

DEPLOYMENT GUIDE

Deploying Infoblox-Flex based Grid on VMware vCloud Director



Table of Contents

Introduction	2
Pre-requisites to deploy Infoblox Infoblox-Flex based grid on VCD.	2
Deploying Infoblox Flex based grid on VCD via GUI	2
Upload vNIOs OVF to a catalog.	2
Provisioning a vApp	7
Assigning networks to VMs.	17
Powering on the vApp, assigning licenses, networking, and setting up the Grid.	22
Converting a vApp to a template.	27
Deploying vApps through vcd APIs.	30
vCloud Director API Constructs	30
Fetching vcd construct IDs.	31
Cloning a vApp	32
Deploying a vApp from a template.	33

Introduction

VMware Cloud Director(VCD) is a leading cloud service-delivery platform used by some of the world's most popular cloud providers to operate and manage successful cloud-service businesses. Using VMware Cloud Director, cloud providers deliver secure, efficient, and elastic cloud resources to thousands of enterprises and IT teams across the world.

VCD users can deploy and build Infoblox-Grid using vNIOS ova image, which can be downloaded from [here](#).

This deployment guide covers deploying Infoblox-Grid(Grid master *1 , Flex Members*2, and a windows client) onto VCD

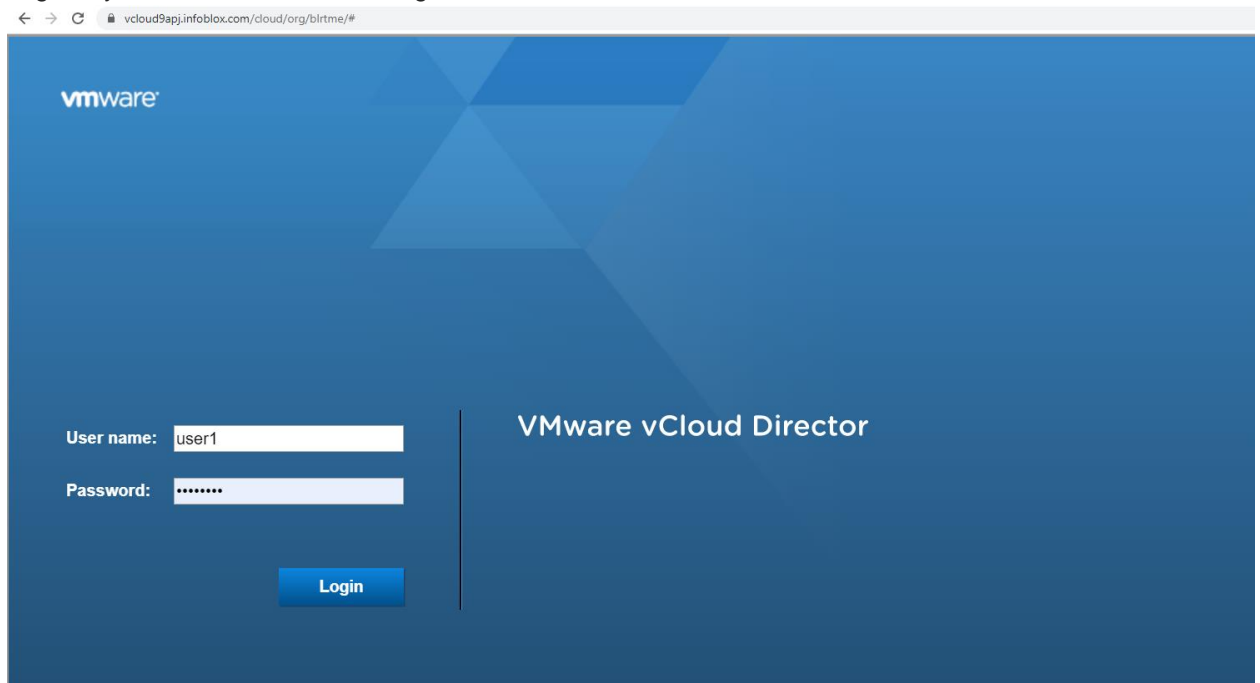
Pre-requisites to deploy Infoblox Infoblox-Flex based grid on VCD.

- Target VDC(Virtual Datacenter) must have enough resources to accommodate Infoblox-Grid.
- User must have a minimum vapp author level permissions to deploy and build Infoblox-Grid.
- If a user is trying to deploy a vApp from scratch, a minimum of 2 vapp networks must be provisioned.
- Access to atleast one of the catalogs where vNIOS ova image can be uploaded.
- Access and availability of vNIOS OVA image.
- Access and availability of Windows client(Any Windows OS, preferable windows7 or 10)

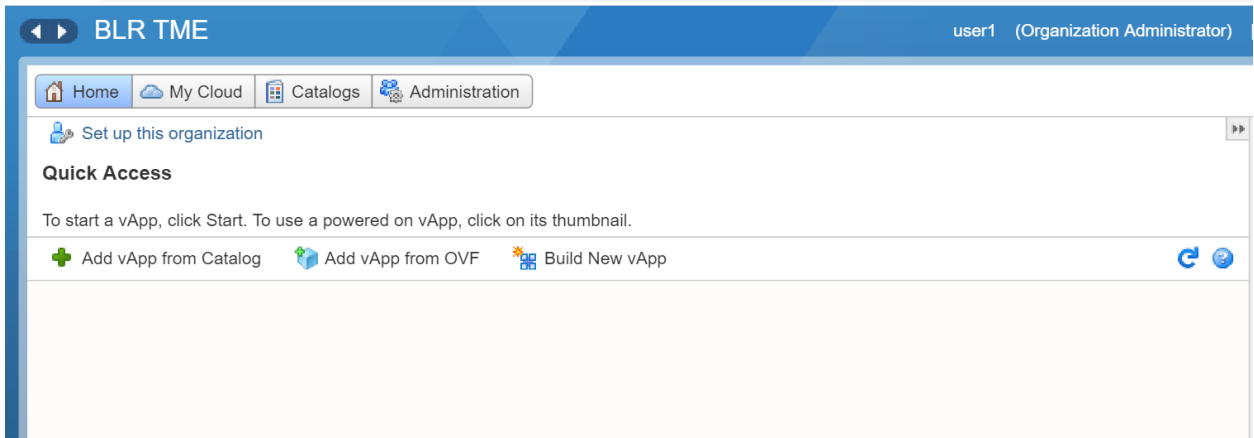
Deploying Infoblox Flex based grid on VCD via GUI

Upload vNIOS OVF to a catalog.

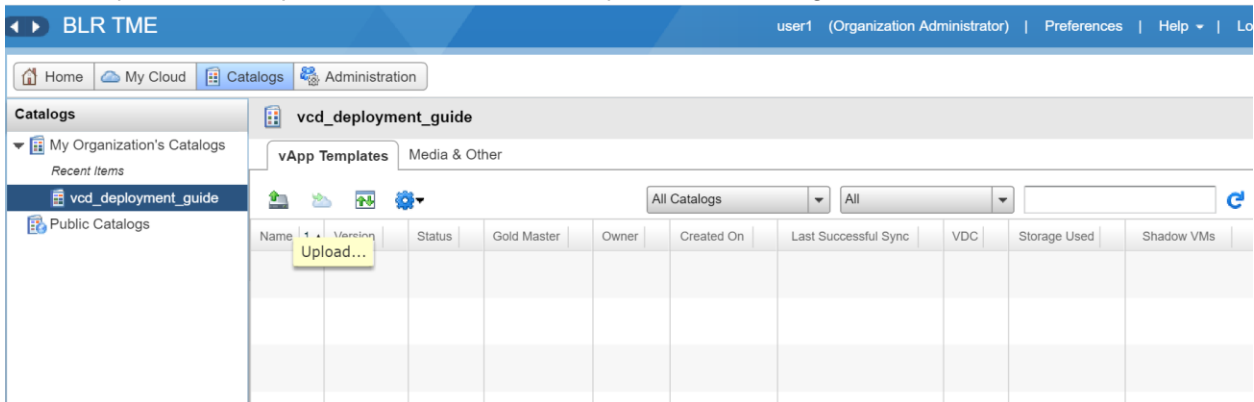
1. Login to your VCD environment using flash-based GUI.



- Once logged in click on **Catalogs** , present at the top.



- You will be presented with a list of catalogs, click on the catalog which you have access to.
Note: We will be using "vcd_deployment_guide" catalog in this deployment guide.
- Click on upload icon to upload vNIO OVF file as template to this catalog.



- vNIO OVF file can be either uploaded from a URL or from the local machine. We will use **Local file** option to upload an vNIO OVA image which is present locally in the system. Enter a name for this

image and click upload.

Upload OVF package as a vApp Template

Select the OVF package that will define this vApp template.

Source

OVF package: URL

Local file

C:\Users\ \Downloads\nios-8.5.0-394706-2020-02-10-01-53-33-ddi.ova

Destination

Name: *

Description:

Catalog: vcd_deployment_guide

i After the upload completes, check VMware Tools version installed on all VMs in the vApp template. Guest customization requires minimum tools version of 7299. You may want to review "Customize VM Settings" option on vApp template properties page.

6. You should see a **Transfer progress** bar showing disc upload progress.

https://vcloud9apj.infoblox.com/cloud/org/blrtme/support/transfer/progres...

vcloud9apj.infoblox.com/cloud/org/blrtme/support/transfer/progress.html

Transfer progress

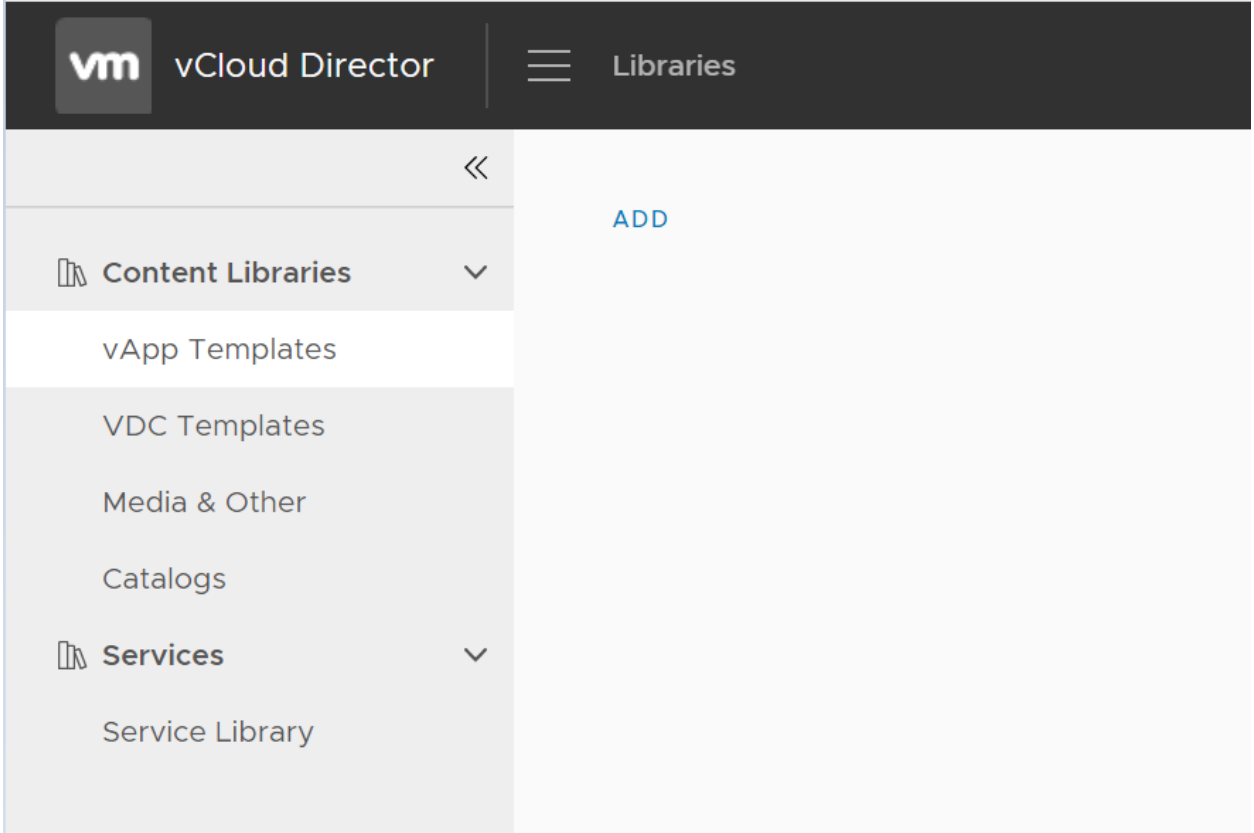
vNIOS.5

0%

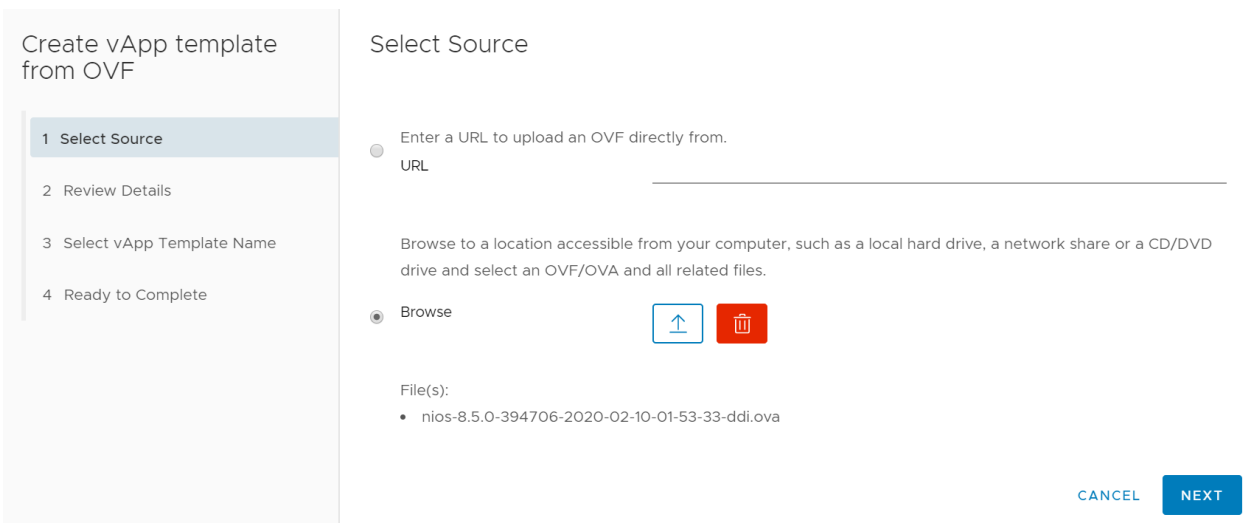
C:/Users/asahu/Downloads/nios-8.5.0-394706-2020-02-10-01-53-33-ddi.ova
Initializing...

Note: If Transfer Progress bar gets stuck at 0% and does not proceed, try following steps.

7. Login to the VCD HTML5 interface by entering following URL
<https://vcd fqdn or ip address/tenant/organization name>
8. Click on the 3 horizontal lines next to the **Datacenters** and select **Libraries**
9. Navigate to **vApp Templates** option, present in the left side and click on **Add**.



10. vNIOS OVF file can be either uploaded from a URL or from the local machine. We will use **Local file** option to upload an vNIOS OVF file which is present locally in the system. Once OVF file is selected click on **NEXT**.



11. You will be presented with **Review Details** section. Review the details and click on **NEXT**.

12. Enter a name for this vApp template and select the catalog from the dropdown menu. Click on **NEXT**.

Create vApp template from OVF

- 1 Select Source
- 2 Review Details
- 3 Select vApp Template Name
- 4 Ready to Complete

Select vApp Template Name

A vApp template is a virtual machine image that is loaded with an operating system, applications, and data. These templates ensure that virtual machines are consistently configured across an entire organization.

Name *

Description

Catalog

13. Click on **FINISH** to start the vNIOS OVF upload process.

Create vApp template from OVF

- 1 Select Source
- 2 Review Details
- 3 Select vApp Template Name
- 4 Ready to Complete

Ready to Complete

You are about to create a vApp template with these specifications. Review the settings and click finish.

OVF file

Name

Description

Catalog

14. You can view the task bar to monitor the file upload progress.

15. Navigate back to the catalog view and select **Media & other**, click on upload icon.

The screenshot shows the vCenter interface for the 'vcd_deployment_guide' catalog. The 'Media & Other' tab is active. The interface includes a navigation pane on the left with 'vcd_deployment_guide' selected. The main area shows a table with columns: Name, Version, Status, Owner, VDC, Created On, Last Successful Sync, and Storage Used. The table is currently empty.

16. Browse for the locally downloaded windows iso file, by selecting Local file. Enter a name and click on **Upload**.

Upload Media & Other

Select the ISO image or other file type to upload.

Source

Media to upload: URL

Local file

C:\ISOs and QCOW2\Windows\en_windows_7_enterprise_n_x64_dvd_x16-11943.iso

Destination

Name: *

Description:

Catalog: vcd_deployment_guide

Provisioning a vApp

1. Login to your vcd environment, and select **Build New vApp**

[Home](#) [My Cloud](#) [Catalogs](#) [Administration](#)

[Set up this organization](#)

Quick Access

To start a vApp, click Start. To use a powered on vApp, click on its thumbnail.

[Add vApp from Catalog](#) [Add vApp from OVF](#) [Build New vApp](#)

2. Enter a name for this vApp and click on next .

New vApp

Select Name and Location

A vApp is a cloud computer system that contains one or more virtual machines. Describe this vApp and configure its Virtual Datacenter and lease settings.

Name: *

Description:

Virtual Datacenter

Select the Virtual Datacenter (VDC) in which this vApp is stored and runs when it is started.

Leases

Runtime lease: *

How long this vApp can run before it is automatically stopped.

Storage lease: *

When this vApp is stopped, how long it is available before being automatically cleaned up.

Back Next Finish Cancel

3. Make sure you select the appropriate catalog from the **Look in** drop down menu and search for the vNIOS ova file which you uploaded in the previous step. Click on **Add** option 3 times to add 3

instances of vNIOS ova image into the vApp. **Do not click on Next.**

New vApp

Select Name and Location

Add Virtual Machines

Configure Resources

Configure Virtual Machines

Configure Networking

Ready to Complete

Add Virtual Machines

You can search the catalog for virtual machines to add to this vApp or add a new, blank VM. Once the vApp is created, you can power on the new VM and install an operating system.

Look in: My Organization's Catalogs All vNIOS

Name	OS	Gold Master	vApp	Catalog	C	D
VNIOS System	Other (64-bit)	-			04/2	244.14

Add Remove 11-12 of 12

Name	OS	Gold Master	vApp	Catalog	Created On	Disk Info
VNIOS System	Other (64-bit)	-			04/21/2020 5:3	244.14 GB
VNIOS System	Other (64-bit)	-			04/21/2020 5:3	244.14 GB
VNIOS System	Other (64-bit)	-			04/21/2020 5:3	244.14 GB

+ New Virtual Machine...

Back Next Finish Cancel

- From the same wizard, click on **New Virtual Machine** option(to install a windows based client). Enter the name for this VM, and select correct **Operating System**. Give atleast 2 virtual CPUs,4 GB

memory, and 50 GB hard disk for a lag free experience. Click **OK**.

New Virtual Machine

A label for this VM that appears in VCD lists:

Computer name: *

The computer name / host name set in the guest OS of this VM that identifies it on a network. This field is restricted to 15 characters for Windows. For non-Windows systems it can be 63 characters long and contain dots.

Description:

Virtual hardware version:

Operating System Family: Microsoft Windows Linux Other

Operating System:

Number of virtual CPUs:

Cores per socket:

Number of sockets: 2

Expose hardware-assisted CPU virtualization to guest OS
Select this option to support virtualization servers or 64-bit VMs running on this virtual machine.

Memory:


Hard disk size:

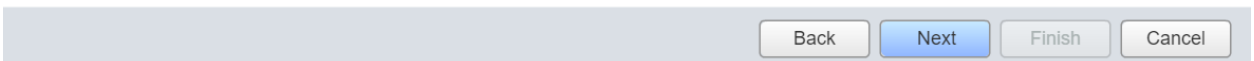
Bus type:

Number of NICs:

- You should now see 4 VMs(3* vNIOs VMs and 1* Windows VM) which will be deployed in the vApp. Click on **Next**.

Name	OS	Gold Master	vApp	Catalog	C	Di...
VNIOs System	Other (64-bit	-	copy_sync_kapil	sync3	04/2	244.14
VNIOs System	Other (64-bit	-	copy_sync_kapil	sync3	04/2	244.14
VNIOs System	Other (64-bit	-	copy_sync_kapil	sync3	04/2	244.14
win7-client	Microsoft Wir	-				50.00

 + New Virtual Machine...



- Enter virtual machine names and select the appropriate **Storage Policy** from the **Configure Resources** wizard and click on **Next**.

Note: If you are not sure about the storage policy, select Any.

New vApp

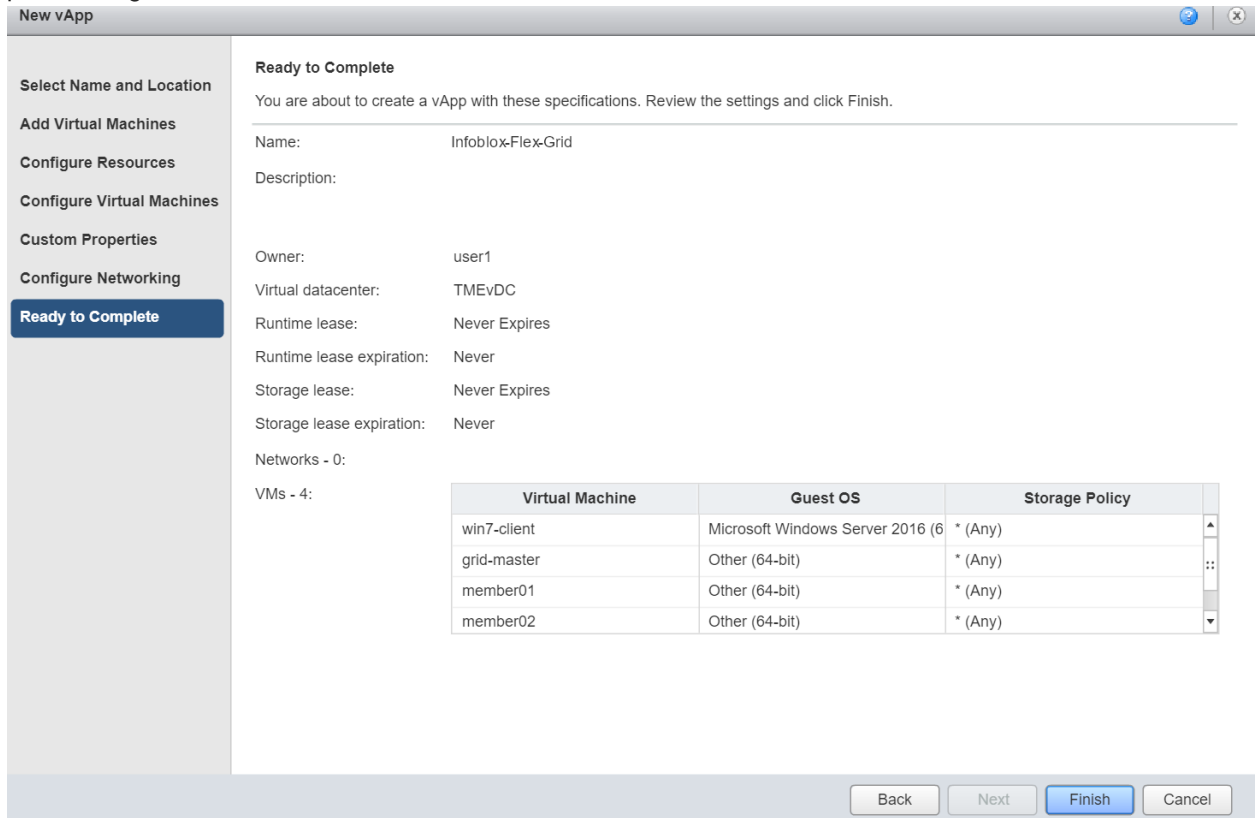
Configure Resources
Select what Storage Policies this vApp's virtual machines will use when deployed.

Virtual Machine	Storage Policy	Template VM Default Storage Pol
win7-client *	* (Any) ▾	
grid-master *	* (Any) ▾	
member01 *	* (Any) ▾	
member02 *	* (Any) ▾	

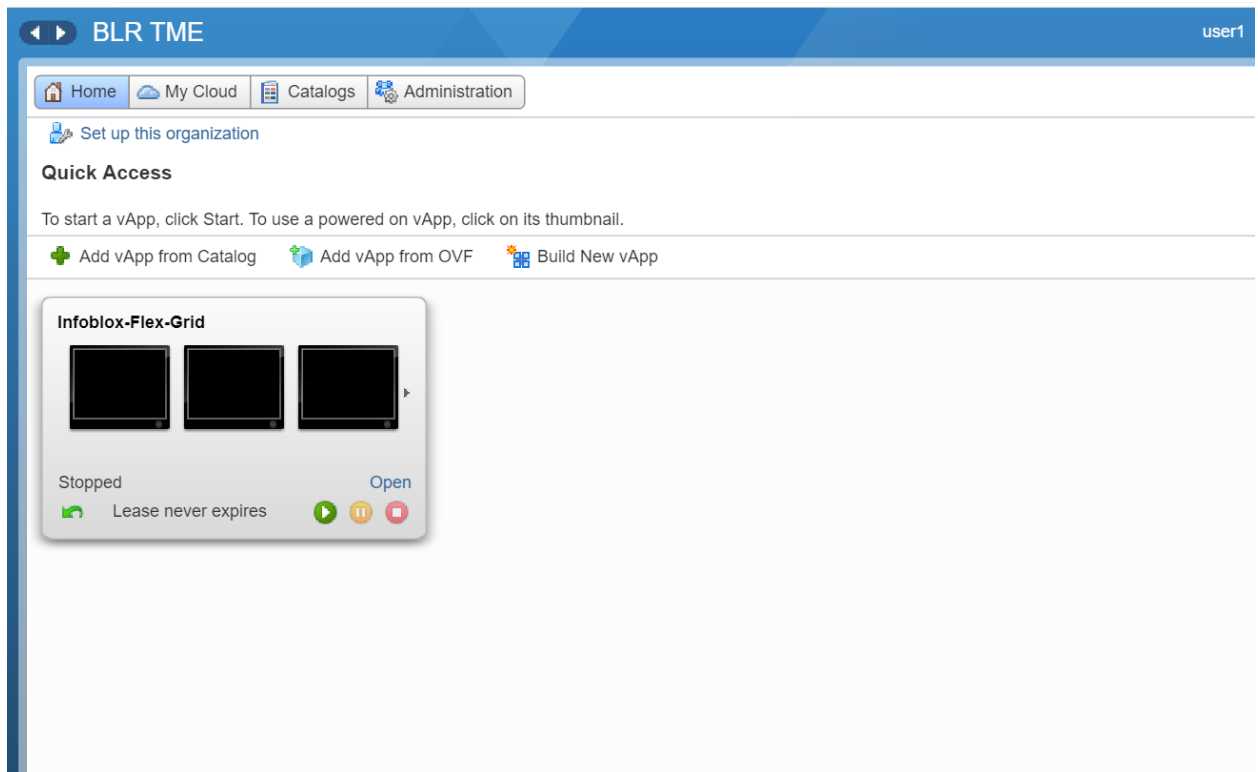
Back Next Finish Cancel

- You will be presented with **Configure Virtual Machines** wizard, leave all the settings to default and click on **Next**.
- You will be presented with **Custom Properties** wizard, leave all the settings to default and click on **Next**.
- You will be presented with **Configure Networking**, leave all the settings to default and click on **Next**

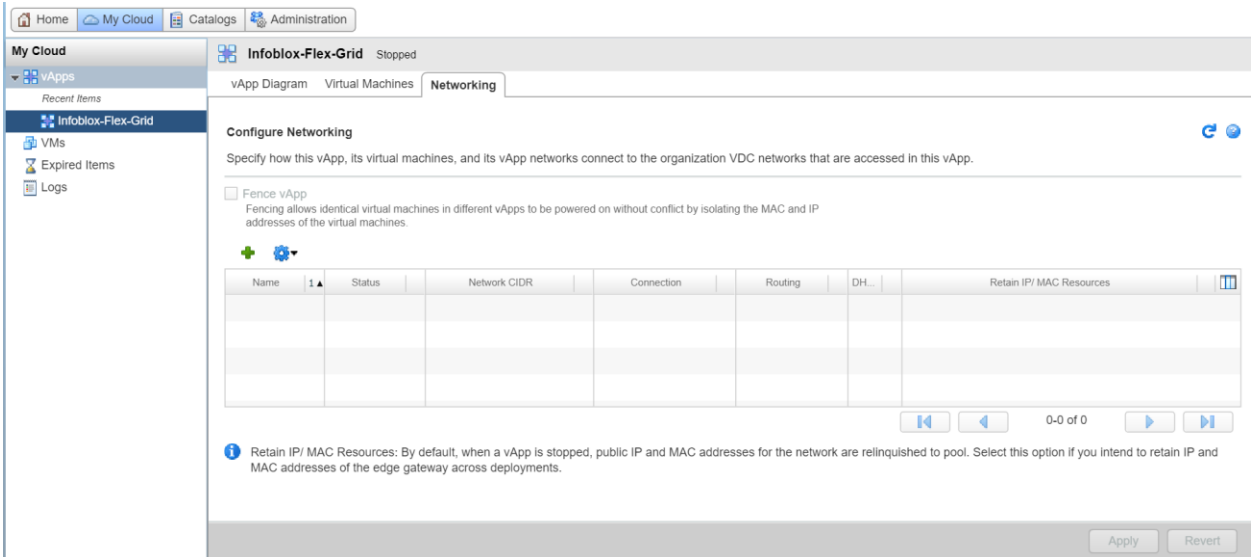
10. You can review the settings from the Ready to Complete wizard. Click on **Finish** to start vApp provisioning.



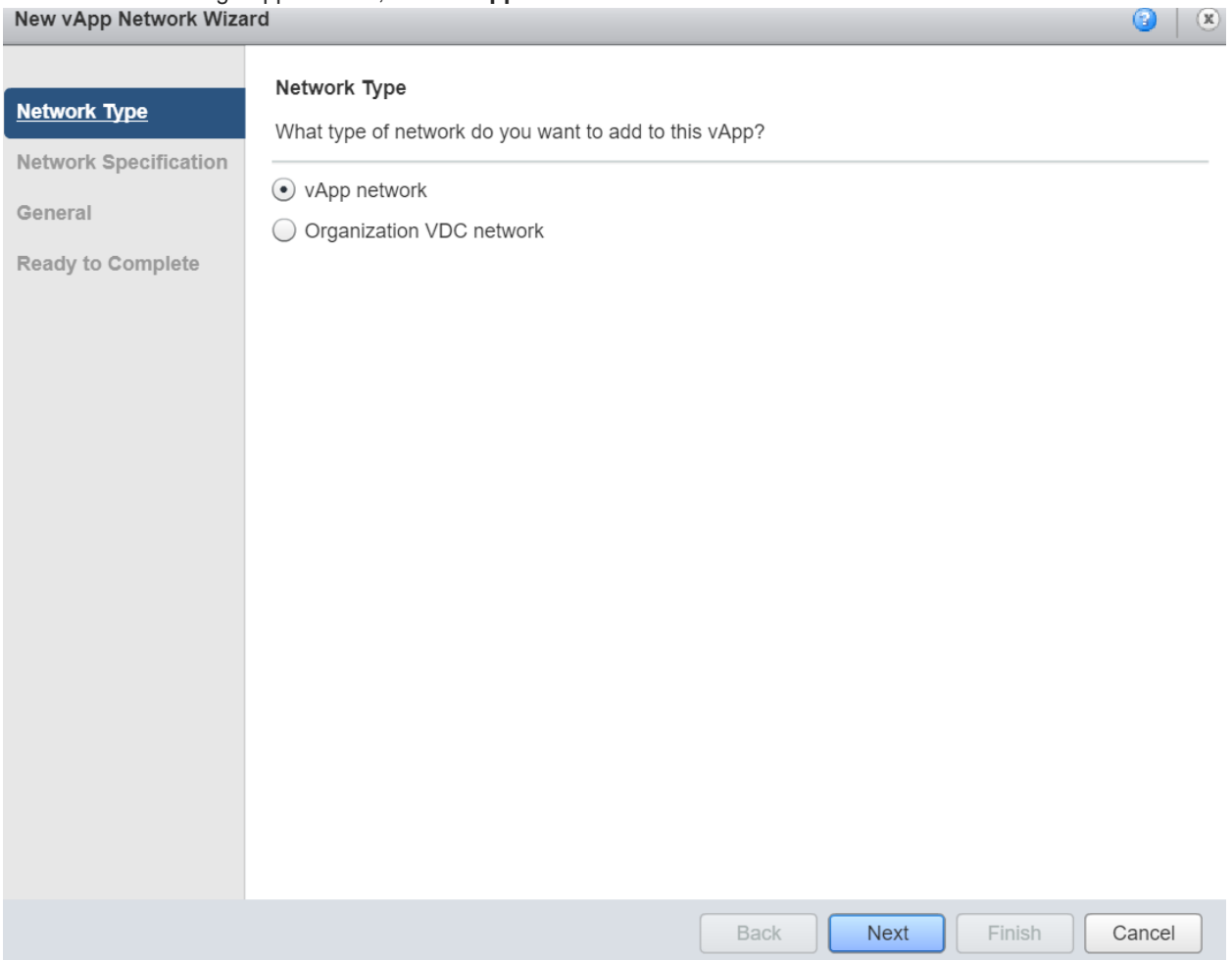
11. vApp provisioning will take 2-3 minutes. Double click on the vApp to access its resources.



12. First thing which you will notice that the vApp does not have any networks. Click Networking tab to start creating networks for Infoblox-Flex-Grid. Click green plus icon to start creating networks.



13. Since we are creating vApp network, select **vApp network** and click on Next.



14. Enter network CIDR and network related inputs as depicted in the screen shot. Enter a **static IP pool** range and click on **Add**. Click on **Next** to go to the next screen.

New vApp Network Wizard

Network Type

Network Specification

General

Ready to Complete

Network Specification

Enter the network settings of the new vApp network below:

Network CIDR: *

Primary DNS:

Secondary DNS:

DNS suffix:

Guest VLAN Allowed:

Static IP pool:

Enter an IP range (format: 192.168.1.2 - 192.168.1.100) or IP address and click Add.

Total: 91

15. Enter a **Network name** for this network. Click on **Next**.

New vApp Network Wizard

Network Type

Network Specification

General

Ready to Complete

General

Enter a name and description for the new vApp network.

Network name: *

Description:

Interface Type: Internal

Back Next Finish Cancel

16. You can review the network details. If everything looks good, click on **Finish**.

New vApp Network Wizard

Ready to Complete

A new vApp network will be created with the following:

Network name: Mgmt

Description:

Primary DNS:

Secondary DNS:

Network CIDR: 192.168.2.1/24

DNS suffix:

Guest VLAN Allowed: No

Static IP pool: 192.168.2.10 - 192.168.2.100

Back Next **Finish** Cancel

17. Click on **Add** network icon again to create second network.

Infoblox-Flex-Grid Stopped

vApp Diagram Virtual Machines **Networking**

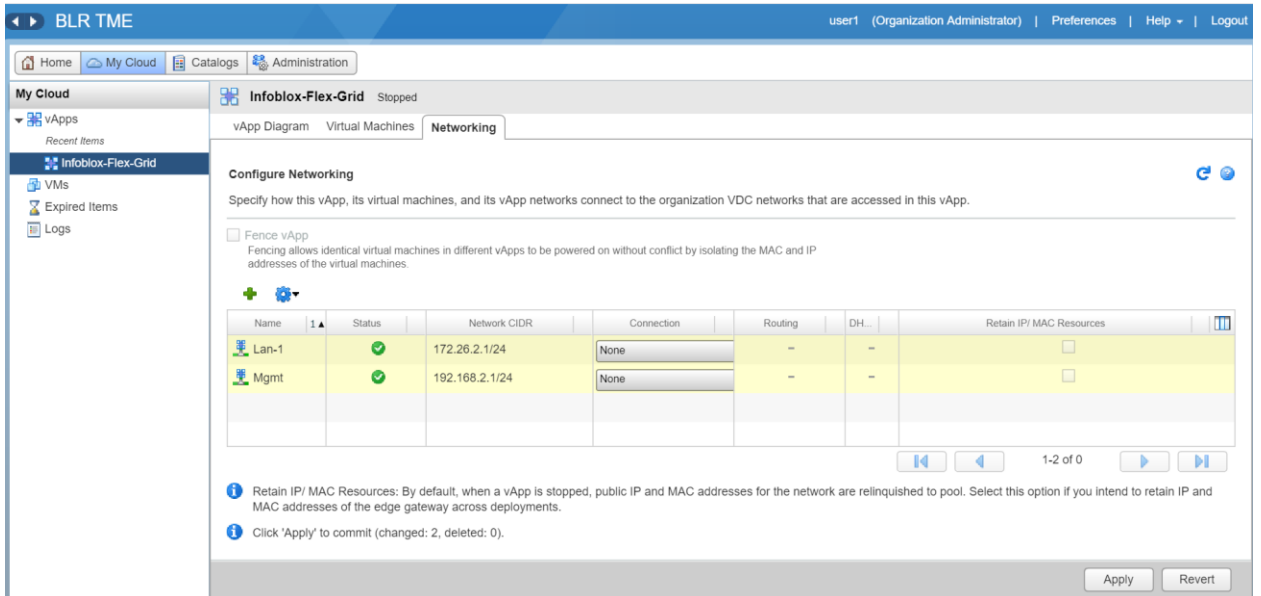
Configure Networking

Specify how this vApp, its virtual machines, and its vApp networks connect to the organization VC

Fence vApp
Fencing allows identical virtual machines in different vApps to be powered on without conflict by isolating addresses of the virtual machines.

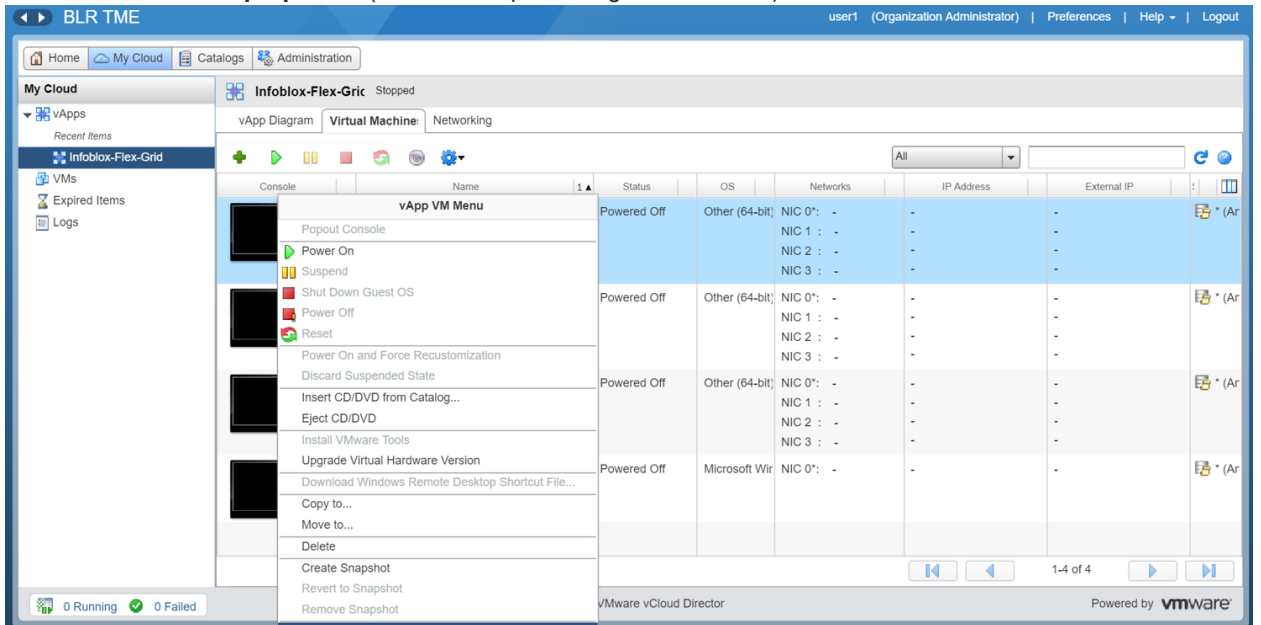
Name	Status	Network CIDR	Connection
Mgmt	✓	192.168.2.1/24	None

18. Follow the same steps and enter a new network CIDR, static ip range and a network name(Lan-1).
19. Please ensure to click on **Apply** to implement the changes.



Assigning networks to VMs.

1. Click **Virtual Machines** tab. You will be presented with the list of VMs present in the vApp. Right click grid-master VM and select **properties**.(It's the last option in right-click wizard)



2. You will be presented with Virtual Machine Properties wizard. Navigate to **Hardware** section and scroll down to assign network interfaces. Assign first interface as Mgmt and second interface as Lan-1. Click **OK** to save

changes.

Virtual Machine Properties: grid-master

General Hardware **Guest OS Customization** Guest Properties Resource Allocation Metadata

NICs

Guest customization is required to run for the NIC changes to take effect.

Show network adapter type
Adapter choice can affect both networking performance and migration compatibility. Consult the VMware KnowledgeBase for more information on choosing among the network adapter support for various guest operating systems and hosts.

NIC#	Connected	Network	Primary NIC	IP Mode	IP Address	MAC Address	
0	<input checked="" type="checkbox"/>	Mgmt	<input checked="" type="radio"/>	Static - IP Pool		00:50:56:01:02:c2	Delete
1	<input checked="" type="checkbox"/>	Lan-1	<input type="radio"/>	Static - IP Pool	172.26.2.10	00:50:56:01:02:c1	Delete
2	<input type="checkbox"/>	None	<input type="radio"/>			00:50:56:01:02:c0	Delete
3	<input type="checkbox"/>	None	<input type="radio"/>			00:50:56:01:02:bf	Delete

Removable Media

CD/DVD Drive: Empty
Floppy Drive: Not installed
USB Ports: Not installed

OK Cancel

- Follow the same steps to assign interfaces to member01 and member02 VMs.
- For win-7 client machine we will be assigning only one interface i.e is Lan-1. After network interface assignment to all VMs, **Virtual Machines** list view will look like this.

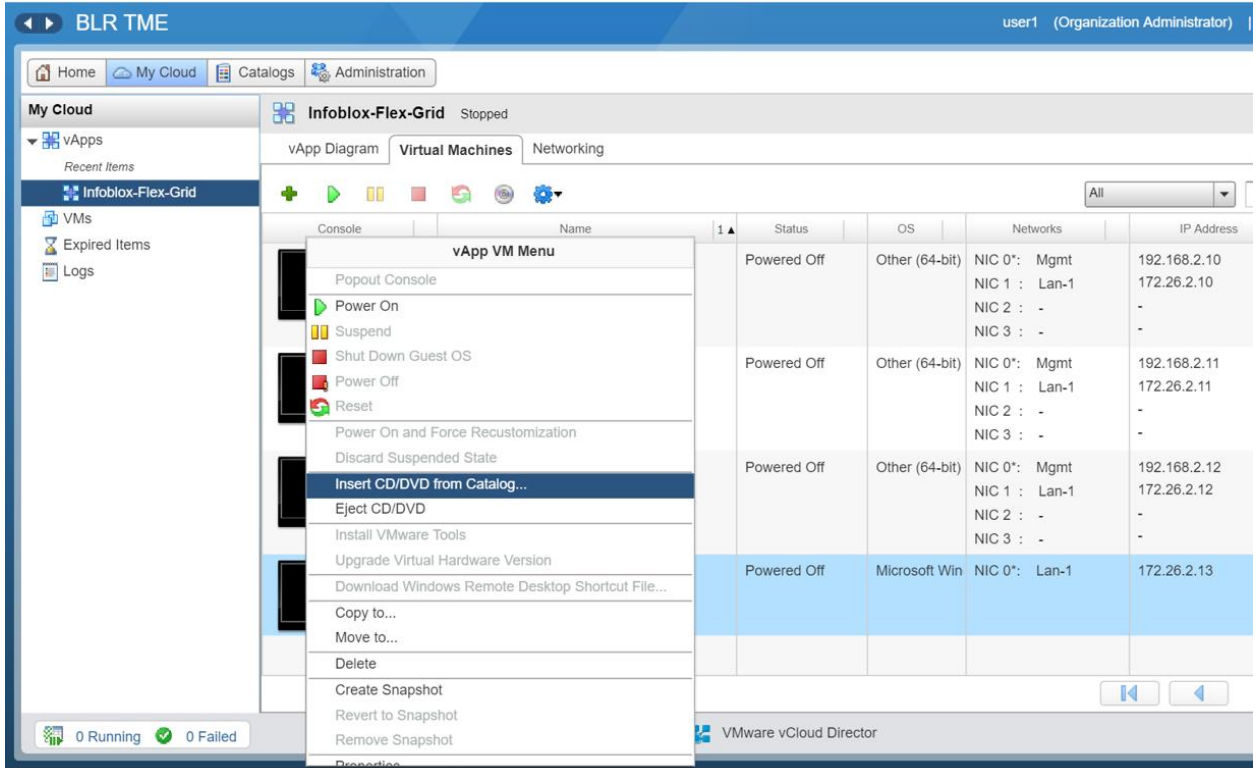
Infoblox-Flex-Grid Stopped

vApp Diagram **Virtual Machines** Networking

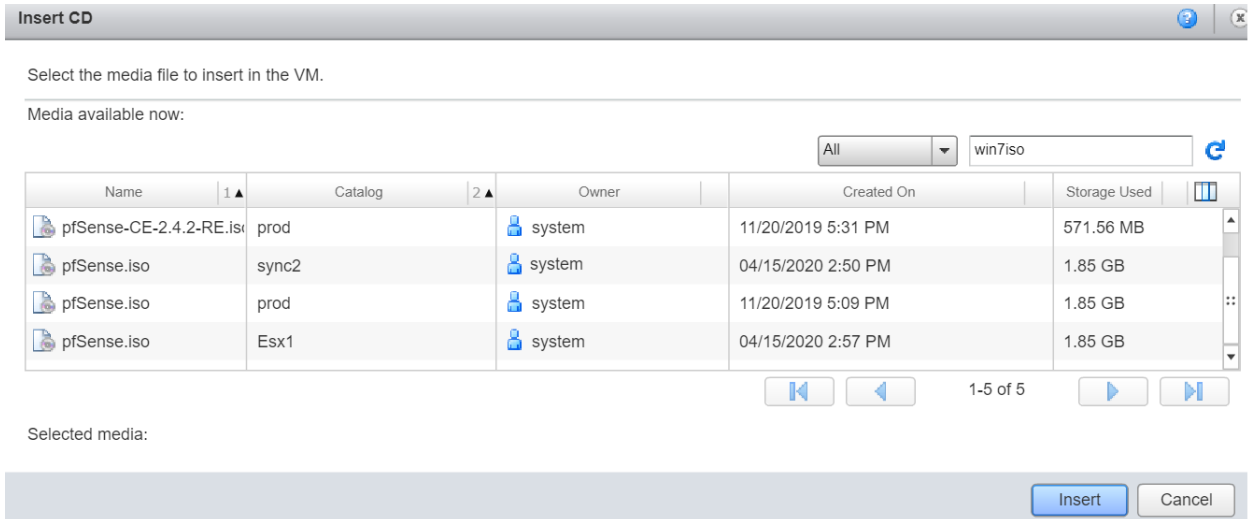
Console	Name	Status	OS	Networks	IP Address
	grid-master	Powered Off	Other (64-bit)	NIC 0*: Mgmt NIC 1 : Lan-1 NIC 2 : - NIC 3 : -	192.168.2.10 172.26.2.10 - -
	member01	Powered Off	Other (64-bit)	NIC 0*: Mgmt NIC 1 : Lan-1 NIC 2 : - NIC 3 : -	192.168.2.11 172.26.2.11 - -
	member02	Powered Off	Other (64-bit)	NIC 0*: Mgmt NIC 1 : Lan-1 NIC 2 : - NIC 3 : -	192.168.2.12 172.26.2.12 - -
	win7-client	Powered Off	Microsoft Win	NIC 0*: Lan-1	172.26.2.13

Installing Operating system onto win7-client VM

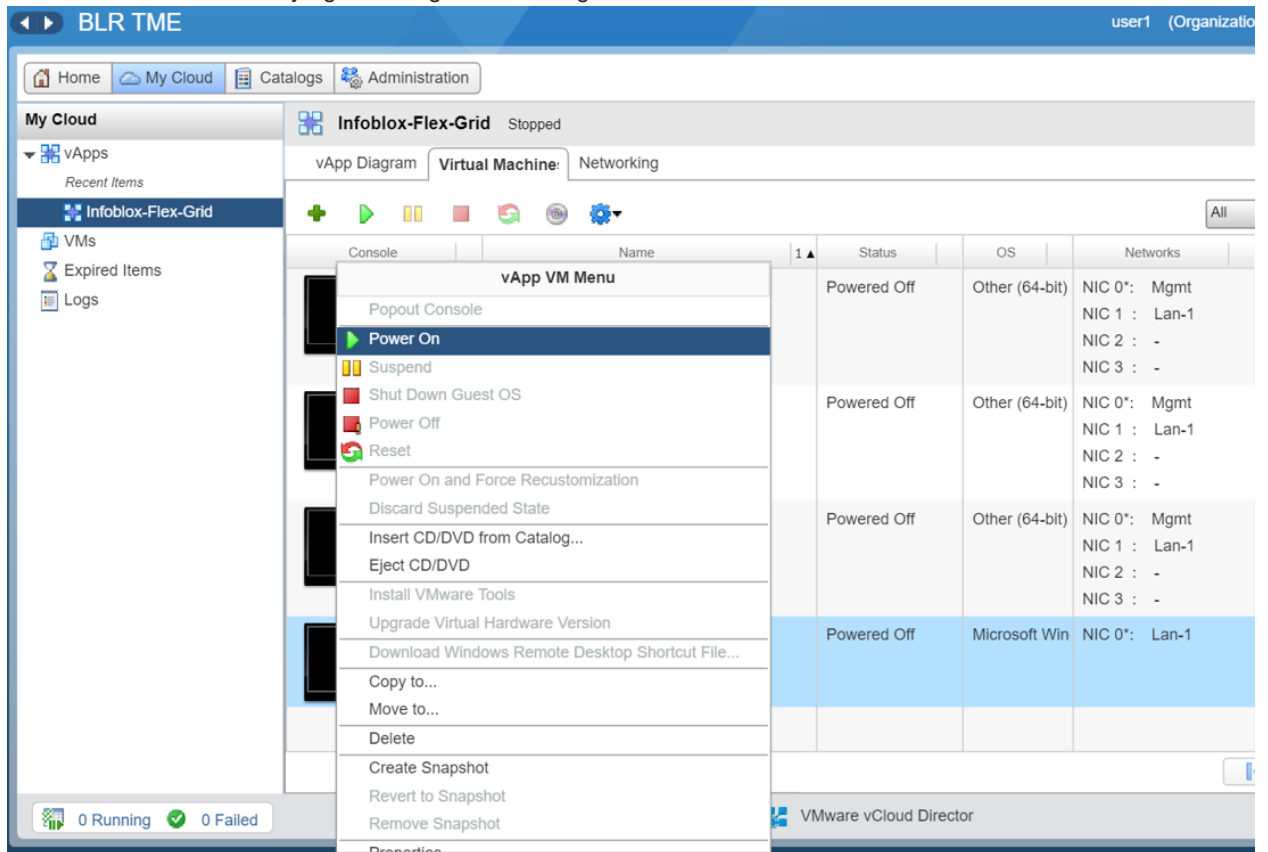
- From virtual machine tab, right click win7-client VM and select **Insert CD/DVD from Catalog**.



- Search for win7 iso from the **Insert CD** wizard. Click **Insert** to mount the iso.



- Power on win7-client VM by right clicking and selecting **Power on** .



- To commence win7 OS installation double click the win7-client icon to open up VM console. From here you can install the OS by following the screen instructions.
- Post OS installation come back to the **Virtual Machine** list view, right click win7-client VM and select **Eject CD/DVD** to unmount iso image.
- From the **Virtual Machine** list view and right click win7-client VM and select **Install VMware Tools**. This step will mount VMware tools iso to win7-client VM. Login to the win7-client VM and continue with the

installation of VMware tools.

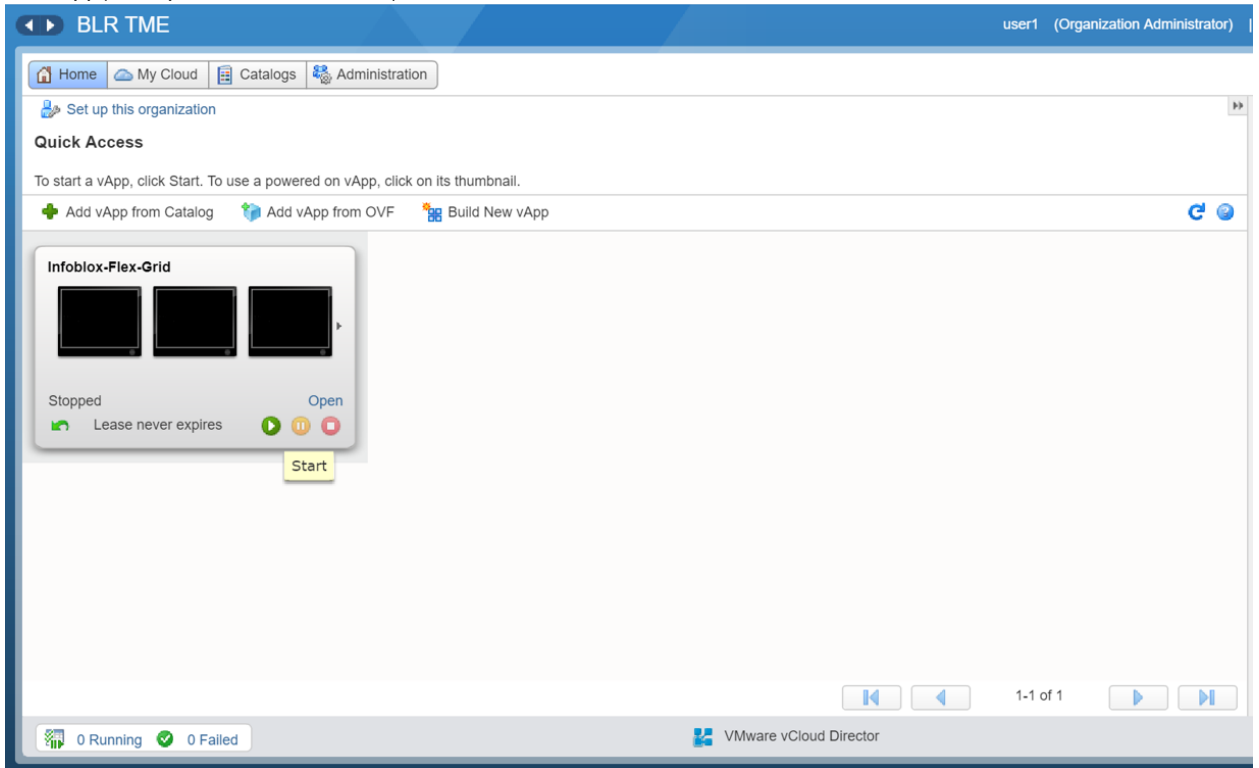
The screenshot shows the VMware vCloud Director interface. The top navigation bar includes 'Home', 'My Cloud', 'Catalogs', and 'Administration'. The user is logged in as 'user1 (Organization Administrator)'. The main area displays the 'Infoblox-Flex-Grid' vApp, which is 'Partially Running'. A 'vApp VM Menu' is open over a virtual machine, listing various actions such as 'Power On', 'Suspend', 'Shut Down Guest OS', 'Power Off', 'Reset', 'Power On and Force Recustomization', 'Discard Suspended State', 'Insert CD/DVD from Catalog...', 'Eject CD/DVD', 'Install VMware Tools' (highlighted), 'Upgrade Virtual Hardware Version', 'Download Windows Remote Desktop Shortcut File...', 'Copy to...', 'Move to...', 'Delete', 'Create Snapshot', 'Revert to Snapshot', and 'Remove Snapshot'. Below the menu is a table of virtual machines:

Name	Status	OS	Networks	IP Address
	Powered Off	Other (64-bit)	NIC 0: Mgmt NIC 1: Lan-1 NIC 2: - NIC 3: -	192.168.2.10 172.26.2.10 - -
	Powered Off	Other (64-bit)	NIC 0: Mgmt NIC 1: Lan-1 NIC 2: - NIC 3: -	192.168.2.11 172.26.2.11 - -
	Powered Off	Other (64-bit)	NIC 0: Mgmt NIC 1: Lan-1 NIC 2: - NIC 3: -	192.168.2.12 172.26.2.12 - -
	Powered On	Microsoft Win	NIC 0: Lan-1	172.26.2.13

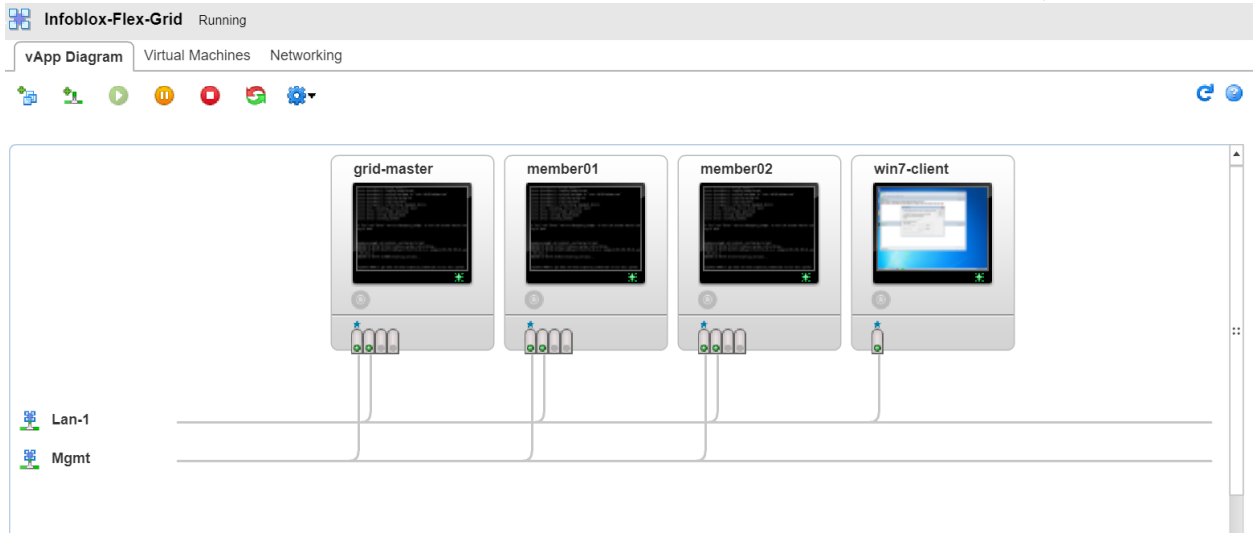
The bottom status bar shows '0 Running' and '0 Failed' VMs, and the VMware vCloud Director logo.

Powering on the vApp, assigning licenses, networking, and setting up the Grid.





1. Navigate to the **Home** option and you will be presented with the vApp view. Click on power on, to power on the vApp (It will power on all the VMs)



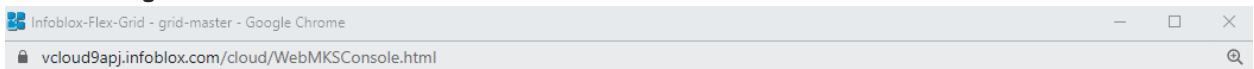
2. Double click the vApp to access its resources. You will now see that vApp has network connectivity.



3. Navigate to the **Virtual Machines** tab and make a note of Lan-1 ipaddresses of the VMs. These ip addresses will be assigned in the respective VMs.

Console	Name	Status	OS	Networks	IP Address
	grid-master	Powered On	Other (64-bit)	NIC 0*: Mgmt NIC 1 : Lan-1 NIC 2 : - NIC 3 : -	192.168.2.10 172.26.2.10 - -
	member01	Powered On	Other (64-bit)	NIC 0*: Mgmt NIC 1 : Lan-1 NIC 2 : - NIC 3 : -	192.168.2.11 172.26.2.11 - -
	member02	Powered On	Other (64-bit)	NIC 0*: Mgmt NIC 1 : Lan-1 NIC 2 : - NIC 3 : -	192.168.2.12 172.26.2.12 - -
	win7-client	Powered On	Microsoft Win	NIC 1*: Lan-1	172.26.2.13

4. Double click **grid-master** VM console icon to access its console.



grid-master

English (US)



```

/etc/rc.d/rcsysinit: making kdump fs
/etc/rc.d/rcsysinit: loading kdump kernel
/etc/rc.d/rcsysinit: setting hostname to 'nios.infobloxdemo.com'
/etc/rc.d/rcsysinit: starting syslog-ng
/etc/rc.d/rcsysinit: starting acpid
/etc/rc.d/rcsysinit: initializing loopback device
/etc/rc.d/rc: executing /etc/rc.d/rc3 start
/etc/rc.d/rc3: start normal operation
/etc/rc.d/rc3: setting system umask
/etc/rc.d/rc3: starting product

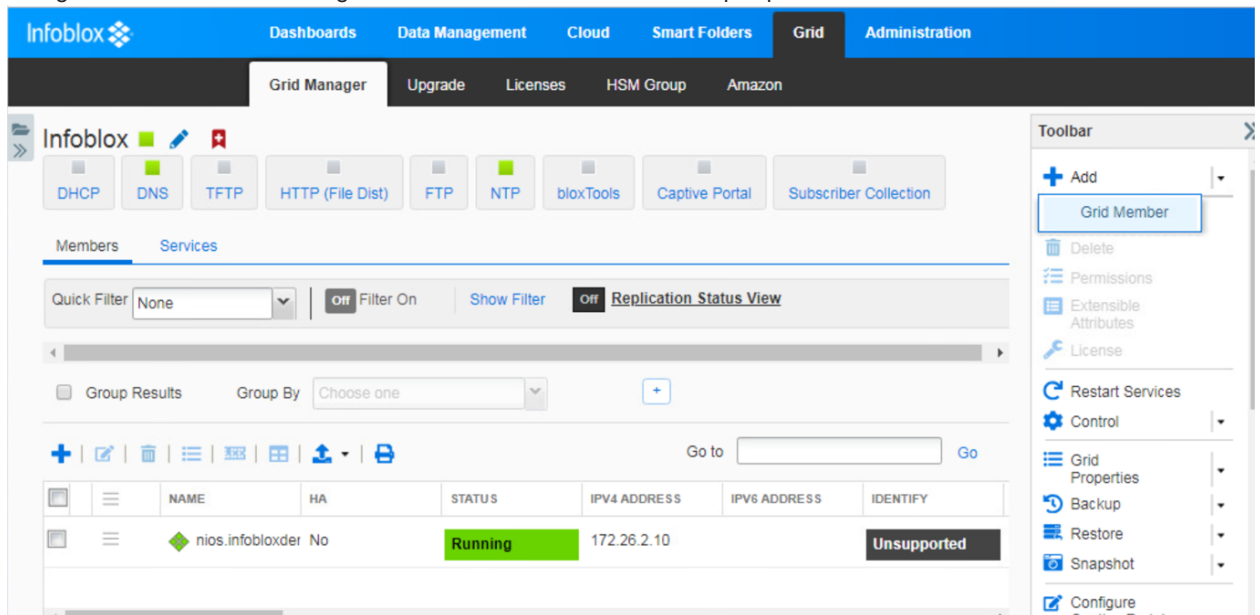
Hit "Esc" and "Enter" now for Emergency prompt, or wait 10 seconds before con
uing to boot.

Emergency prompt not entered, continuing to boot.
[2020/05/17 05:46:59.326] Infoblox system initializing...
[2020/05/17 05:47:01.675] LAN port IPv4 172.26.1.2, netmask 255.255.255.0, ga
ay 172.26.1.1
[2020/05/17 05:47:37.000] Starting services...

Disconnect NOW if you have not been expressly authorized to use this system.
login:

```


5. Use default user id and password(admin / infoblox) to login into the console of grid-master.
6. Use `set_temp license` command to activate desired licenses. After license assignment use `set_network` command to set lan-1 ip address. Use the same lan-1 IP address which is reflected under IP Address section of the vcd GUI. (For more details on setting and activating flex based licenses please refer [this](#) deployment guide.
7. For members(member01 and member02) first set the hardware type to IB-FLEX by executing `set hardware -type IB-FLEX` command. Post this step, set up the networking. Please refer [this](#) guide for more details.
8. Open the console of win7-client VM and make sure that it has the correct lan-1 IP address. If not, then assign the correct lan-1 IP address.
9. Open a browser and login to the infoblox grid, by typing https://grid_master_lan-1_ip After login page shows up use default user-id and password(admin/infoblox) to access Infoblox Grid.
10. Navigate to Grid → Grid Manager → Members and click on **add** to pre-provision members.



11. Select **Virtual NIOS** from the **Member Type drop** down box and give a hostname.

Add Grid Member > Step 1 of 3

Member Type

***Host Name** Must be a fully qualified domain name

Time Zone
Inherited from Grid Infoblox

Comment

Master Candidate

12. Assign correct lan-1 ip address as per the vcd gui. Click on **Save & Close**.

Add Grid Member > Step 2 of 3

Standalone Member
 High Availability Pair

REQUIRED PORTS AND ADDRESSES

INTERFACE	ADDRESS	SUBNET MASK (IPv4) OR PREFIX LENGTH (I...	GATEWAY	VLAN TAG	PORT SETTINGS
LAN1 (IPv4)	172.26.2.11	255.255.255.0			Automatic

13. Follow the same set of steps and pre-provision member02 as well.

14. After provisioning members open the member01 console and execute `set membership` command. Key in grid-master lan-1 ip address and other grid details.

Infoblox-Flex-Grid - member01 - Google Chrome
vcloud9apj.infoblox.com/cloud/WebMKSConsole.html

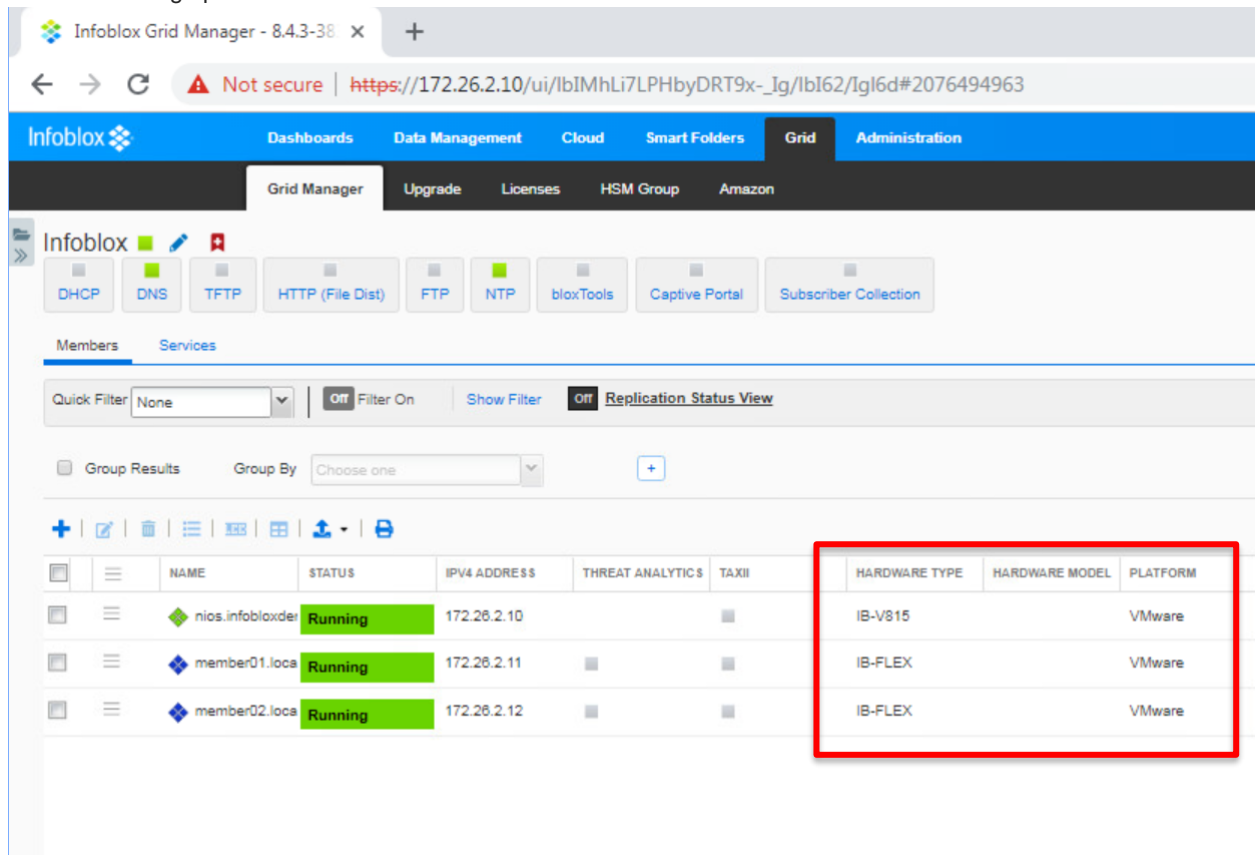
member01

```
Infoblox > set membership
Join status: No previous attempt to join a grid.
Enter New Grid Master VIP: 172.26.2.10
Enter Grid Name [Default Infoblox]:
Enter Grid Shared Secret: test
Join grid as member with attributes:
Grid Master VIP:      172.26.2.10
Grid Name:            Infoblox
Grid Shared Secret:  test

WARNING: Joining a grid will replace all the data on this node!
Is this correct? (y or n):
```

15. Repeat same steps in member02 console window.

- Post adding member01 and member02 to the grid, login to the grid and verify that members are connected and are showing up as IB-FLEX.

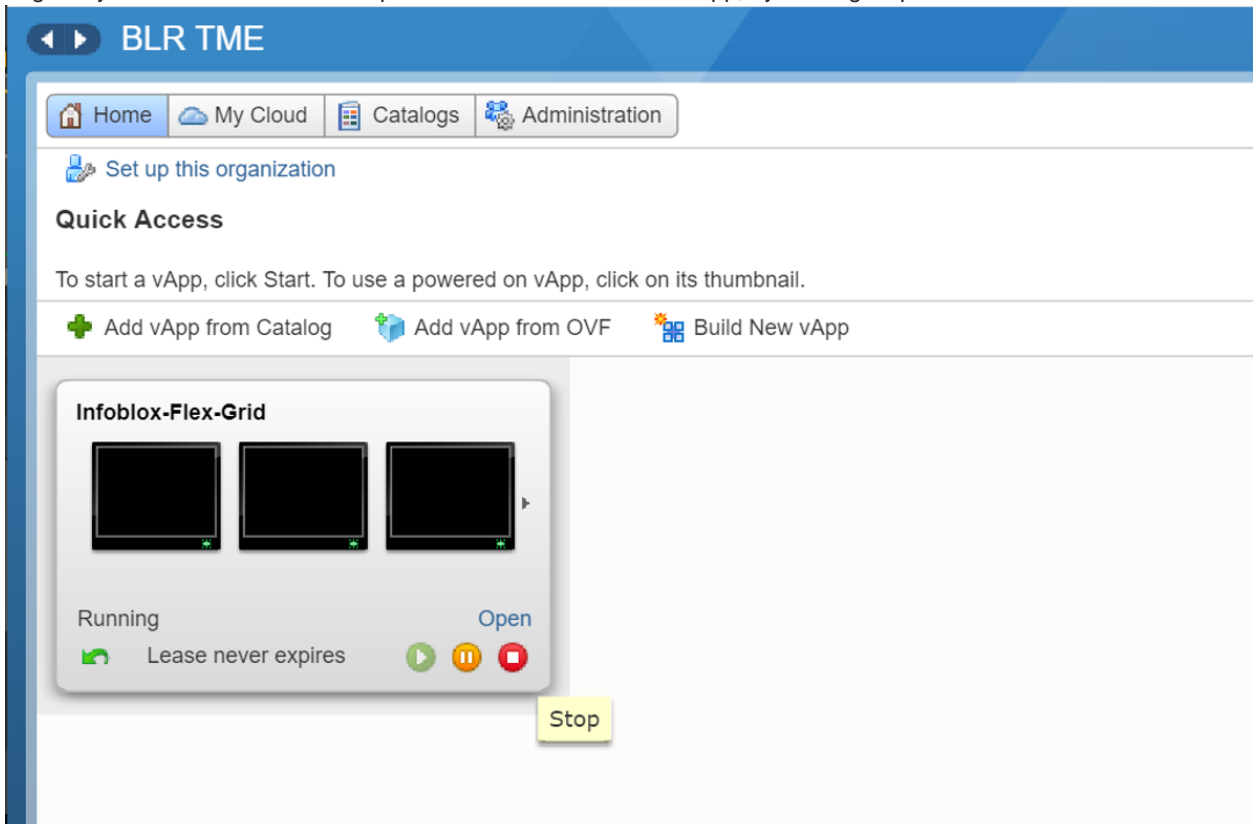


Converting a vApp to a template.

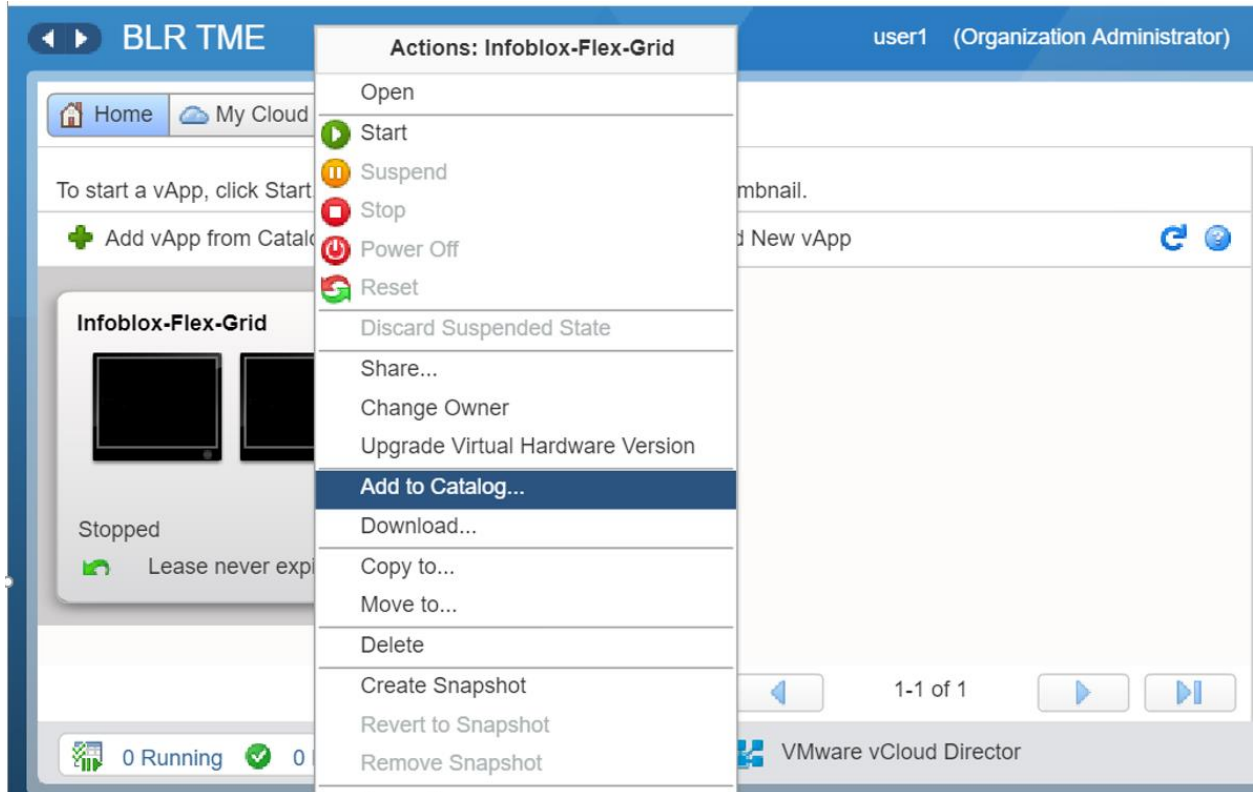
A vApp template is an image of a vApp which contains one or more VM images and one or more vApp networks.

vApp templates are like master copies of a vApp. If need be, a user can deploy multiple vApps(with same or modified configuration) from a vApp template.

1. Login to your vcd environment and power off Infoblox-Flex-Grid vApp, by clicking stop icon.



2. Right click the vApp and select **Add to catalog**.



- Select the name of your **Catalog**(for which you have access) and enter a name for the template. Click **OK** .

Add to Catalog: Infoblox-Flex-Grid

Add this vApp to catalog:

Catalog:

This catalog is public and available to other organization members.
 This catalog is published externally.

Name:

Description:

Storage lease: *

When this vApp is stopped, how long it is available before being automatically cleaned up.

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.

- From the home screen navigate to **Catalogs** → **Catalogs** and select your catalog. You should see a template with status as **Ready**.

BLR TME user1 (Organization Administrator) | Preferences | Help | Logout

Home My Cloud Catalogs Administration

Catalogs

My Organization's Catalogs
Recent Items
vcd_deployment_guide

Public Catalogs

vcd_deployment_guide

vApp Templates Media & Other

All Catalogs All

Name	V...	Sta...	Gol...	Ow...	Created ...	Last Successful S...	V...	Stor...	Sha...
Infoblox-Flex-Grid	2	Ready	-	user	05/17/2020		TM	792.42 C	0

0 Running 0 Failed VMware vCloud Director Powered by vmware

Deploying vApps through vcd APIs.

The vCloud Director(vcd) API is a powerful and easy to use solution for automating and orchestrating vApps creation. VMware vCloud Director supports several versions of the vCloud API. vCloud API clients communicate with servers over HTTP, exchanging representations of vCloud objects. These representations take the form of XML elements. You use HTTP GET requests to retrieve the current representation of an object, HTTP POST and PUT requests to create or modify an object, and HTTP DELETE requests to delete an object.

This deployment guide covers cURL, a Linux based utility to fire vcd APIs. cURL by default is not part of Linux distros and needs to be installed separately.

- For Debian based systems use `apt-get install curl -y`
- For Linux based systems use `yum install curl -y`

This deployment guide covers following vcd objects

S.no.	Action	Description
1	<code>cloneVApp</code>	Creates a copy of an existing vApp.
2	<code>instantiateVAppTemplate</code>	Edits a vApp to add, remove, or reconfigure virtual machines.

vCloud Director API Constructs

Construct	Description
Organization (org)	An organization is the unit of multi-tenancy that represents a single logical security boundary. An organization contains users, virtual data centers and networks.
Provider Virtual datacenter(vdc)	A provider virtual datacenter is a grouping of compute and storage resources from a single vCenter Server instance.
vApp	A vApp is a container for a distributed software solution and is the standard unit of deployment in vCloud director.
Org Networks	An Org network provides networking services to virtual machines or virtual appliances deployed inside of an Org vDC network.

Fetching vcd construct IDs.

Use following shell script to fetch various vcd construct IDs which we will need to fire subsequent vcd APIs. Replace the variable name (in red) with your environment values. Save this script as **vcd_ids.sh**, assign executable permission to it and then execute it.

```
#!/bin/bash

vcd_url="https://vcd_ip_or_fqdn"

org="org_name"
vdc="vdc_name"
vcd_pass="password"
vcd_user="user_id@$org"
vcd_catalog="catalog_name"
template="template_name"
vapp="name_of_the_vapp"
header="Accept:application/*+xml"
api="version=29.0"

auth_token=$(curl -I -k -s -H "$header;$api" -u "$vcd_user:$vcd_pass" -X POST
"$vcd_url/api/sessions"| awk '/x-vcloud-authorization/{print $2}'| awk '{ sub("\r$", "");print}' )

org_id=$(curl -B -k -s -H "$header;$api" -H "x-vcloud-authorization: $auth_token" -X GET
"$vcd_url/api/query?type=organization&format=references"| awk -F "org" "/$org/{print
substr(\$2,2)}"|awk -F "' ' "){print\$1}")

vdc_id=$(curl -B -k -s -H "Accept:application/*+xml;version=29.0" -H "x-vcloud-authorization:
$auth_token" -X GET "$vcd_url/api/admin/vdcs/query?type=vdc&format=references" |awk -F 'vdc'
"/$vdc/{ print substr(\$2,2)}"|awk -F "' ' '{print $1}'")

catalog_id=$(curl -B -k -s -H "$header;$api" -H "x-vcloud-authorization: $auth_token" -X GET
"$vcd_url/api/org/$org_id"| awk -F "catalog" "/$vcd_catalog/{print substr(\$2,2)}"| awk -F "' '
'{print\$1}'")

catalog_item=$(curl -B -k -s -H "$header;$api" -H "x-vcloud-authorization: $auth_token" -X GET
"$vcd_url/api/catalog/$catalog_id"| awk "/$template/{print\$3}"| awk -F "' ' "){print \$2}")

vapp_id=$(curl -B -k -s -H "$header;$api" -H "x-vcloud-authorization: $auth_token" -X GET
"$vcd_url/api/query?type=vApp&format=references" |awk -F "vApp" "/$vapp/{print substr(\$2,2)}"|awk
-F "' ' "){print\$1}")

vapp_template=$(curl -B -k -s -H "$header;$api" -H "x-vcloud-authorization: $auth_token" -X GET
"$vcd_url/api/catalogItem/$catalog_item"| awk -F "vAppTemplate" "/$template/{print
substr(\$2,2)}"| awk -F "' ' "){print\$1}")

echo "authtoken --> $auth_token"
echo "org_id --> $org_id"
echo "vdc_id --> $vdc_id"
echo "catalog_id --> $catalog_id"
echo "catalog_item_id --> $catalog_item"
echo "vapp_template_id --> $vapp_template"
echo "vapp_id --> $vapp_id"
```



```

root@ansible-control-server:~/vcd_automation# ./vcd_ids.sh
AuthToken --> 1158e17818864c899c0eb03223be7d0d
Org ID --> a0e8bce1-2de1-4ffc-9dc4-a0a9cee5e18e
VDC ID --> d1326dc5-45eb-4bec-ab37-003c3fc3cc99
Catalogid --> 1ca8e7af-500d-45e9-bd6b-50d844d0086a
Catalog_item_id --> b508934a-7d1f-4365-ac8e-ac371c9f07f7
vapp_template_id -->
vappTemplate-9d069506-a2f1-4172-9f9b-76093841c08c
root@ansible-control-server:~/vcd_automation# █

```

Cloning a vApp

1. Save the following file as **clone**. Edit the values marked in red. Use the vapp_id generated by the shell script and update it in the “<Source href” section.

```

<?xml version="1.0" encoding="UTF-8"?>

<CloneVAppParams xmlns="http://www.vmware.com/vcloud/v1.5"
xmlns:ovf="http://schemas.dmtf.org/ovf/envelope/1" name="name_of_the_vapp" deploy="true"
powerOn="false">

  <Description>Cloned vApp Example</Description>

  <Source href="https://vcloud9apj.infoblox.com/api/vApp/vapp_id_obtained_from_the_shell_script"/>

</CloneVAppParams>

```

2. Execute the following curl command to commence cloning process of an existing vapp.

```

curl -s -i -k -H 'Accept:application/*+xml;version=29.0' -H 'x-vcloud-
authorization:authtoken' -X POST
https://vcd_ip_address_or_fqdn/api/vdc/vdc_id/action/cloneVApp -H 'Content-
Type: application/vnd.vmware.vcloud.cloneVAppParams+xml' -d @clone

```

```

root@ansible-control-server:~/vcd_automation# curl -s -i -k -H 'Accept:application/*+xml;version=29.0' -H 'x-vcloud-au
947d1fc40f67b55d' -X POST https://10.196.200.160/api/vdc/d1326dc5-45eb-4bec-ab37-003c3fc3cc99/action/cloneVApp -H 'Con
vmware.vcloud.cloneVAppParams+xml' -d @clone █

```

3. Post executing the command, login to the vcd gui to verify that a new vapp creation has started or not.

Deploying a vApp from a template.

1. Retrieve the vApp template href link, by executing following curl command.

```
curl -B -k -s -H 'Accept:application/*+xml;version=29.0' -H 'x-vcloud-authorization: authtoken' -X GET "https://vcd_ip_address_or_fqdn/api/query?type=vAppTemplate&fields=name"|grep "template_name"
```

```
root@ansible-control-server:~/vcd_automation# curl -B -k -s -H 'Accept:application/*+xml;version=29.0' -H 'x-vcloud-authorization: b4d4039736514847b7bc21419d1f5ae6' -X GET "https://10.196.200.160/api/query?type=vAppTemplate&fields=name"|grep "IB-Grid-Flex"  
<VAppTemplateRecord name="IB-Grid-Flex" href="https://vcloud9apj.infoblox.com/api/vAppTemplate/vappTemplate-1ad8265a-02fa-4e67-877d-c7a423a6ad34"/>  
root@ansible-control-server:~/vcd_automation#
```

2. Command mentioned in step 1 will return matching template name and its href link(underlined in red). Make a note of this.
3. Run the following curl command against the href link obtained from the previous step. This command will redirect the vapp XML representation to `vApp_template.xml` file.

```
curl -B -k -s -H 'Accept:application/*+xml;version=29.0' -H 'x-vcloud-authorization: authtoken' -X GET "href_link_obtained_from_step_1" >> vApp_template.xml
```

4. Open the `vApp_template.xml` file and make a note of xml elements within `<NetworkConfigSection>` `</NetworkConfigSection>` tag. Skip external network section in case, your vapp template does not have/need external network connectivity.
5. Update the network config section copied from the previous step under `InstantiationParams` section file in the following xml schema and save it as `instantiate_vapp` .

```
<?xml version="1.0" encoding="UTF-8"?>  
<InstantiateVAppTemplateParams  
  xmlns="http://www.vmware.com/vcloud/v1.5"  
  name="name"  
  deploy="true"  
  powerOn="true"  
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
  xmlns:ovf="http://schemas.dmtf.org/ovf/envelope/1"  
  <Description>DDI automation</Description>  
  <InstantiationParams>  
  
    ...network_section...  
  
  </InstantiationParams>  
  <Source  
    href="href_link_obtained_from_step_1" />  
    <AllEULAsAccepted>true</AllEULAsAccepted>  
  </InstantiateVAppTemplateParams>
```

6. After updating network section, xml file should look like this. Change the values in red as per your environment.

```
<?xml version="1.0" encoding="UTF-8"?>
<InstantiateVAppTemplateParams
  xmlns="http://www.vmware.com/vcloud/v1.5"
  name="name"
  deploy="true"
  powerOn="true"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:ovf="http://schemas.dmtf.org/ovf/envelope/1">
  <Description>DDI automation</Description>
  <InstantiationParams>
    <NetworkConfigSection>
      <ovf:Info>Configuration parameters for logical networks</ovf:Info>
      <NetworkConfig
        networkName="mgmt">
      <Description></Description>
      <Configuration>
        <IpScopes>
          <IpScope>
            <IsInherited>>false</IsInherited>
            <Gateway>192.161.2.1</Gateway>
            <Netmask>255.255.255.0</Netmask>
            <SubnetPrefixLength>24</SubnetPrefixLength>
            <Dns1>10.120.3.10</Dns1>
            <IsEnabled>>true</IsEnabled>
            <IpRanges>
              <IpRange>
                <StartAddress>192.161.2.20</StartAddress>
                <EndAddress>192.161.2.80</EndAddress>
              </IpRange>
            </IpRanges>
          </IpScope>
        </IpScopes>
        <FenceMode>isolated</FenceMode>
        <RetainNetInfoAcrossDeployments>>false</RetainNetInfoAcrossDeployments>
        <GuestVlanAllowed>>false</GuestVlanAllowed>
      </Configuration>
      <IsDeployed>>false</IsDeployed>
    </NetworkConfig>
    <NetworkConfig networkName="lan1">
      <Description></Description>
      <Configuration>
        <IpScopes>
          <IpScope>
            <IsInherited>>false</IsInherited>
            <Gateway>172.126.2.1</Gateway>
            <Netmask>255.255.255.0</Netmask>
            <SubnetPrefixLength>24</SubnetPrefixLength>
            <Dns1>10.120.3.10</Dns1>
            <IsEnabled>>true</IsEnabled>
            <IpRanges>
              <IpRange>
                <StartAddress>172.126.2.10</StartAddress>
                <EndAddress>172.126.2.100</EndAddress>
              </IpRange>
            </IpRanges>
          </IpScope>
        </IpScopes>
        <FenceMode>isolated</FenceMode>
        <RetainNetInfoAcrossDeployments>>false</RetainNetInfoAcrossDeployments>
        <GuestVlanAllowed>>false</GuestVlanAllowed>
      </Configuration>
      <IsDeployed>>false</IsDeployed>
    </NetworkConfig>
  </NetworkConfigSection>
  <LeaseSettingsSection
    type="application/vnd.vmware.vcloud.leaseSettingsSection+xml">
    <ovf:Info>Lease Settings</ovf:Info>
    <StorageLeaseInSeconds>172800</StorageLeaseInSeconds>
    <StorageLeaseExpiration>2010-04-11T08:08:16.438-07:00</StorageLeaseExpiration>
  </LeaseSettingsSection>
</InstantiationParams>
<Source
  href="href_link_obtained_from_step_1" />
  <AllEULAsAccepted>>true</AllEULAsAccepted>
</InstantiateVAppTemplateParams>
```

7. Use the following curl command to initiate vApp instantiation from a template.

```
curl -i -k -H 'Accept:application/*+xml;version=29.0' -H 'x-vcloud-authorization:  
authtoken' -H 'Content-Type:  
application/vnd.vmware.vcloud.instantiateVAppTemplateParams+xml' -X POST  
"https://vcd_ip_or_fqdn/api/vdc/vdc_id/action/instantiateVAppTemplate" -d  
@instantiate_vapp
```

```
root@ansible-control-server:~/vcd_automation# curl -i -k -H 'Accept:application/*+xml;version=29.0' -H 'x-  
-vcloud-authorization: ee9231c0ca9342868218200b974b07d6' -H 'Content-Type: application/vnd.vmware.vcloud.  
instantiateVAppTemplateParams+xml' -X POST "https://10.196.200.160/api/vdc/d1326dc5-45eb-4bec-ab37-003c3f  
c3cc99/action/instantiateVAppTemplate" -d @instantiate_vapp █
```



Infoblox is the leader in modern, cloud-first networking and security services. Through extensive integrations, its solutions empower organizations to realize the full advantages of cloud networking today, while maximizing their existing infrastructure investments. Infoblox has over 12,000 customers, including 70 percent of the Fortune 500.

Corporate Headquarters | 2390 Mission College Boulevard, Ste. 501 | Santa Clara, CA | 95054
+1.408.986.4000 | info@infoblox.com | www.infoblox.com



© 2021 Infoblox, Inc. All rights reserved. Infoblox logo, and other marks appearing herein are property of Infoblox, Inc. All other marks are the property of their respective owner(s).