg-net	EduDemo-Kam-Std	192.168.56.254/24	Routed	EduDemo-Kam01
✓	UBC-IT-BAK	EduDemo-Kam-Std	10.10.16.1/24	Isolated	UBC-IT-BAK

- ADD**  
This adds the network to the vApp and makes it available to the VM

- Return to the **Details** tab
- Expand **Sharing**
- Share as required
- Click **SAVE**
  
- Click on the **VM Name**
  - Ensure that the **Computer Name** is correct
  - Adjust Hardware CPU and Memory Resources
  - Add disk(s) and/or adjust disk sizes as necessary
  - Under NIC configure the Network
    - **Network** – choose the network
    - **IP Mode** - usually choose **Static – IP Pool**

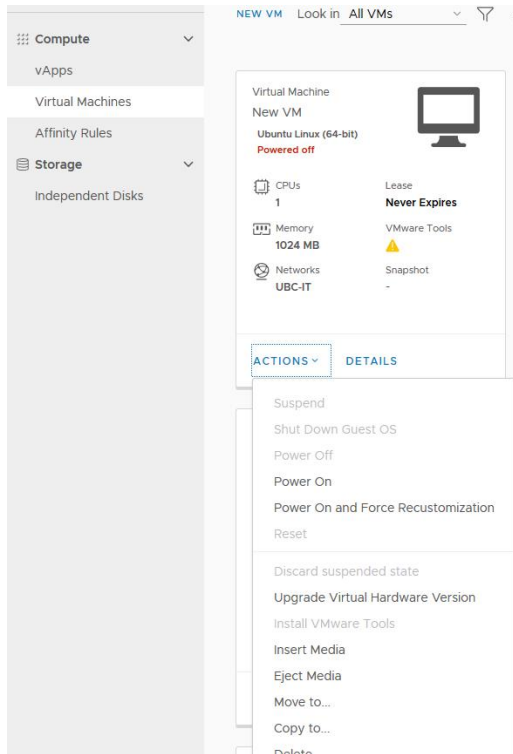
NICs

[ADD](#)

Primary NIC	NIC	Connected	Network	IP Mode	IP Address	MAC Address
<input checked="" type="checkbox"/>	0	<input type="checkbox"/>	UBC-IT ▾	Static - ▾		00:50:56:33:

- Adjust **Guest OS Customization** as necessary
- **SAVE**

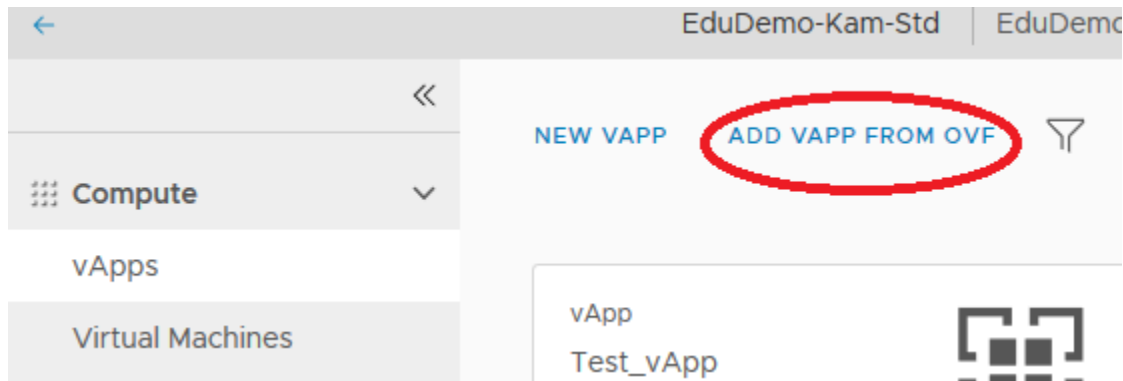
- Navigate to the VM  
**Datacenters → Virtual Machines → Find the VM**
- From the **ACTIONS** drop down select **Power On and Force Recustomization**



Configure VM

## vApp Creation from OVF

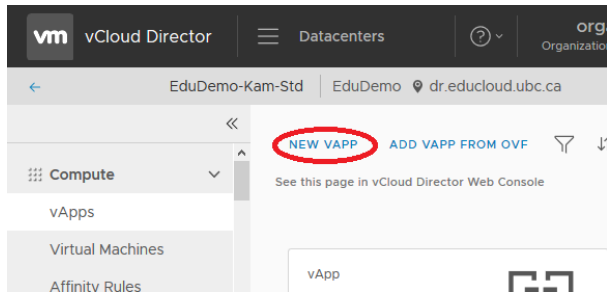
- If you have more than one VDC (Virtual Data Centre), choose the Data Center you wish **Datacenters** → Select the **Datacenter** desired.
- From the **Compute** menu choose **vApps**
- Then **ADD VAPP FROM OVF**



- Under **Select Source**, **Browse** to select your OVF package.
- **Review Details** and click **Next**.
- **Enter Name**. Click **Next**.
- **Configure Resources**. Set **Computer Name** and **Storage Policy**.
- **Select Network**:  
If you wish more advanced customization, check the box for **Switch to the advanced network workflow**
- **Select the Resources you wish**
- **Ready to Complete**: Review and click **Finish**.

## vApp Creation from Install Disk

- Ensure you are in the correct Virtual Data Center
- From the **Compute** menu, choose **vApps**
- Then **NEW VAPP**



- Enter a vApp **Name** then **ADD VIRTUAL MACHINE**
- Enter a VM **Name**, a **Computer Name** and choose Type **New** and other options as appropriate
- Click **OK**
- Mount your install ISO
- Power On the VM
- Use the Console to interact with the Install

# Virtual Machines (VMs)

## Guest OS Customization

Guest OS customization configures the guest operating system of a VM.

The customization process can update the administrator/root password, hostname, and network settings based on the information entered in the VM properties. It also ensures there are no hostname or network (IP address, MAC address) conflicts.

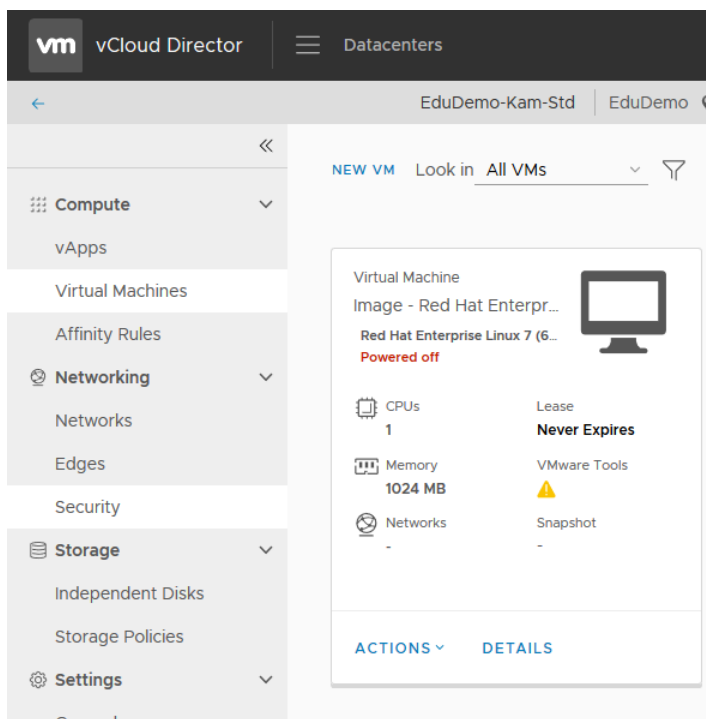
It is usually run after creating a VM or making configuration changes.

Run Guest OS customization to :

- change the administrator/root password
- reset the host name
- reset the network settings

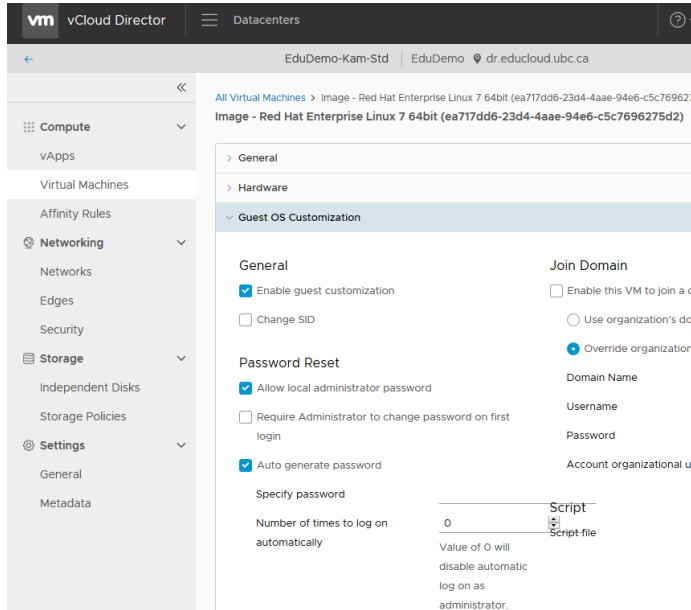
The guest OS must have VMware tools or open-vm-tools installed in order for guest customization to work.

- In the appropriate Virtual Datacenter → **Compute** menu, choose **Virtual Machines**
- Find the VM you wish to modify  
You can also navigate to the VM via the vApp

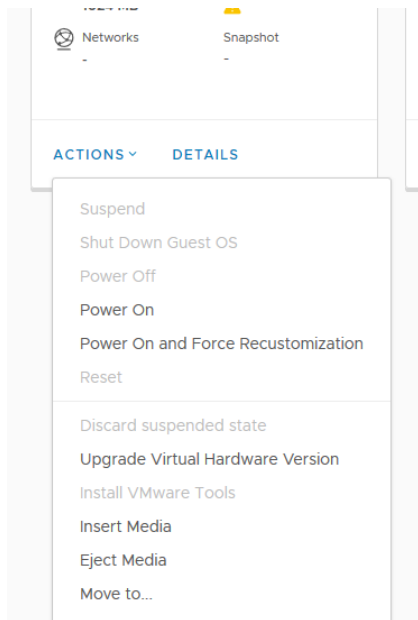


- Select **Details** and expand **Guest OS Customization**

- To change the administrator/root password, ensure that the following are selected:
  - Enable guest customization
  - Allow local administrator password
  - Auto generate password or specify a password



- Then click **Save** and **Save**
- Then from the **ACTIONS** select **Power on and Force Recustomization**

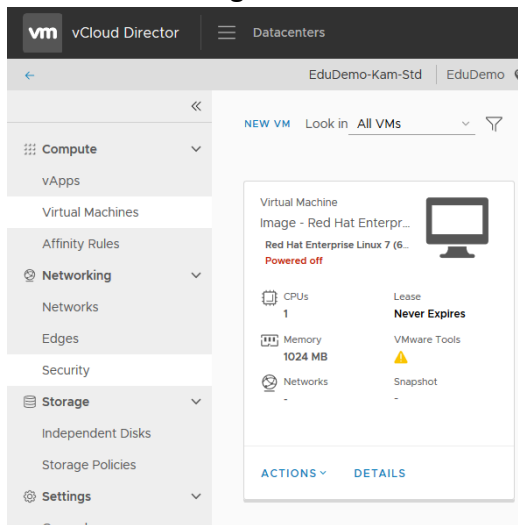


Host name, network info and (if selected) credentials will be changed.

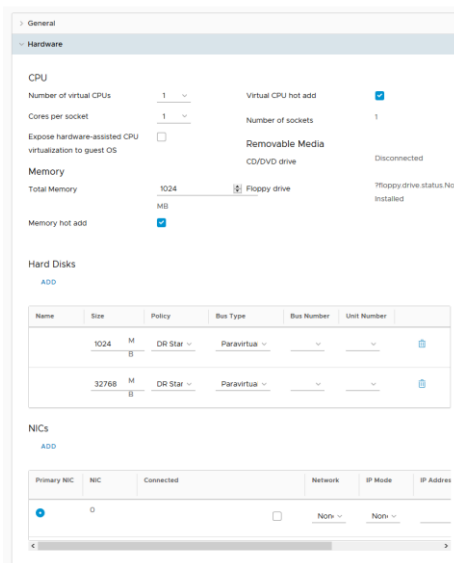


## Modify VM CPU Memory, Hard Disk and/or Network Resources

- In the appropriate Virtual Datacenter → **Compute** menu, choose **Virtual Machines**
- Find the VM you wish to modify  
You can also navigate to the VM via the vApp



- Select **DETAILS** and expand **Hardware**



- Modify as you wish.
  - Choosing virtual CPU's, cores
  - Total Memory
  - ADD Disk and/or modify current disks
  - ADD NIC and/or modify current NICs
- Depending on your change, run Guest OS Customization  
From **ACTIONS** select **Power on and Force Recustomization**

## Enable Hot Add

These options are enabled by default on all EduCloud provided templates (i.e. the ones in the public catalogs).

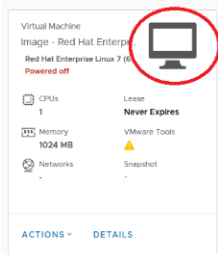
Hot-add options allow you to add additional CPU and memory resources to a VM that is powered on. This feature is only supported on certain guest operating systems and virtual machine hardware versions.

- In the appropriate Virtual Datacenter, **Compute** menu, choose **Virtual Machines**
- Find the VM you wish to modify  
You can also navigate to the VM via the vApp
- **Details** → expand **Hardware** tab
- check the **Virtual CPU hot add** and/or **Memory hot add** as you wish

## VM Console

Please that browser pop-ups must be enabled to open a virtual machine console.

- In the appropriate Datacenter → **Compute** → **Virtual Machines** → find the appropriate **VM**.
- Double-click on the Monitor icon

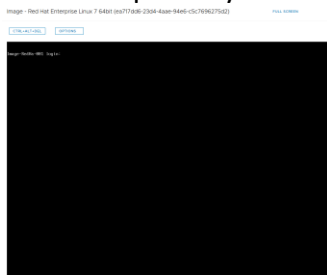


Or, click on **ACTIONS** and choose **Launch Web Console**

If the VM is not powered on, click on **ACTIONS** and choose **Power On** first.

You may see various setup messages first time the VM is powered on as EduCloud applies customization changes.

Once completed you will see the operating system logon prompt:



## Affinity Rules

Affinity and anti-affinity rules allow some control over how VMs are distributed across hosts in the cluster/compute tier.

An Affinity Rule specifies that a group of VMs should be placed on the same host whenever possible. In some cases, this can improve performance by reducing network latency for communications between the VMs.

An Anti-affinity Rule specifies that a group of VMs should be placed on different hosts whenever possible, minimizing how many VMs are impacted when a single host fails. Often used for a group of VM's that are being load balanced.

### View Affinity Rules

You can view existing affinity and anti-affinity rules and their properties including rules, status, and applicable virtual machines of each rule.

- In the appropriate Virtual Datacenter → **Compute** menu, choose **Affinity Rules**

### Add an Affinity Rule

- In the appropriate Virtual Datacenter → **Compute** menu, choose **Affinity Rules**
- In the Affinity Rules section, click **NEW**.
- Type a **Name** for the new affinity rule.
- Select virtual machines to add to the affinity rule
- (Optional) Deselect **Enabled** to create the rule without enabling it.
- Click **SAVE** to create the new rule.

### Add Anti-Affinity Rule

- In the appropriate Virtual Datacenter → **Compute** menu, choose **Affinity Rules**
- In the Anti-Affinity Rules section, click **NEW**.
- Type a **Name** for the new anti-affinity rule.
- Select virtual machines to add to the anti-affinity rule
- (Optional) Deselect **Enabled** to create the rule without enabling it.
- Click **SAVE** to create the new rule.

## Edit Affinity or Anti Affinity Rule

- In the appropriate Virtual Datacenter → **Compute** menu, choose **Affinity Rules**
- Select the **Anti-Affinity** or **Affinity** rule you wish to edit
- Click **EDIT**.
- Edit as you wish
- Click **SAVE** to apply the changes to the rule.

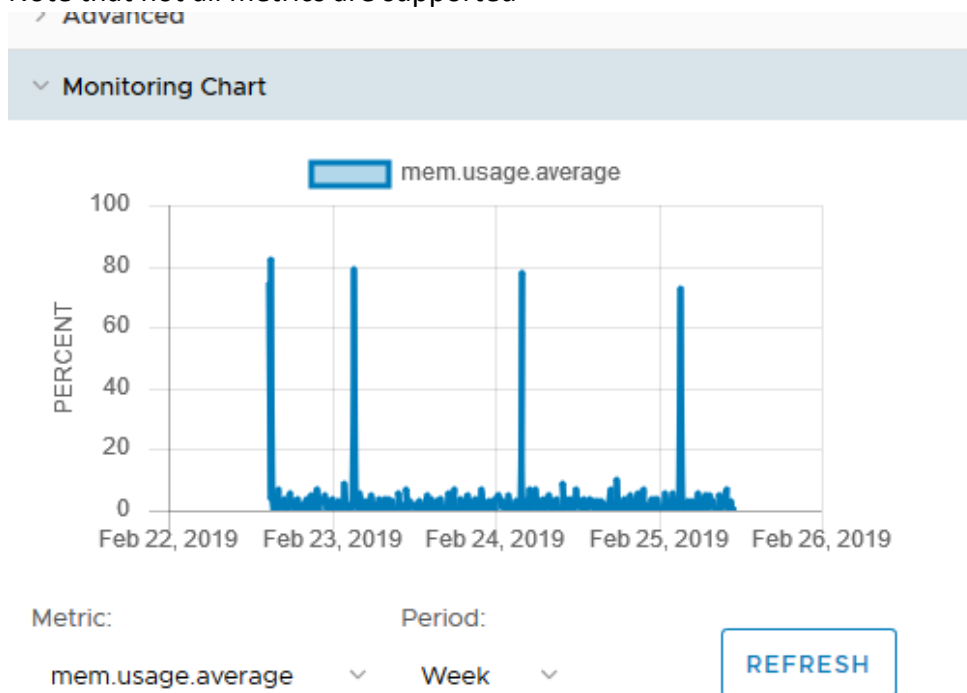
## Delete an Affinity or Anti-Affinity Rule

- In the appropriate Virtual Datacenter → **Compute** menu, choose **Affinity Rules**
- Select the **Anti-Affinity** or **Affinity** rule you wish to delete
- Click **DELETE**.

## Monitoring Chart

Basic VM Statistics are available via the EduCloud interface.

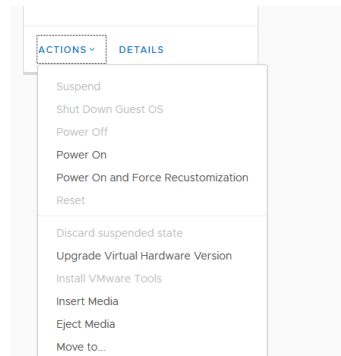
- In the appropriate Virtual Datacenter → **Compute** menu, choose **Virtual Machines**
- Find the VM you wish to look at  
You can also navigate to the VM via the vApp
- **DETAILS** → expand **Monitoring Chart** tab
- Choose a **Metric** and **Period**  
Note that not all metrics are supported



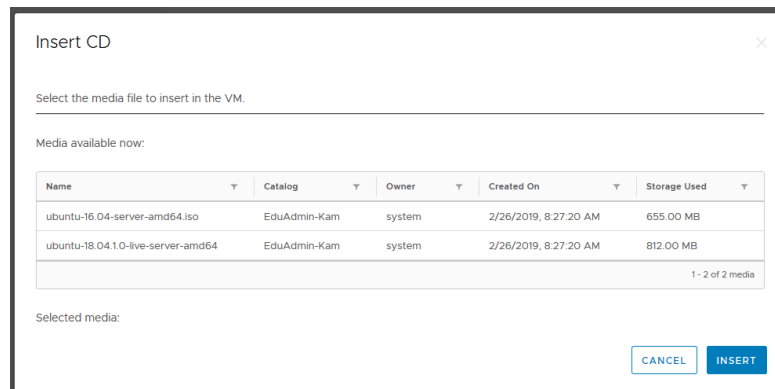
## Mount ISO

If you need to mount an CD/DVD ISO image:

1. Upload the ISO if you have not already  
**Libraries** → **Content Libraries** Menu → **Media & Other** → **ADD**
2. Mount the ISO to the VM
  - a. **Datacenters** → **Compute** Menu → **Virtual Machines** → find the VM
  - b. **ACTIONS** → Insert Media



- c. Choose the ISO you wish, then click on **INSERT**



## Install a Guest Operating System

If the Public catalogs do not have an appropriate image, then you have the option to install a Guest OS directly.

- Create a Blank VM
- Mount the OS Install ISO as in the previous section
- Power up the VM ( **ACTIONS** → Power On )
- Follow the Install on the Console ( **ACTIONS** → Launch Web Console)

## Add Additional VMs to a vApp

- Datacenters → **vApps** → Find the vApp you created
- Click **ACTIONS** → **Add VM**

**ADD VIRTUAL MACHINE**

- Enter a **Name** , **Computer Name**, and if using a template, choose the Template and **OK**

New VM ×

Name \*

Computer Name \*

Description

Type \*  New  From Template

Power on

Templates

Template	OS
<input checked="" type="radio"/> Name Image - Red Hat Enterprise Linux 7 64bit (ea717dd6-23d4-4aae-94e6-c5c7696275d2)	Red Hat Enterprise Linux 7 (64-bit)
Catalog EduAdmin-Van	

Use custom storage policy

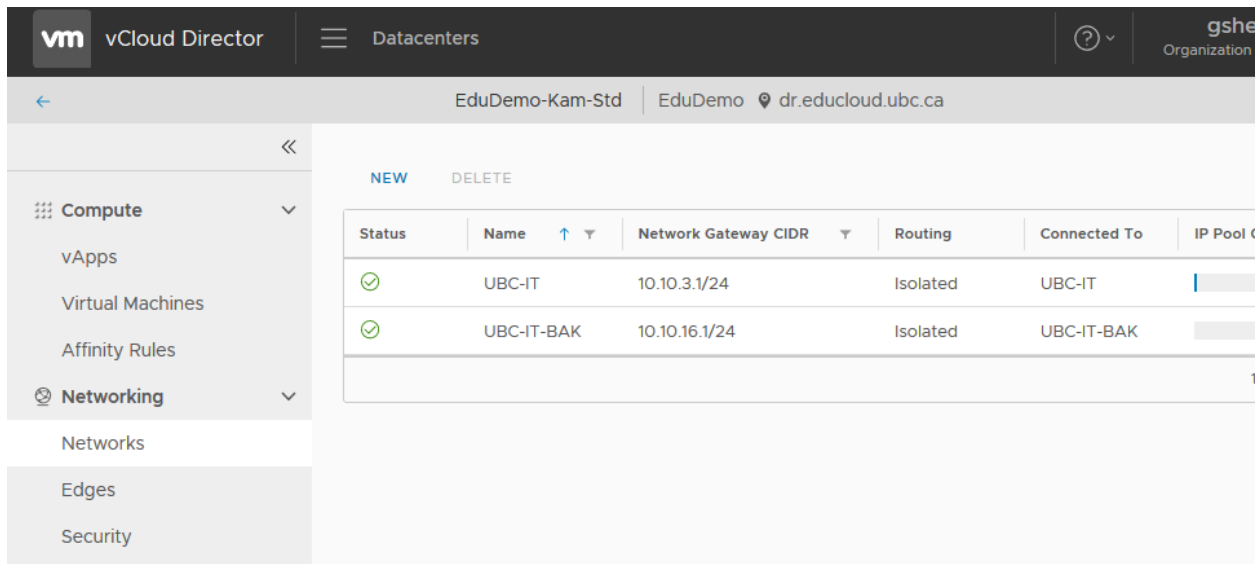
End User License Agreements

There are no EULAs to review.

## Networking

This is a brief discussion of networking in EduCloud. See the more comprehensive EduCloud Networking Guide for more information

**Datcenters** → **Networking** Menu → **Networks** will show networks that have been added to and/or created in your Org.



The screenshot shows the vCloud Director interface. The top navigation bar includes the 'vm' logo, 'vCloud Director', a hamburger menu, 'Datcenters', a help icon, and the organization name 'gshe Organization'. Below this, the breadcrumb path is 'EduDemo-Kam-Std | EduDemo | dr.educloud.ubc.ca'. The left sidebar shows a navigation menu with 'Compute' (vApps, Virtual Machines, Affinity Rules) and 'Networking' (Networks, Edges, Security). The main content area displays a table of networks under the 'NEW' and 'DELETE' tabs. The table has columns for Status, Name, Network Gateway CIDR, Routing, Connected To, and IP Pool. Two networks are listed: 'UBC-IT' with CIDR '10.10.3.1/24' and 'UBC-IT-BAK' with CIDR '10.10.16.1/24', both with a status of 'Isolated' and connected to their respective vApps.



Status	Name	Network Gateway CIDR	Routing	Connected To	IP Pool
✓	UBC-IT	10.10.3.1/24	Isolated	UBC-IT	
✓	UBC-IT-BAK	10.10.16.1/24	Isolated	UBC-IT-BAK	

Networks can be configured when creating a VM or can be added to a vApp ( Compute → vApps → Find vApp → ACTIONS → Add Network ) and then configured

Configuring a Network for a VM under **Hardware**, you will see the following:

NICs

[ADD](#)

Primary NIC	NIC	Connected	Network	IP Mode	IP Address	MAC Address	
	0	<input checked="" type="checkbox"/>	UBC-IT ▾	Static - IP Pool ▾	10.10.3.3	00:50:56:33:00	

Where:

- Primary NIC – indicates which is the primary NIC for traffic
- Connected – whether the NIC is enabled or not
- Network – the network chosen for this NIC
- IP Mode
  - DHCP – if you have configured and are using DHCP
  - Static IP Pool – EduCloud will assign an IP from the Network selected
  - Static Manual – allow you to enter a specific IP Address
- MAC Address – assigned to the NIC. To reset, clear the field and Save



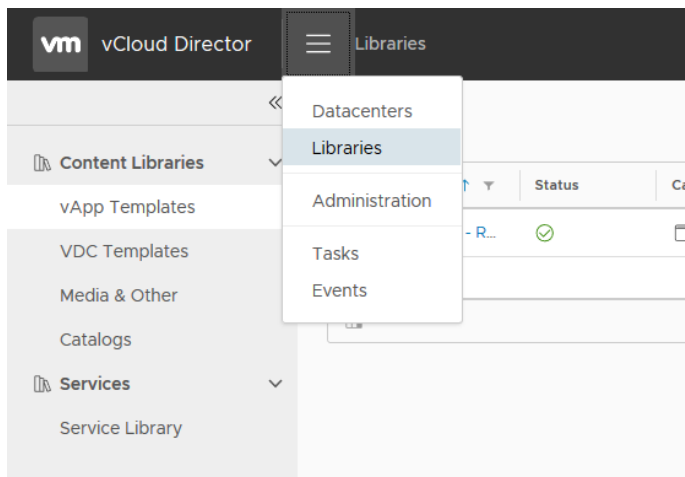
## Catalogs

A catalog is a container for vApp templates and media files.

EduCloud has public catalogs containing pre-built operating system gold images or you can create your own Templates and/or upload media as necessary (Depending on roles assigned to your account).

## Navigation

To view Catalogs and Media, go to **Libraries** in the top menu



On the left choose:

- **Catalogs**
  - to view Public catalogs and view/edit Org specific catalogs
- **vApp Templates**
  - to view vApp Templates in Catalogs
- **Media and Other**
  - to view/upload/delete ISOs and other media in Catalogs
- **VDC Templates** – not currently used by the EduCloud Server Service

## Public Catalogs

EduCloud publishes catalogs containing vApp Templates built with recent versions of Microsoft Windows, Microsoft Windows Server, RedHat Linux and Ubuntu. You can use these templates to create vApps within your Org

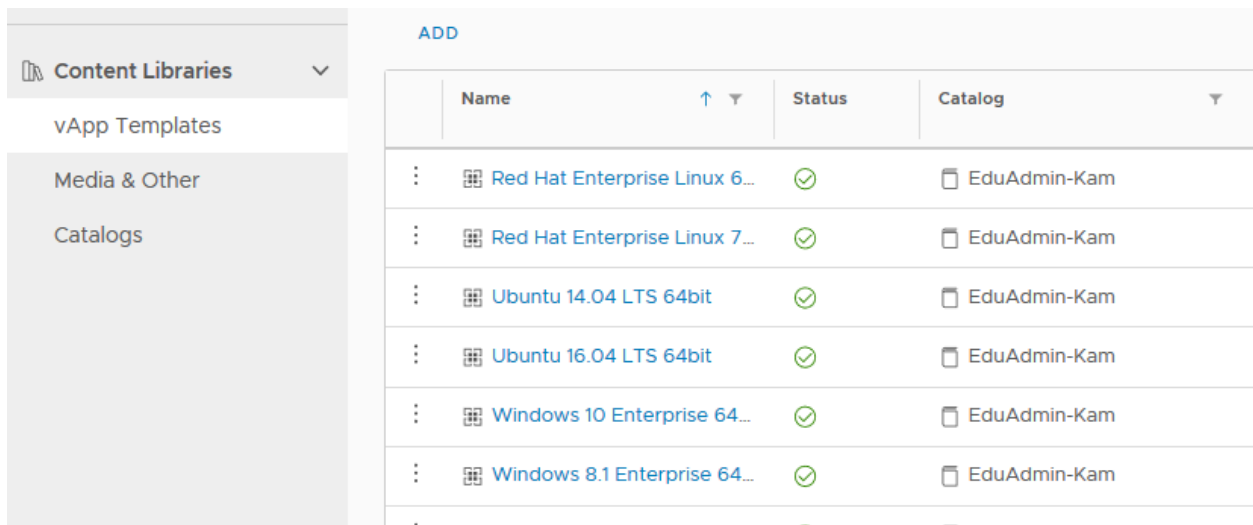
To view catalogs and create new vApps:

- **Libraries** → **Content Libraries** Menu → **Catalogs**

To view vApp Templates directly

- **Libraries** → **Content Libraries** Menu → **vApp Templates**

Public Catalogs will be in a catalog(s) named **EduAdmin -location**  
e.g.: EduAdmin-Van



The screenshot shows the 'Content Libraries' menu on the left, with 'vApp Templates' selected. The main area displays a table of vApp templates under the 'ADD' header. The table has columns for 'Name', 'Status', and 'Catalog'. The 'Name' column includes a grid icon and the template name. The 'Status' column shows a green checkmark for each entry. The 'Catalog' column shows a folder icon and the catalog name 'EduAdmin-Kam'.

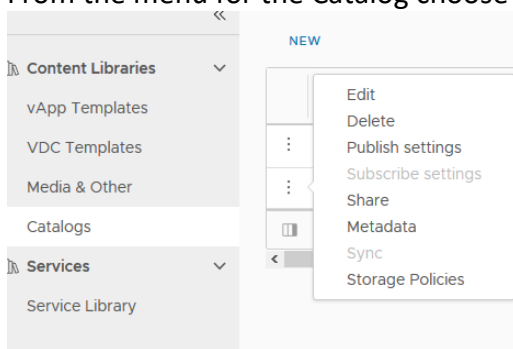
Name	Status	Catalog
Red Hat Enterprise Linux 6...	✓	EduAdmin-Kam
Red Hat Enterprise Linux 7...	✓	EduAdmin-Kam
Ubuntu 14.04 LTS 64bit	✓	EduAdmin-Kam
Ubuntu 16.04 LTS 64bit	✓	EduAdmin-Kam
Windows 10 Enterprise 64...	✓	EduAdmin-Kam
Windows 8.1 Enterprise 64...	✓	EduAdmin-Kam
Windows Server 2012 R2...	✓	EduAdmin-Kam

## My Organization's Catalogs

As noted, you can create a catalog and publish its content to the users of your organization. Create a Catalog first, then add vApp Templates and Media (ISO's, etc.)

### Create a Catalog

- **Libraries** → **Content Libraries** Menu → **Catalogs**
- Click **ADD**
- Enter a **Name**
- Click **OK**
- From the menu for the Catalog choose **Share**



- **+ADD**
- **And Share as required**

## Create a vApp Template

### From vApp

- Create a vApp. Configured and customized as per your requirements
- **Datacenters** → **vApps** → Find vApp → **ACTIONS** → **Add to Catalog**
- Select the Catalog and any other options and click **OK**

Add to Catalog: DEMO-RHEL7

Add this vApp to catalog:

Catalog: EduDemo-local-catalogue

Name	Description	Shared	Access Level	External
EduDemo-local-catalogue				

This catalog is local to your organization.

Overwrite catalog item:

Name: DEMO-RHEL7

Description:

When using this template:

Make identical copy

Customize VM settings

This setting applies when creating a vApp based on this template. It is ignored when building a vApp using individual VMs from this template.

CANCEL OK

### From OVF

- **Libraries** → **Content Libraries** Menu → **vApp Templates** → **ADD**
- Select the source an OVF; Review Details
- Enter a vApp Template Name; Select the Catalog
- **FINISH**

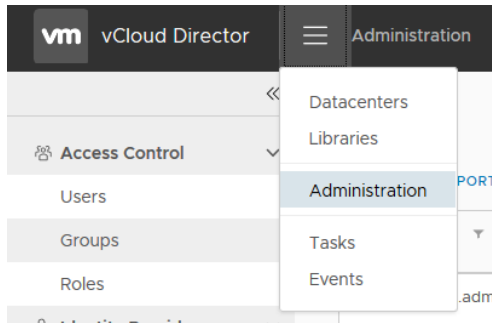
## Add Media

- **Libraries** → **Content Libraries** Menu → **Media & Other**
- Click **ADD**
- Choose the Catalog to add to
- Enter a **Name**
- Select the media to upload
- Click **OK**

# User and Group Management

## General

The user, group and role management can be found in the **Administration** menu.




You need to be an organization administrator to view this section. Roles and rights for users and groups in your Org are managed here.


## Import Users / Groups from Authentication Service

Import/Add users from your LDAP based authentication service (eg UBC CWL/EAD):

### Add Users

- **Administration → Access Control → Users.**
- **IMPORT USERS.**
- Search for the username. 
- Select the user(s) from those displayed.
- Assign the appropriate role for the user(s).
- Click **SAVE**.

### Add Groups

- **Administration → Access Control → Users.**
- **IMPORT GROUPS.**
- Search for the group. 
- Select the group(s) from those displayed.
- Assign the appropriate role for the group(s).
- Click **SAVE**.

## Create Local User

For Users that are not in an LDAP Authentication System

### Add Users

- **Administration** → **Access Control** → **Users**
- **NEW**.
- Create the user's **Credentials**, choose the **Role**, fill in the **Contact Info**, and select a **Quota**
- Click **SAVE**.

## Roles

The following Roles are commonly used in the EduCloud Server Service. A number of other roles are available to Organization Administrators as well

- **Administrator – Limited**  
Limited access allowing VM management; console access; powering on/off; snapshot management, password management.  
But no access to manage resources.  
Primarily used for shared Orgs and/or allowing access to users for limited management of specific VMs in an Org
- **Catalog Author**  
Rights to create and manage vApps, VMs and Catalogs.  
Limited Org management
- **Organization Administrator**  
Rights to most Organization management, except inter org and Virtual Data Center Management
- **vApp User**  
Rights to use vApps created by other users.  
Fewer rights than the Administrator – Limited role

## VMware Tools and open-vm-tools

See the following for more information, but note that support for VMs not running current versions of VMware Tools or open-vm-tools may be restricted. If you are having VM issues, please ensure that you are running the latest version.

### VMware Tools

VMware Tools are the official, commercial versions of the guest system utilities from VMware and consist of a suite of virtualization utilities that improves the functionality, administration, and management of virtual machines within a VMware environment.

VMware tools enables features such as shared folders and cut and paste operations between the guest operating system and the machine from which you launch the vCloud Director Web console.

#### Install on a Windows Guest

- In the appropriate Datacenter → **Compute** → **Virtual Machines** → find the appropriate **VM** .
- In the left pane, click **VMs**
- **Actions** → select **Install VMware Tools**
- Follow the prompts in the guest OS to complete the installation wizard
- Click **Finish**
- Restart the virtual machine

## Install on a Linux Guest

Check to see if open-vm-tools is more appropriate for the OS you are working with.

- In the appropriate Datacenter → **Compute** → **Virtual Machines** → find the appropriate **VM** .
- In the left pane, click **VMs**
- **Actions** → select **Install VMware Tools**
- Login to the VM via the console or remote
- In the guest OS, start the RPM installer
  - Double click the VMware Tools CD icon on your desktop and double click the RPM installer in the root of the CD-ROM
  - Double click the RPM installer in the file manager window
- Type the root password and click **OK**
- Click **Continue** when the package is ready
  - When VMware tools is installed, no confirmation or Finish button appears.
- At a terminal console, as root, run the **vmware-config-tools.pl** script to configure VMware Tools
- Press Enter to accept the default values
- After the upgrade is complete, enter **/etc/init.d/network restart** to restart the network
- Type **exit**
- To start the VMware Tools control panel, enter **vmware-toolbox &**

## Open Virtual Machine Tools

open-vm-tools is the open source implementation of VMware Tools. The primary purpose for open-vm-tools is to enable operating system vendors and/or communities and virtual appliance vendors to bundle VMware Tools into their product releases.

VMware recommends using open-vm-tools redistributed by operating system vendors if available.

open-vm-tools is available with these operating systems:

- Fedora 19 and later releases
- Debian 7.x and later releases
- openSUSE 11.x and later releases
- Recent Ubuntu releases (12.04 LTS, 13.10 and later)
- Red Hat Enterprise Linux 7.0 and later releases
- CentOS 7 and later releases
- Oracle Linux 7 and later releases
- SUSE Linux Enterprise 12 and later releases



VMware Tools or open-vm-tools is already pre-installed on all EduCloud Server Public Catalog templates. For instructions on installing VMware Tools or open-vm-tools for a VM not deployed from one of the Public Catalog templates, please check <http://partnerweb.vmware.com/GOSIG/home.html>

## Configuring for Trend Micro

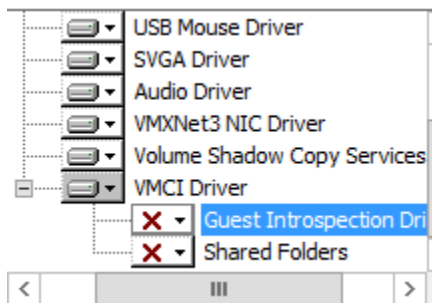
EduCloud Server provides advanced server security through Trend Micro Deep Security. Deep Security offers the following features:

- Anti-malware
- Web Reputation

### Windows Systems

Windows systems in EduCloud Server are automatically protected when deployed from one of the Public Catalog templates.

If you would like to add protection to your own Windows templates, please install the Guest Introspection Driver component of VMware Tools (not installed by default).



An in-guest agent is not required, but you can download and install the optional notifier from [http://downloadcenter.trendmicro.com/index.php?regs=NABU&clk=latest&clkval=4698&lang\\_1oc=1](http://downloadcenter.trendmicro.com/index.php?regs=NABU&clk=latest&clkval=4698&lang_1oc=1).

### Linux Systems

Please open a ticket with EduCloud Support if you wish to configure a Linux System for Trend

## Snapshots

Snapshots allow you to save the state of a vApp or VM. This allows an easy reversion to a previous state when working on a VM.

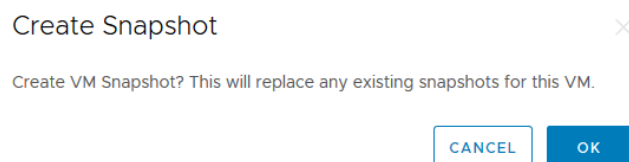
In EduCloud you can only create a single snapshot of a VM. This can be done either on a vApp level or a VM level. For example, you can snapshot all the VMs contained within a vApp by creating a vApp snapshot. Any subsequent VM snapshots will replace the previous snapshot (taken either on the vApp or VM level).

Snapshots should not be kept for longer than a week. The snapshot file will continue to grow as it ages. This may cause the snapshot storage location to run out of space, reduced system performance, and/or problems with regular backups.

Note that network information is not captured by a Snapshot – any networking changes made after the snapshot is taken will not be reverted if you roll back to a snapshot.

### vApp snapshot

- In the appropriate Datacenter → **Compute** → **vApps** → find the appropriate **vApp**
- **ACTIONS** → **Create Snapshot**.
- A window will pop up with a warning that previous snapshots will be replaced. Click **OK** to proceed.



This may take some time depending on how many VMs are contained in the vApp, their size and whether they are powered on.

### VM snapshot

Alternatively, you may only want to create a snapshot for a single virtual machine.

- In the appropriate Datacenter → **Compute** → **Virtual Machines** → find the appropriate **VM**.
- **ACTIONS** → **Create Snapshot**.
- Click **OK** button to create the snapshot.

## Revert a vApp/VM to a Snapshot

You can revert a virtual machine to the state it was in when the snapshot was created. This can be done multiple times until the snapshot is deleted.

Remember that snapshots are intended for short term use and should not be kept for too long.

- In the appropriate Datacenter → **Compute** → **vApps / Virtual Machines** → find the appropriate **vApp** or **VM**.
- **ACTIONS** → **Revert to Snapshot**.
- Click **OK** button to create the snapshot

## Remove a vApp/VM Snapshot

- In the appropriate Datacenter → **Compute** → **vApps / Virtual Machines** → find the appropriate **vApp** or **VM**
- **ACTIONS** → **Remove Snapshot**.
- Click **OK**

This will remove snapshots from all VMs in the vApp

## Remove a Snapshot for a single VM

- In the appropriate Datacenter → **Compute** → **Virtual Machines** → find the appropriate **VM**.
- **ACTIONS** → **Remove Snapshot**.
- Click **OK** button to create the snapshot.

## Appendix

### Supported browsers

The following browsers have been tested by VMWare for use accessing vCloud Director 9.5

- Google Chrome 69
- Mozilla Firefox 60.2 ESR
- Microsoft Edge 42
- Microsoft Internet Explorer 11

**Note:** Flash must be enabled in the browser to access the vCloud Director Web Console.