



HPE NFV Director

vCenter Integration Guide

Release 4.2

First Edition

Notices

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Preface

About this guide

This document describes the procedure to integrate vCenter with NFV Director, which includes prerequisites to integrate vCenter with NFV Director, procedure to import vCenter certificate into NFV Director, and discovery utilities.

- Chapter 1: Introduction
- Chapter 2: Discovery using GUI
- Chapter 3: Discovery using command line utility
- Chapter 4: **Error! Reference source not found.**
- Chapter 5: Discovery utilities
- Chapter 6: vCenter Certificates

By following the procedures in this document, vCenter resources can be discovered and integrated with NFV Director.

Audience

This document is any stakeholder requiring to perform resource discovery using the NFV Director, and to create VNFs using the discovered vCenter. Pre requisite is to have knowledge of NFV Director Concepts, and an understanding of the NFV Director Resource model.

Document history

Table 1: Document history

Edition	Date	Description
1.0	November 14, 2016	First edition.
2.0	March 08, 2017	Second edition.

Chapter 1

Introduction

vCenter integration Guide explains the various aspects of integrating vCenter with NFV Director. First step to integrating vCenter is to discover the resources managed by vCenter into NFV Director. Once discovered, NFV Director should be able to create and monitor the VNFs using the vCenter.

This document explains the process to discover a vCenter, steps to import vCenter certificates into NFV Director to enable monitor deployment of the VNFs that are created using those vCenter.

Here is an overview of steps involved in integrating vCenter with NFV Director:

1. Discover the vCenter resources into NFV Director.
2. Import vCenter certificates into HP SiteScope before deploying VNFs using the discovered vCenter.

1.1 Pre requisites

1.1.1 NFV Director Installation and configuration

NFV Director must be successfully installed and configured. Refer to NFV Director Installation and Configuration Guide for detailed instructions.

1.2 Overview of resource discovery

NFV Director is responsible for managing the lifecycle of VNF and it's important for NFV Director to know the complete topology of the vCenter resources.

The complete list of vCenter resource topology is described below.

The Discovery process described in this document helps in automatic discovery of vCenter resources and their inter-relationship.

It is an optional component in the NFV Director.

1.2.1 Architectural View

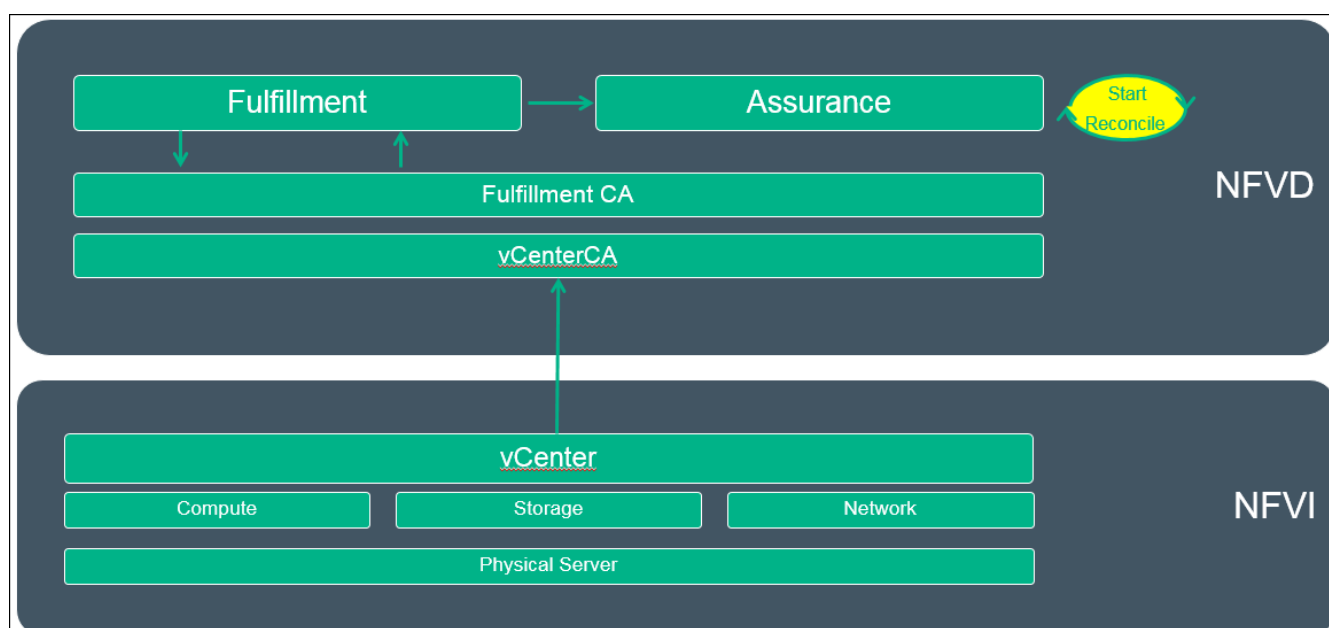


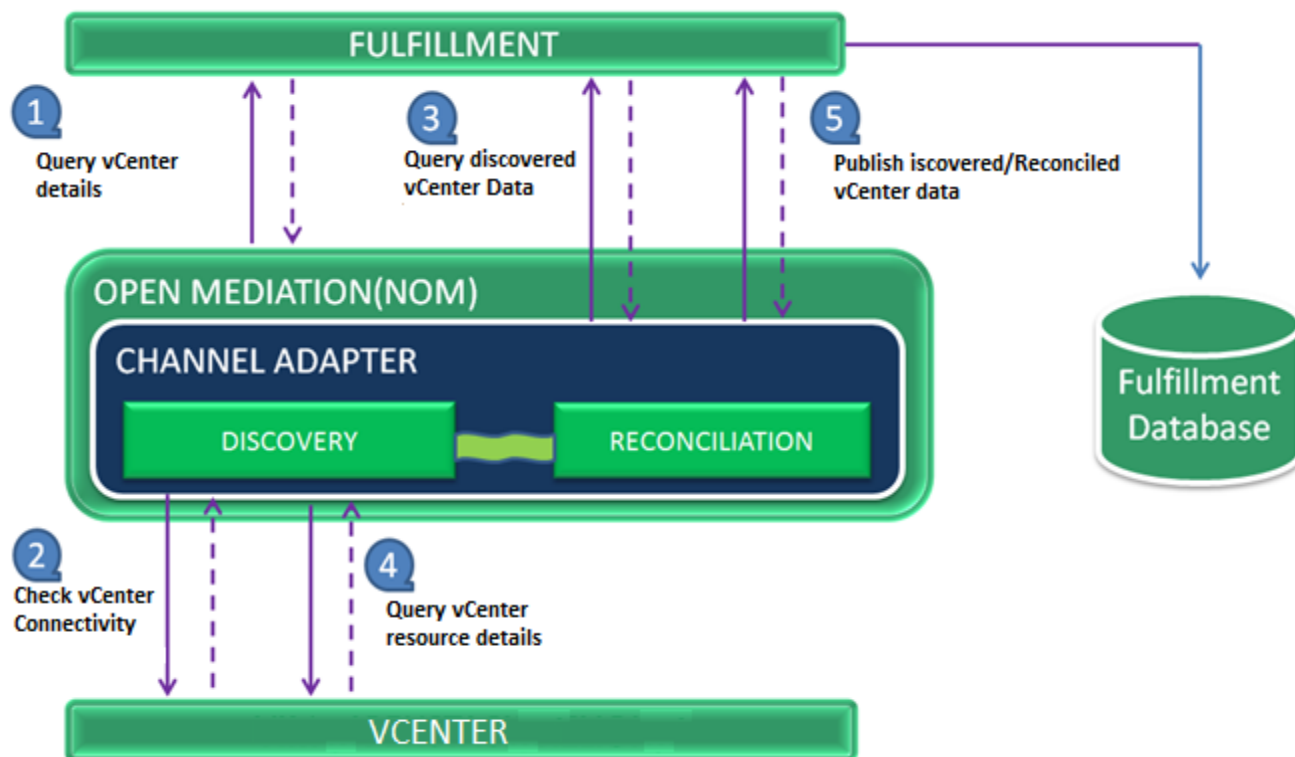
Figure 1: vCenter Discovery Architecture

Discovery process consists of two modules:

Discovery Module: Interacts with vCenter and queries for resource information, and stores the data into NFV Director in artifact-relationship model.

Reconciliation Module: Reconciliation module builds delta information to reconcile. The final data will be prepared and persisted to NFV Director via REST API's.

Below is the pictorial diagram that explains the design approach of NFV Director Discovery.

**Figure 2: vCenter Discovery NFV Director Components**

1.3 Verifying vCenter accessibility

Run the below command to confirm that vCenter is up and running, before proceeding with the discovery operation:

```
wget -v -v https://<vcenter-ip>/sdk/vimService.wsdl
```

1.4 vCenter integration

Once the discovery process is completed, following situations could arise, and may require attention:

1. If vCenter services are https enabled, it is mandatory to import the vCenter certificate into SiteScope before VNF deployment. Else, it would result in monitor deployment failure. See Chapter 6 for details.

Chapter 2 Discovery using GUI

2.1 Discovery APIs

2.1.1 Load Self-Management instances to Fulfillment.


NOTE:

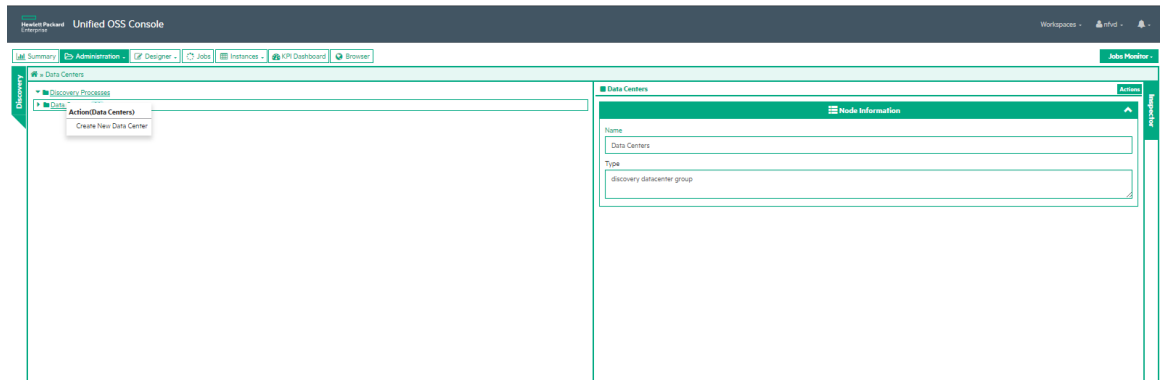
- Auto installer will load this section with default values, In case of any modification required please refer the below section, otherwise ignore the section.
- GUI will invoke Discovery API to perform discovery operations, it's mandatory to load VNF_COMPONENT:OPEN_MEDIATION self-management instances in FF with the appropriate values as given in the below section "Load Self-Management instances to Fulfillment".
- FF-AA sync has to be configured.
- Discovery APIs are invoked through Assurance Gateway, AGW default REST endpoint port is 18080

Required Parameters in VNF_COMPONENT:OPEN_MEDIATION for Discovery API

NFV Director resource attribute	Required value	Remarks
VNF_COMPONENT:OPEN_MEDIATION.CONNECTION.HOST	Hostname	Host name of NOM installed machine (only hostname expected). IP address is not supported
VNF_COMPONENT:OPEN_MEDIATION.CONNECTION.PORT	https: 18999 (default) http: 18989	Discovery API endpoint port
VNF_COMPONENT:OPEN_MEDIATION.CONNECTION.NOMInstanceNumber	0(default)	Nom instance number, depends on which nom is configured. Instance number will be for e.g. 0, 1, 2 ...
VNF_COMPONENT:OPEN_MEDIATION.CONNECTION.useSSL	true/false	True: https False: http
VNF_COMPONENT:OPEN_MEDIATION.GENERAL.IS_PRIMARY	true/false	To indicate Nom instance is primary or not, If its primary discovery will find the Datacenters which does not have the association with VNFC and consider the DC as default DC and discovers the same

2.2 Steps to discover Datacenter using GUI

1. Create a new Datacenter in GUI
 - a. Login as domain user
 - b. Go to "Administration -> Discovery Management" tab.
 - c. Select and right click on "Data Centers" and click on Create new datacenter



- d. Fill-in Datacenter Name
- e. Datacenter Description
- f. Select the appropriate Datacenter Template
 - i. vCenter – NFVO : vCenter in NFVO mode
- g. Click on create

Create Data Center Instance ✕

Datacenter name:
 ✓

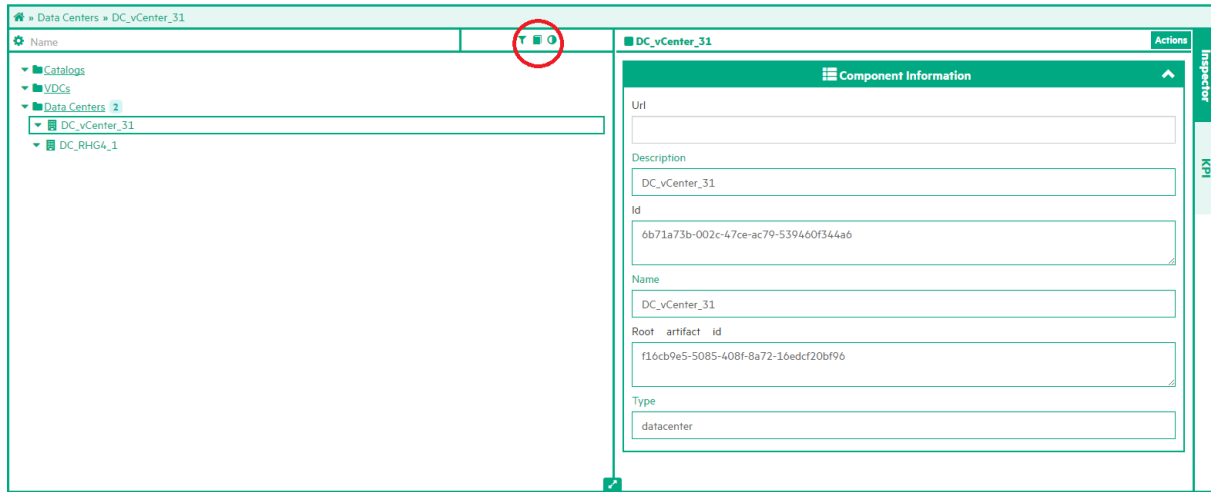
Description:
 ✓

Data Center Templates

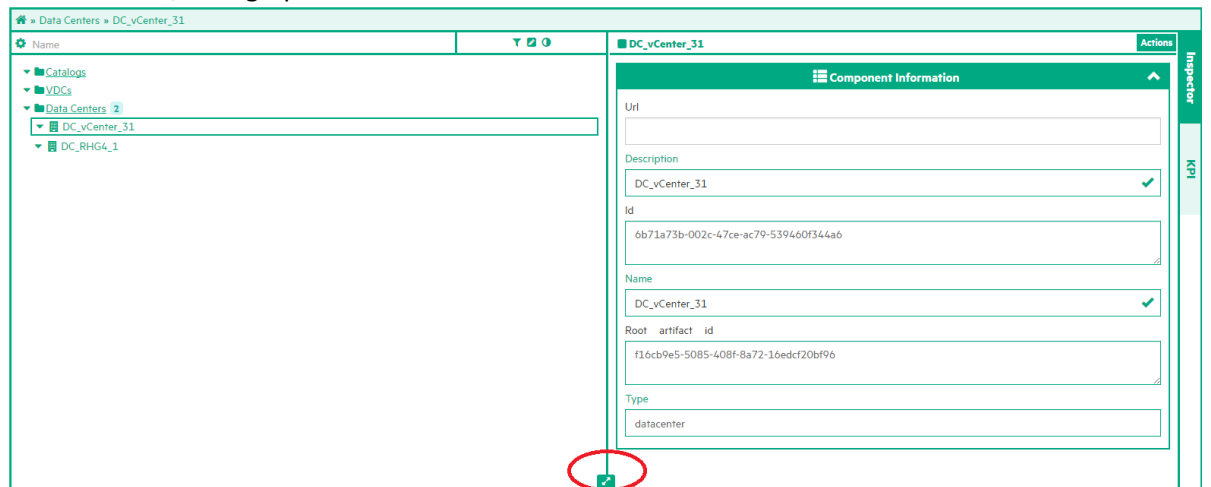
DataCenters	Description	Managed By	
<input type="checkbox"/>			
<input checked="" type="checkbox"/>	vim-helion-VIM_managed	dc with vim-helion	VIM
<input checked="" type="checkbox"/>	vcenter	dc with vcenter	NFVO
<input checked="" type="checkbox"/>	vim-openstack-VIM_managed	dc with vim-openstack	VIM
<input checked="" type="checkbox"/>	vim-helion-NFVO	dc with vim-helion	NFVO
<input checked="" type="checkbox"/>	vim-openstack-NFVO	dc with vim-openstack	NFVO

1 - 5 of 5 items

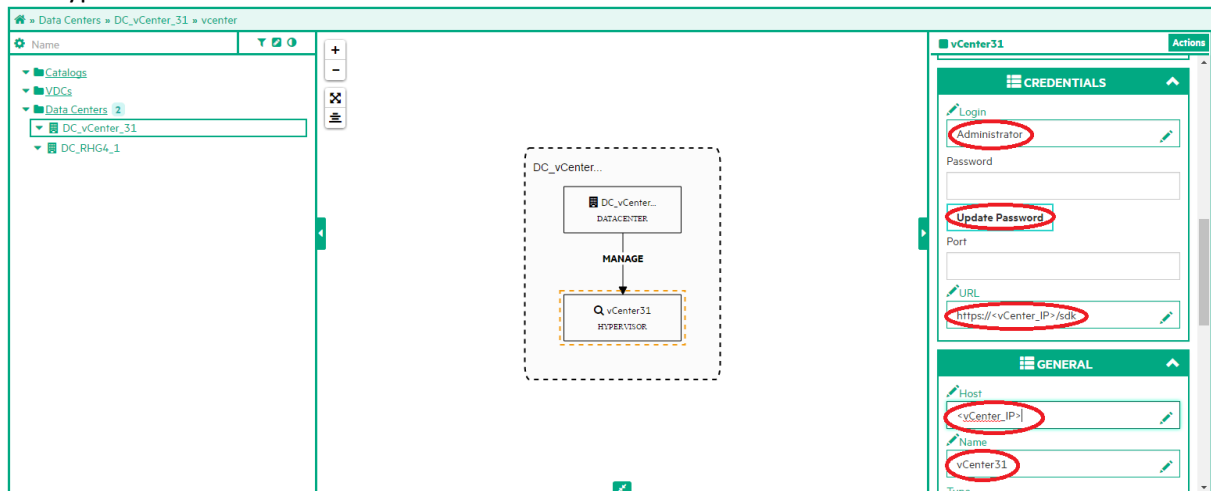
2. Change the hypervisor attributes for the datacenter
3. Go to 'Browser' tab
 - a. Double click the "Data Centers" node to load the new created data center instance
 - b. Select the new created data center instance node
 - c. Click on 'Browse Mode'



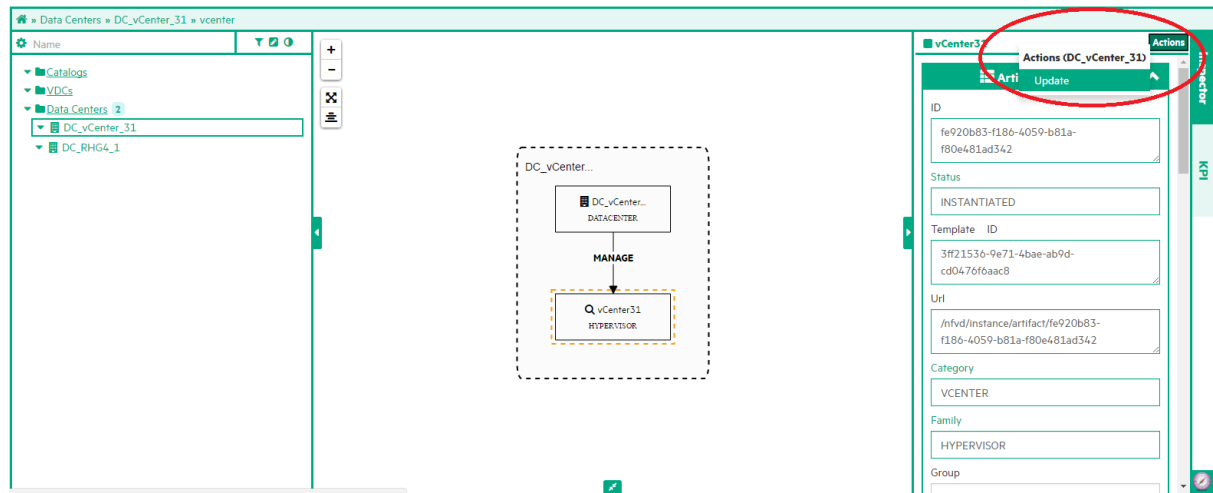
d. Click on Show/Hide graph



e. Fill Hypervisor attributes



f. Click 'Actions' button and select 'Update'



- g. Verify the details and select 'Update'

Update Instance: ✕

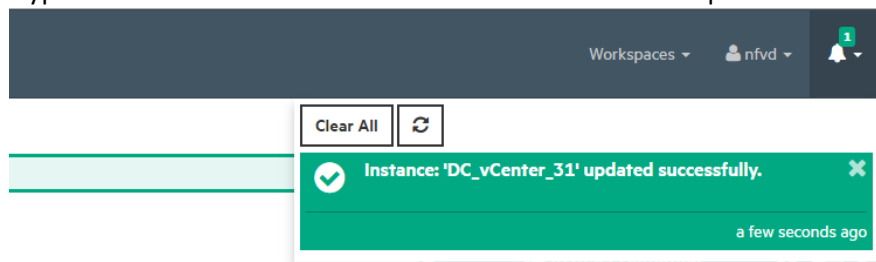
Warning: Unchecked modifications will be lost after update !

Modified Attributes (4):

Element	Attribute	Category	Old Value	New Value	<input checked="" type="checkbox"/>
hypervisor : vcenter	VNF_DESIGNER.LOGIN	CREDENTIALS		Administrator	<input checked="" type="checkbox"/>
hypervisor : vcenter	VNF_DESIGNER.URL	CREDENTIALS		https://15.146.236.31/sdk	<input checked="" type="checkbox"/>
hypervisor : vcenter	VNF_DESIGNER.HOST	GENERAL	host	15.146.236.31	<input checked="" type="checkbox"/>
hypervisor : vcenter	Name	GENERAL	vcenter	vCenter31	<input checked="" type="checkbox"/>

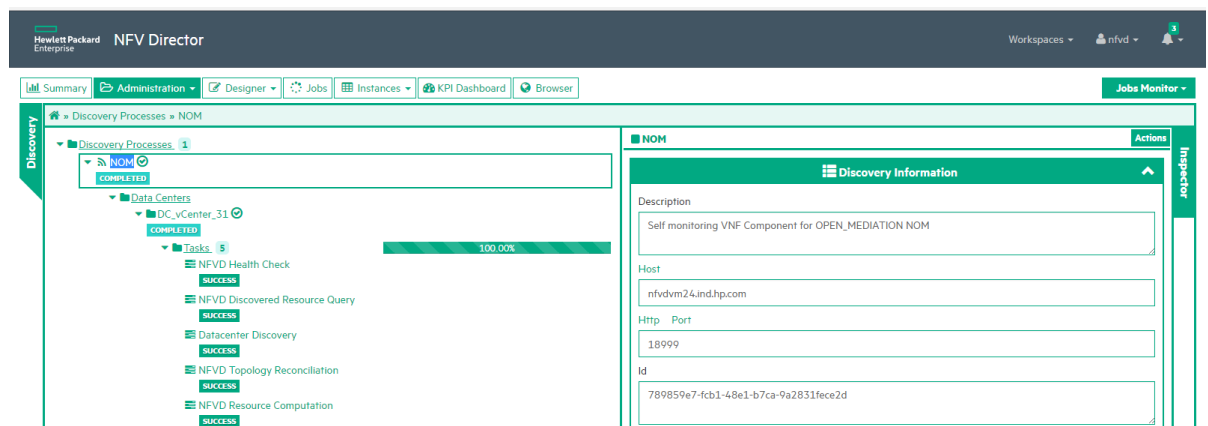
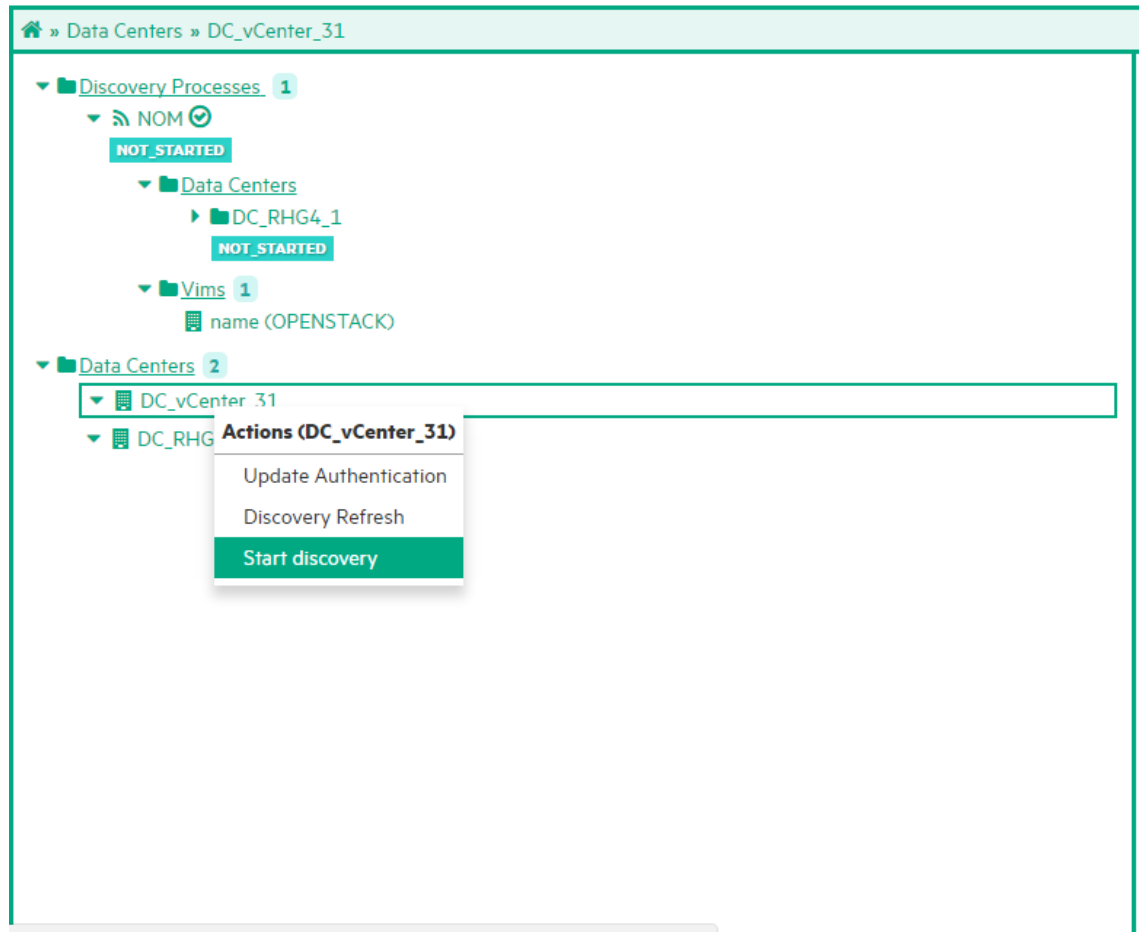
Update
Cancel

- h. Hypervisor attributes for the data center instance will be updated



4. Perform Discovery actions for the newly created Datacenter artifact
 - a. Login as domain user
 - b. Go to "Administration -> Discovery Management" tab
 - c. Click on Datacenter
 - d. Lists the Datacenter instances attached

- e. To trigger discovery on one of the Datacenters, Right click on the Datacenter and click “Start Discovery”



- f. Track the tasks status by clicking on the Tasks menu
- Click on the specific task and refer to the task information on the right side pane
 - Logs – will tell about steps executed in discovery and any ERROR occurred
 - Task Exec status: Status on the task

NFVD Health Check Actions

Task Information

Description
NFVD Health Check

End Time
2017-03-08T16:40:43.259+0530

Logs
08-Mar-2017 04:40:19.743 - [INFO] - [FF-CA] Initial/Incremental Discovery Service Call
Triggered - waiting for southbound ca response

Start Time
2017-03-08T16:40:27.725+0530

Task Exec Status
SUCCESS

Task Id
DISC_HEALTH_CHK

Message
[OS-CA] Initializing Datacenter discovery, datacenter-id: f16cb9e5-5085-408f-8a72-16edcf20bf96,

2.3 Discovery Refresh for a datacenter

1. Select a datacenter instance, and click the “Actions” button, it will show the “Discovery Refresh” menu item

Tips: you can also right click the instance you selected to show the context action menu.

Data Center Management Actions

Name	Description	Managed By
DC_vCenter_31	DC_vCenter_31	NFVO
DC_RHG4_1	DC_RHG4_1	NFVO

Actions menu for DC_vCenter_31:

- Create New Data Center
- Update Authentication
- Discovery Refresh**
- Start Discovery

2. Click this menu item, a dialog will be opened

DC_vCenter_31 On Demand Refresh

Resource Type:
--Please choose an option--

Tenant (Optional):

Region (Optional):

OK **Cancel**

3. Choose the resource type, tenant (optional) and region (optional), then click the “OK” button
4. Discovery refresh for this datacenter instance will be triggered

The screenshot shows the HP Enterprise NFV Director interface. At the top, there is a navigation bar with 'Administration', 'Designer', 'Jobs', 'Instances', 'KPI Dashboard', and 'Browser' tabs. A notification banner at the top right states: 'Discovery refresh started for Network on DC_vCenter_31 a few seconds ago'. Below the notification is a table with the following data:

Name	Description	Managed By
DC_vCenter_31	DC_vCenter_31	NFVO
DC_RHG4_1	DC_RHG4_1	NFVO

Chapter 3 Discovery using command line utility

Triggering the discovery involves two steps:

- Uploading Hypervisor artifact and relationship instances to NFV Director
- Triggering discovery

3.1 Upload HYPERVISOR:VCENTER instance

On: <AA_HOST>

Login: root

vCenter hypervisor details must be populated into NFV Director. By doing this, NFV Director becomes aware of the vCenter URL and credentials details.

Run the following script to populate the DC and HYPERVISOR details

```
/opt/HPE/nfvd/discovery/scripts/discovery_vcenter/nfvd_createHypervisor.sh
```

Usage: nfvd_createHypervisor.sh

```
./nfvd_createHypervisor.sh [-host <FF Host/IP>] [-port <FF Port>] [-hypervisorHost <vCenter_IP>] [-hypervisorName <HYPERVISOR Name>] [-vCenterConnUrl https://<vCenter_IP>/sdk] [-login <Admin User>] [-password <Admin Password>]
```



NOTE: Password provided to 'nfvd_createHypervisor.sh' has to be encrypted.

Password encryption can be done using the below script that is present on <FF_HOST>:

```
cd /opt/HPE/nfvd/fulfillment/scripts/
./encryption.sh -o encrypt -p <password>
```

Where:

MANDATORY:

```
-host          <<Hostname or IPAddress of Fulfillment>>
-port         <<Fulfillment Port>>
-hypervisorHost <<vCenter Host IPAddress>>
-hypervisorName <<Hypervisor Name eg. hypervisorMyName>>
-vCenterConnUrl <<vCenter connection URL eg.https://<ip>/sdk>>
-login       <<vCenter user with administrator privileges>>
-password    << Password for above mentioned user>>
```

OPTIONAL:

```
-nomartifactid <<NOM Artifact Id (default:blank) if not provided,
discovery will be triggered on a default nom>>
```



NOTE: If there are multiple vCenters to be discovered, their respective instances must be uploaded.

3.2 Triggering discovery

Run the following script on <AA_HOST> to trigger discovery of the vCenter instances uploaded in the previous step.

For usage details of the script, refer to **Error! Reference source not found.**



NOTE: For various command line discovery utilities, refer to the “Discovery Utilities” chapter.

3.3 Post Discovery Step: Update PORT:GENERIC

After discovery has been completed successfully, login to NFVD GUI as domain user and edit artifact-instance PORT:GENERIC’s attribute INFO:Dedicated_To from ‘OTHERS’ to ‘VIRTUALIZATION’, for the ports that would be accessible to the Virtual Machines deployed, on each of the Servers.

Chapter 4 NFV Director discovered resources

4.1.1 Discovered resources

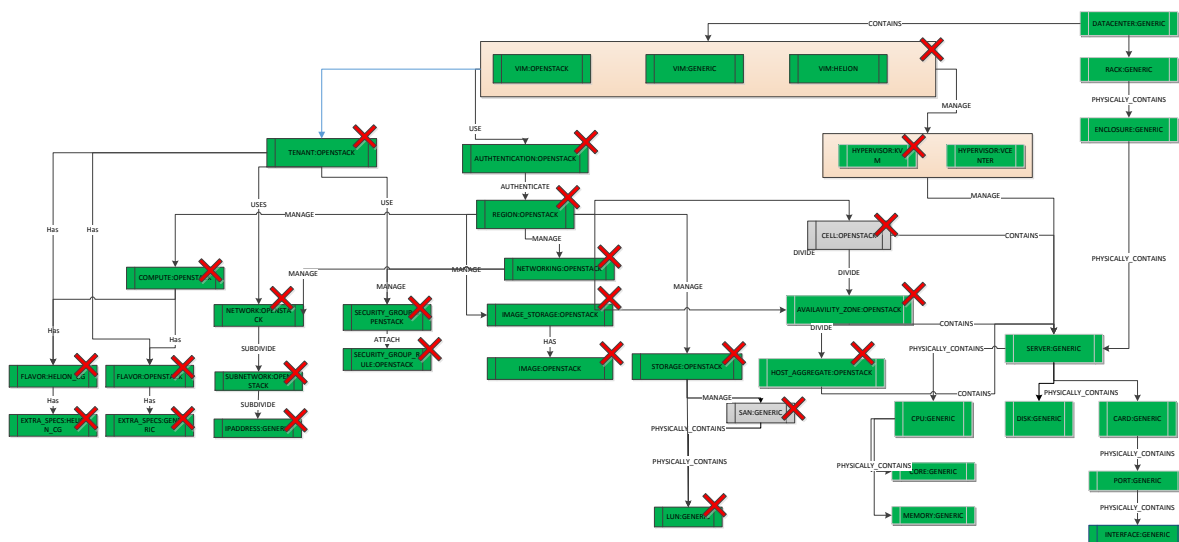
Following resources are auto discovered from vCenter

- SERVER
 - CPU, Memory, Disk, CORE
 - Card, Port, Interface
 - vSwitch:vCenter, Port_Group:vCenter
- Virtual Machine
 - vPort, vCore, vMemory, vDisk

4.1.2 Resources which are not discovered/applicable for vCenter:

Following resources discovered for Openstack are not discovered for vCenter:

- LUN
 - Datastore as a whole is being mapped to 'DISK:GENERIC' (inclusive of internal & external storage)
- Image
- Flavour
- Availability_Zone
- Host_Aggregates
- Region, Compute, Networking, Image_Storage, Storage,
- Network, Subnetwork, IPAddress
- Security_Groups
- VNF/NS
- DCN



4.1.3 Resources with default value

Once discovery operation is complete, some resources are stored in NFVD with default value. Following are the resources and their default values:

NFV Director resource attribute	Default value	Remarks
Policy.OVER_SUBSCRIPTION.OVER_SUBSCRIPTION.Rate	1	

Server.General.Class	Class_A	Class_A or Class_B
Server.General.usage_mode	shared	shared or dedicated
CPU.General.usage_mode	shared	shared or dedicated
PORT.INFO. Dedicated_To	Default: 'OTHERS' for vSwitch=NFVD: 'VIRTUALIZATION'	VIRTUALIZATION or OTHERS
Datacenter.General.Name	datacenter-<Hypervisor IP>	
Rack.General.Name, Rack.General.Type, Rack.General.Description	Static data	
Enclosure.General.Name, Enclosure.General.Type, Enclosure.General.Description	Static data	
Card.General.Name, Card.General.Type, Card.General.Description	Static data	

4.1.4 Updating the resources with default value

4.1.4.1 Updating non-significant resources

For the following NFV Director resources, updating the attributes will not have any impact on the behavior of the solution.

- Policy.OVER_SUBSCRIPTION.OVER_SUBSCRIPTION.Rate
- Datacenter.General.Name
- Rack.General.<Attribute>
- Enclosure.General.<Attribute>
- Card.General.<Attribute>

As an example, in order to update Rack.General.<Attribute>, in the NFV Director GUI, select Instances > Other > RACK, choose the appropriate Rack from the list, choose the Edit Action, edit the attribute, and click on Update button.

The screenshot shows the NFV Director GUI interface. At the top, there is a navigation bar with tabs: Summary, Administration, Designer, Jobs, Instances, and Utilities. Below this, there is a 'Global View' dropdown menu. The main content area displays 'OpenStack' and a 'Virtual Infrastructure' sidebar menu. The sidebar menu includes: Organization:Generic, NS, VNFs, VNF Manager, VDC, and Other. The 'Other' option is selected, and a dropdown menu is open showing a list of resources: Policy, PORT, PROPAGATION_RULE, QUOTA, RACK (highlighted in green), and REDIRECTION_TARGET. The title 'nfvd.domain Summary' is visible in the top right corner of the main content area.

[Home](#) > [Instances](#) > [RACK](#) > Name of the artifact **Actions** ▾

[At a glance](#) [Details](#) [Topology](#) [Browse](#)

[EDIT](#)
[EXPORT](#)

Base information

Name:	Name of the artifact
UUID:	
Family:	RACK
Category:	GENERIC
Group:	
Type:	
Subtype:	
Description:	Description
Vendor:	
Version:	
Creation Date:	2016-07-29 12:32:31
Last Modification Date:	2016-07-29 12:32:31
State:	ENABLED
Status:	

Edit attributes: Name of the artifact ✕

GENERAL **STATUS** **INTEGRATION**

Name:

Type:

Description:

4.1.4.2 Updating resources that affect functionality

PORT.INFO.Dedicated_To will by default be set to 'OTHERS' for vSwitch=NFVD it has to be set to 'VIRTUALIZATION'

In order to update PORT.INFO.Dedicated_To, in the NFV Director GUI:

- a) Select Instances > Other > PORT
- b) Choose the PORT you want to edit from the list
- c) Choose the Edit Action, edit the attribute, and click on Update button

Hewlett Packard Enterprise NfV Director Workspaces nfvd

Summary Administration Designer Jobs Instances KPI Dashboard Browser Jobs Monitor Refresh

VDC

Name	Category	Creation Date
vmnic1	GENERIC	2017-03-08 16:40:50
vmnic0	GENERIC	2017-03-08 16:40:50
vmnic1	GENERIC	2017-03-08 16:40:48

Organization:Generic
NS
VNFs
VNF Manager
VDC
Other

- Organization
- PHYSICAL_MACHINE
- Policy
- PORT**
- PORT_GROUP
- PROPAGATION_RULE
- QUOTA

Total Items: 3

Hewlett Packard Enterprise NfV Director Workspaces nfvd

Summary Administration Designer Jobs Instances KPI Dashboard Browser Jobs Monitor Refresh

Instances PORT vmnic1 Actions

At a glance Details Topology Browse

EDIT
EXPORT

Base information

Name:	vmnic1
UUID:	
Family:	PORT
Category:	GENERIC

Edit attributes: vmnic1

INFO SDN STATUS INTEGRATION

ID:

Name: vmnic1

Type: virtio

Speed: 10

MAC: 14:58:d0:56:2f:54

Position:

Amount:

Dedicated_To: OTHERS

Update Cancel

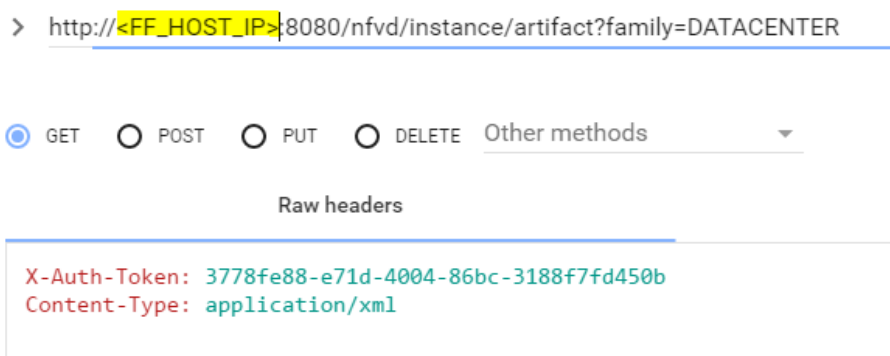
4.1.4.3 Updating resources that require DC quota recalculation

When the following NFV Director Resource attributes are updated, datacenter quota must be recalculated.

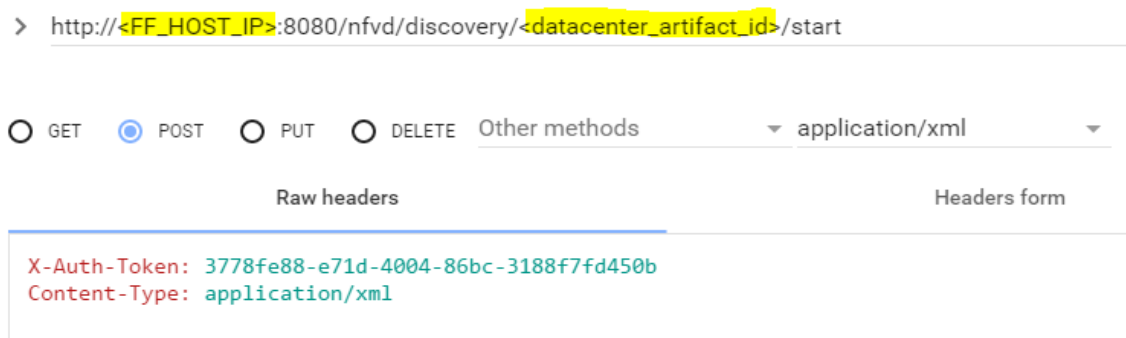
- Server.General.Class
- Server.General.usage_mode
- CPU.General.usage_mode

Follow the below steps:

1. Query the DATACENTER artifact ID from fulfillment server using REST client.



2. Pick the DATACENTER artifact ID from the response body, for which you want to modify the resource.
3. Perform a start of data load by executing the REST request “/nfvd/discovery/<datacenter_artifact_id>/start”.



4. Edit the resources using GUI for which default values were populated by Discovery module. Browse to the respective resource from Instance Menu in GUI and select Edit option from Actions.

As an example, in order to update `Server.General.usage_mode`, in the NFV Director GUI, select Instances > Other > Server, choose the appropriate Server from the list, choose the Edit Action, edit the `General.usage_mode` value, and click on Update button.

Instances > Server > dummy Actions ▾

At a glance Details Topology Browse

EDIT
EXPORT

Raw Attributes INTEGRATION STATUS GENERAL

Attribute Name	Value	Unit	Description
Name	dummy	TEXT	
Type	compute	TEXT	
Description		TEXT	
hostname	dummy	TEXT	hostname
Management_access		TEXT	IP or URL to manage
usage_mode	shared	TEXT	usage mode _ two possible values _ guaranteed or shared
Class	Class_A	TEXT	Server class _ two possible values _ Class_A or Class_B
Model		TEXT	Server _ DL360,DL380...
Managed_by		TEXT	

GENERAL STATUS INTEGRATION

Name:

Type:

Description:

hostname:

Management_access:

usage_mode:

Class:

Model:

Managed_by:

- To recalculate the data center quota, stop the data load by executing the REST request `"/nfvd/discovery/<datacenter_artifact_id>/stop"`.

> http://<FF_HOST_IP>:8080/nfvd/discovery/<datacenter_artifact_id>/stop

GET POST PUT DELETE Other methods ▼ application/xml ▼

Raw headers Headers form

```
X-Auth-Token: 3778fe88-e71d-4004-86bc-3188f7fd450b
Content-Type: application/xml
```

**NOTE:**

Quota calculation time will vary based on number of DATACENTER resources.

6. Login with an Organization or VDC level user in the GUI, and the changes should reflect in Quota management windows.
7. User can now modify the Organization or VDC level quota, as per the need.

Chapter 5 Discovery utilities

5.1 Enabling and Disabling of discovery process

By default discovery is enabled, when NFV Director Discovery components are installed. The following utilities can be run on the <AA_HOST>

5.1.1 Disable discovery even in fresh installation

Execute the below script when you install the fulfillment-ca, before deploying it. By default, the script works in https mode. In case http mode is required, use '-m http' option.

```
cd /opt/HPE/nfvd/discovery/scripts/  
  
sh disable_discovery.sh -m http  
  
Usage: disable_discovery.sh [OPTIONS...]  
-h <<Hostname or IPADDRESS of the machine where Discovery needs to be disabled>>  
-m <<https or http>>
```

5.1.2 Disable discovery temporarily

Execute the below script. Once disabled subsequent Discovery runs will not be triggered. Disabling while discovery in progress will not impact the current run. By default, the script works in https mode. In case http mode is required, use '-m http' option.

```
cd /opt/HPE/nfvd/discovery/scripts/  
sh disable_discovery.sh -m http  
  
Usage: disable_discovery.sh [OPTIONS...]  
-h <<Hostname or IPADDRESS of the machine where Discovery needs to be disabled>>  
-m <<https or http>>
```

5.1.3 Enable Discovery

Execute the below script. By default, the script works in https mode. In case http mode is required, use '-m http' option.

```
cd /opt/HPE/nfvd/discovery/scripts/  
sh enable_discovery.sh -m http  
  
Usage: enable_discovery.sh [OPTIONS...]  
-h <<Hostname or IPADDRESS of the machine where Discovery needs to be enabled>>  
-m <<https or http>>
```

5.1.4 Manual Discovery trigger

Manual discovery can be triggered any time. It will not get triggered when another instance of Discovery is already running. Run the following script to trigger manual discovery. By default, the script works in https mode. In case http mode is required, use '-m http' option.

```
cd /opt/HPE/nfvd/discovery/scripts/  
./trigger_reconciliation.sh -m http  
  
Usage: trigger_reconciliation.sh [OPTIONS...]  
-h <<Hostname or IPADDRESS of the machine where Reconciliation needs to be triggered>>  
-m <<https or http>>
```

5.1.5 Making changes in CA properties

Two Channel Adapters are involved in the vCenter discovery – fulfillment-ca-10 and vcenter-ca-10.

Following are the steps, if you want to make changes in channel adapter properties:

1. disable discovery
2. un-deploy the Channel Adapters
3. make changes to properties
4. deploy Channel Adapters
5. enable discovery



NOTE:

See 5.1.2 for instructions to disable discovery

See 5.1.3 for instructions to enable discovery

Channel Adapter properties can be edited to update the Fulfillment endpoint details, if required.

```
/var/opt/openmediation-70/containers/instance-0/ips/fulfillment-ca-10/etc/config/reconciliation-endpoints.properties
```

Below are the steps to Undeploy and deploy Channel Adapters

```
/opt/open-mediation-70/bin/nom_admin --undeploy-ip-in-container 0 vcenter-ca-10
```

```
/opt/open-mediation-70/bin/nom_admin --undeploy-ip-in-container 0 fulfillment-ca-10
```

```
/opt/open-mediation-70/bin/nom_admin --deploy-ip-in-container 0 vcenter-ca-10
```

```
/opt/open-mediation-70/bin/nom_admin --deploy-ip-in-container 0 fulfillment-ca-10
```

5.1.6 Track Initial/Incremental Discovery completion

Open Mediation log file will have a status message of Discovery:

```
/var/opt/openmediation-70/containers/instance/data/log/servicemix-info.log
```

```
***** [FF-CA] Initial/Incremental Discovery Service has been completed successfully, Quota Calculation is in Progress *****
```

5.2 Enabling and disabling discovery of Virtual Machines

On: <AA_HOST>

Login: root

By default discovery of virtual machines is enabled, when NFV Director Discovery components are installed.

5.2.1 Disable discovery of virtual machines

Execute the below steps.

5.2.1.1 Modify “discover.virtual.topology” property value to false

```
cd /var/opt/openmediation-70/containers/instance-0/ips/vcenter-ca-10/etc/config  
  
vi user-config.properties  
  
#Enable/Disable discovery of virtual topology  
  
discover.virtual.topology =false
```

5.2.1.2 Undeploy and redeploy vcenter channel adapter

```
/opt/open-mediation-70/bin/nom_admin --undeploy-ip-in-container 0 vcenter-ca-10  
  
/opt/open-mediation-70/bin/nom_admin --deploy-ip-in-container 0 vcenter-ca-10
```

NOTE: If disable task has been performed after initial discovery run, already discovered Virtual machines will neither be reconciled nor deleted from NFVD database.

5.2.2 Enable discovery of virtual machines

Execute the below steps.

5.2.2.1 Modify “discover.virtual.topology” property value to true

```
cd /var/opt/openmediation-70/containers/instance-0/ips/vcenter-ca-10/etc/config  
  
vi user-config.properties  
  
#Enable/Disable discovery of virtual topology  
  
discover.virtual.topology =true
```

5.2.2.2 Undeploy and redeploy vcenter channel adapter

```
/opt/open-mediation-70/bin/nom_admin --undeploy-ip-in-container 0 vcenter-ca-10  
  
/opt/open-mediation-70/bin/nom_admin --deploy-ip-in-container 0 vcenter -ca-10
```

Chapter 6 vCenter Certificates

If the vCenter services are https enabled, it is mandatory to import the VIM certificate into SiteScope before any VNF deployment.

6.1 Importing VIM certificate to SiteScope

In order to import vCenter certificate into SiteScope, following is the process:

1. Go to SiteScope Preferences > Certificate Management
2. Click on “Import Certificates” option.
3. Provide the Host IP where vCenter server is installed and the Port. e.g. for vCenter, the port is 443.
4. Click on the ‘Load’ button to load the certificate.
5. Now select the loaded certificate and click on ‘Import’.

Note: Make sure that vCenter certificates valid, i.e. they generated for correct vCenter IP addresses