HP NFV Director

HP NFV Director

Version 3.0

WorkFlows – Reference Guide

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Preface

In this Guide

This guide describes how the workflows work in NFV Director.

Audience

This document is intended for the solution users and system administrators.

Typographical Conventions

`Courier` Font:

- Source code and examples of file contents.
- Commands that you enter on the screen.
- Pathnames
- Keyboard key names

Italic Text:

- Filenames, programs and parameters.
- The names of other documents referenced in this manual.

Bold Text:

- To introduce new terms and to emphasize important words.

Chapter 1

1.1   OpenStack Workflows

In the current version, a unique activation workflow is deployed for each necessary operation. The structure in the workflows is always the same:

Get values from outside

- o   Authentication Values
- o   Activation Values (Server Name, Network UUID)

Add Activation Values inside a HashMap

Invoke the plug-in with those values

- o   Authenticate
- o   Execute concrete operation

Check correct activation

If activation was OK get the OpenStack Response into an object

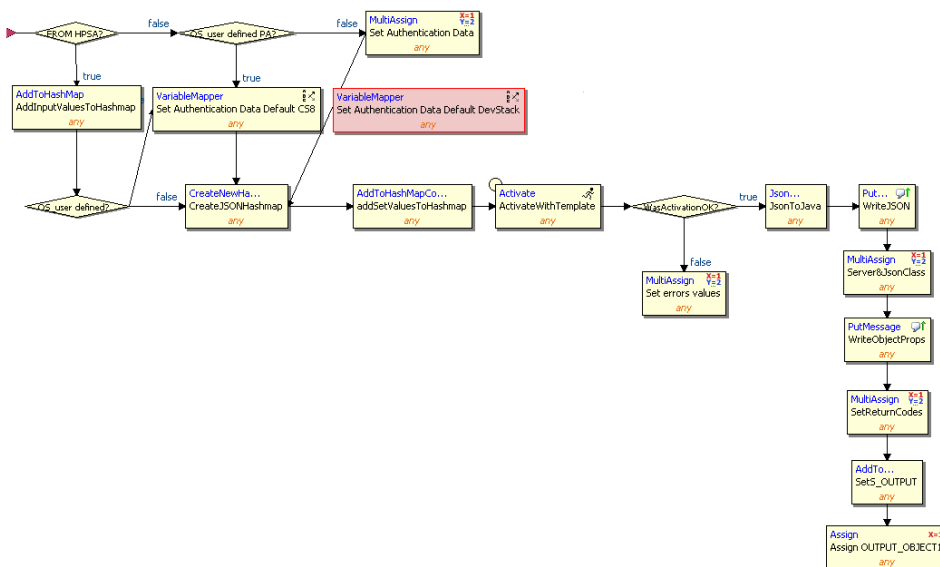Send the object to the workflow caller.

Figure 1 Example: Create Server Workflow

1.2   Workflows supported by NFV Director

HP NFV Director v3.0 introduces in this version new concepts about execution tasks. Similar to assignment rules that defines what can be assigned, now is possible to define execution

rules that will define WHAT will be executed, the order and the parallelization of those tasks.

Also, when using execution rules it is possible to track down how many task have been executed, which ones where executed in parallel and the time consumed for each one.

Next sections list all the Workflows in NFV Director v3.0.

	WorkFlow Name	Description
1	WF_NFVD_ACTIVATE	Activate Virtual Machine
2	WF_NFVD_ACTIVATE_CS8	Activate CS8
3	WF_NFVD_ACTIVATE_HELION	Activate HELION
4	WF_NFVD_ACTIVATE_ICEHOUSE	Activate IceHouse
5	WF_NFVD_ACTIVATE_OPENSTACK	Activate OPENSTACK
6	WF_NFVD_ASSIGN_RESOURCES	Assign Resources
7	WF_NFVD_ASSIGN_RESOURCES_OLD	Assign Resources Old
8	WF_NFVD_ASSIGNMENT	Assignment resources
9	WF_NFVD_ASSIGNMENT_OLD	Assignment resources old
10	WF_NFVD_ASSURANCE_MONITOR	Assurance Monitor
11	WF_NFVD_CREATE_CONNECT_NET_FROM_TEMPLATE	Create a tree of instance artifacts and relationship since a template tree
12	WF_NFVD_CREATE_EXECUTION_TASKS	Create a tree of execution tasks from a definition task tree and ARTIFACT_ID
13	WF_NFVD_CREATE_INSTANCES_FROM_TEMPLATE	Create a tree of instance artifacts and relationship since a template tree
14	WF_NFVD_CREATE_POLICY_INSTANCES	Creation All policies instances Child from a template tree
15	WF_NFVD_CREATE_WITHOUT_CONNECT_NET_FROM_TEMPLATE	Create a tree of instance artifacts and relationship since a template tree
16	WF_NFVD_DEACTIVATE	Deactivate Virtual Machine
17	WF_NFVD_DEACTIVATE_NETWORK_CS8	Deactivate Network CS8
18	WF_NFVD_DEACTIVATE_NETWORK_HELION	Deactivate Network HELION
19	WF_NFVD_DEACTIVATE_NETWORK_ICEHOUSE	Deactivate Network ICEHOUSE
20	WF_NFVD_DEACTIVATE_NETWORK_OPENSTACK	Deactivate Network OPENSTACK
21	WF_NFVD_DEACTIVATE_SUBNET_CS8	Deactivate Subnetwork CS8
22	WF_NFVD_DEACTIVATE_SUBNET_HELION	Deactivate Subnetwork HELION
23	WF_NFVD_DEACTIVATE_SUBNET_ICEHOUSE	Deactivate Subnetwork ICEHOUSE
24	WF_NFVD_DEACTIVATE_SUBNET_OPENSTACK	Deactivate Subnetwork OPENSTACK
25	WF_NFVD_DEACTIVATE_VM_CS8	Deactivate CS8
26	WF_NFVD_DEACTIVATE_VM_HELION	Deactivate HELION
27	WF_NFVD_DEACTIVATE_VM_ICEHOUSE	Deactivate ICEHOUSE
28	WF_NFVD_DEACTIVATE_VM_OPENSTACK	Deactivate OPENSTACK
29	WF_NFVD_DELETE_INSTANCE	Delete instance
30	WF_NFVD_DELETE_TEMPLATE	Delete template
31	WF_NFVD_EXECUTE_TASKS	Task separation
32	WF_NFVD_EXECUTE_TASKS_DO	Check if the query was realized ok
33	WF_NFVD_EXECUTE_TASKS_UNDO	Rollbacks the execution of tasks if any error happens
34	WF_NFVD_INSTANCE_ASSIGNMENT	Result must be empty. Oter response will be interpreter as an error
35	WF_NFVD_INSTANCE_VALIDATION	Result must be empty. Oter response will be interpreter as an error

36	WF_NFVD_NS_ORCHESTRATOR	Network Services orchestration
37	WF_NFVD_NS_PRECONNECT	Network Services preconnect
38	WF_NFVD_POSTPROCESS_ACTION	Postprocess action
39	WF_NFVD_PREPROCESS_ACTION	Preprocess action
40	WF_NFVD_PROCESSING_MONITORS	Processing Monitors
41	WF_NFVD_SCALE_CHANGE_FLAVOR_CS8	Scale change flavor on CS8
42	WF_NFVD_SCALE_CHANGE_FLAVOR_HELION	Scale change flavor on HELION
43	WF_NFVD_SCALE_CHANGE_FLAVOR_ICEHOUSE	Scale change flavor on ICEHOUSE
44	WF_NFVD_SCALE_CHANGE_FLAVOR_OPENSTACK	Scale change flavor on OPENSTACK
45	WF_NFVD_SCALE_IN	Scale IN
46	WF_NFVD_SCALE_OUT	Scale OUT
47	WF_NFVD_SCALE_OUT_AND_CONNECT	Scale OUT and connect
48	WF_NFVD_SCALE_OUT_FROM_TREE	Scale OUT from tree
49	WF_NFVD_SCALE_UPDOWN	Scale UP/DOWN
50	WF_NFVD_SCALE_UPDOWN_ACTIVATION	Scale UP/DOWN Activation
51	WF_NFVD_SCALE_UPDOWN_INVENTORY	Scale UP/DOWN Inventory
52	WF_NFVD_START_SO	Start SO
53	WF_NFVD_START_VM	Start Virtual Machine
54	WF_NFDV_STOP_VM	Stop Virtual Machine
55	WF_NFVD_VALIDATE_RELATIONSHIPS_NS	Validate relationships for Network Services
56	WF_OPENSTACK_REST_GET	Sent get OpenStack request
57	WF_OPENSTACK_REST_POST	Sent post OpenStack request
58	WF_TS_ACTIVATE_NETWORK	Activate Network Task
59	WF_TS_ACTIVATE_NETWORK_HELION	Activate Network Task on Helion
60	WF_TS_ACTIVATE_SUBNETWORK	Activate Subnetwork Task
61	WF_TS_ACTIVATE_SUBNETWORK_HELION	Activate Subnetwork Task on Helion
62	WF_TS_ACTIVATE_VM	Activate Virtual Machine Task
63	WF_TS_ACTIVATE_VM_HELION	Activate Virtual Machine Task on Helion
64	WF_TS_DEACTIVATE_NETWORK	Deactivate Network Task
65	WF_TS_DEACTIVATE_NETWORK_HELION	Deactivate Network Task on Helion
66	WF_TS_DEACTIVATE_SUBNETWORK	Deactivate Subnetwork Task
67	WF_TS_DEACTIVATE_SUBNETWORK_HELION	Deactivate Subnetwork Task on Helion
68	WF_TS_DEACTIVATE_VM	Deactivate Virtual Machine Task
69	WF_TS_DEACTIVATE_VM_HELION	Deactivate Virtual Machine Task on Helion
70	WF_TS_MONITOR_DEPLOY	Deploy Monitor Task
71	WF_TS_MONITOR_START	Start Monitor Task
72	WF_TS_MONITOR_STOP	Stop Monitor Task
73	WF_TS_MONITOR_UNDEPLOY	Undeploy Monitor Task
74	WF_NFVD_VNFM_CREATE_TEMPLATES_FROM_DESCRIPTOR	Create templates from descriptor
75	WF_NFVD_VNFM_DELETE_VNF_MANAGER	Delete VNF manager
76	WF_NFVD_VNFM_DELETE_VNF_MANAGER_GENERIC	Delete VNF manager generic
77	WF_NFVD_VNFM_DO_NOTHING	Do nothing
78	WF_NFVD_VNFM_GET_JSON_GRANT	Get JSON grant
79	WF_NFVD_VNFM_GET_MANAGER_VNF_DETAILS	Get manager VNF details
80	WF_NFVD_VNFM_GET_MANAGER_DETAILS_GENERIC	Get manager details generic
81	WF_NFVD_VNFM_JOB_STATUS_MANAGER	Job status manager

82	WF_NFVD_VNFM_JOB_STATUS_MANAGER_GENERIC	Job status manager generic
83	WF_NFVD_VNFM_REGISTER_MANAGER	Register manager
84	WF_NFVD_VNFM_RELATE_VNF_TO_TENANT	Relate VNF to Tenant
85	WF_NFVD_VNFM_SELECT_TEMPLATE_FROM_DESCRIPTOR	Select template from descriptor
86	WF_NFVD_VNFM_SELECT_VNF_IMPL_MANAGER	Select VNF implement manager
87	WF_NFVD_VNFM_UPDATE_STATUS	Update status
88	WF_NFVD_VNFM_UPDATE_STATUS_GENERIC	Update status generic
89	WF_NFVD_VNFM_VNFDESC_MANAGER	VNF description manager
90	WF_NFVD_VNFM_VNFDESC_MANAGER_GENERIC	VNF description manager generic
91	WF_NFVD_VNFM_CHANGE_FLAVOR	Change Flavor
92	WF_NFVD_VNFM_CREATE_VNF	Create VNF
93	WF_NFVD_VNFM_CREATE_VNF_DESCRIPTOR	Create VNF descriptor
94	WF_NFVD_VNFM_DELETE_VNF	Delete VNF
95	WF_NFVD_VNFM_GET_JOB_STATUS	Get Job status
96	WF_NFVD_VNFM_GET_LIST_ORCHESTATOR_REGISTERED	Get list orchestator registered
97	WF_NFVD_VNFM_GET_VNF_DESCRIPTOR_DETAILS	Get VNF Descriptor details
98	WF_NFVD_VNFM_GET_VNF_DESCRIPTOR_LIST	Get VNF Descriptor list
99	WF_NFVD_VNFM_GET_VNF_DETAILS	Get VNF Details
100	WF_NFVD_VNFM_GET_VNF_LIST	Get VNF List
101	WF_NFVD_VNFM_REGISTER_ORCHESTATOR	Register Orchestator
102	WF_NFVD_VNFM_SCALE	Scale
103	WF_NFVD_VNFM_UNREGISTER_ORCHESTATOR	Unregister Orchestator
104	WF_NFVD_OPENSTACK_Assign_SG	Openstack Interface: Assign Security Group
105	WF_NFVD_OPENSTACK_Assign_Virtual_IP	Openstack Interface: Create Server
106	WF_NFVD_OPENSTACK_Create_Flavor	Openstack Interface: Create Flavor
107	WF_NFVD_OPENSTACK_Create_Floating_IP	Openstack Interface: Activate Floating IP
108	WF_NFVD_OPENSTACK_Create_Network	Openstack Interface: Create Network
109	WF_NFVD_OPENSTACK_Create_Port	Openstack Interface: Create Network
110	WF_NFVD_OPENSTACK_Create_Server	Openstack Interface: Create Server
111	WF_NFVD_OPENSTACK_Create_SG	Openstack Interface: Create Network
112	WF_NFVD_OPENSTACK_Create_SG_Rule	Openstack Interface: Create Network
113	WF_NFVD_OPENSTACK_Create_Subnet	Openstack Interface: Create Subnet
114	WF_NFVD_OPENSTACK_Create_Virtual_IP	Openstack Interface: Create Server
115	WF_NFVD_OPENSTACK_Delete_Flavor	Openstack Interface: Delete Flavor
116	WF_NFVD_OPENSTACK_Delete_Network	Openstack Interface: Delete Network
117	WF_NFVD_OPENSTACK_Delete_Server	Openstack Interface: Delete Server
118	WF_NFVD_OPENSTACK_Delete_Subnet	Openstack Interface: Delete Network
119	WF_NFVD_OPENSTACK_Query_Flavor	Openstack Interface: Query Flavor
120	WF_NFVD_OPENSTACK_Query_Image	Openstack Interface: Query Image
121	WF_NFVD_OPENSTACK_Query_Network	Openstack Interface:

		Query Network
122	WF_NFVD_OPENSTACK_Query_Server	Openstack Interface: Query Server
123	WF_NFVD_OPENSTACK_Query_Subnet	Openstack Interface: Query Subnet
124	WF_NFVD_OPENSTACK_Server_Actions	Openstack Interface: Delete Server
125	WF_NFVD_OPENSTACK_Start_Server	Openstack Interface: Starts a stopped server and set its status to ACTIVE
126	WF_NFVD_OPENSTACK_Stop_Server	Openstack Interface: Stops a running server and set its status to STOPPED
127	WF_NFVD_OPENSTACK_Update_Network	Openstack Interface: Update Network
128	WF_NFVD_OPENSTACK_Update_Server	Openstack Interface: Update Server
129	WF_NFVD_OPENSTACK_Update_Subnet	Openstack Interface: Update Subnet

Table 1 Workflows supported

Automation workflows

2.1 WF_NFVD_CREATE_INSTANCES_FROM_TEMPLATE

2.1.1 General Description

This workflow creates a complete tree of artifact instances from an artifact template tree. This workflow has three child workflow policies:

- WF_NFVD_INSTANCE_ASSIGNMENT
- WF_NFVD_INSTANCE_VALIDATION
- WF_NFVD_CREATE_POLICY_INSTANCES

Three special nodes called policy nodes are available, as the artifact template tree can include three types of policy nodes, each one with its specific functionality:

- POLICY:ENTITY_ASSIGN
- POLICY:VALUE_VALIDATION
- POLICY:ENTIY_RANGE

The first child workflow sets the instance attributes of an artifact indicated by the ENTITY_ASSIGN node and the second child workflow validates those attributes' content. If the validation is incorrect, the instances cannot be created.

2.1.2 Using the Workflow

To launch the workflow, use the following procedure:

1. Right-click the desired template.

   That template defines the parent of the instances tree that is created.

2. From the pop-up menu, select the **Create Instances from Template**.

   On the right-hand side, a form appears.

3. Enter the Parent Instance ID and the Parent relationship type in the text boxes.

4. Click **OK**.

   After some time, the instance tree is created according to the policies.

2.1.3 Results

2.1.3.1 ERRORS

The following list of errors might appear.

- 1001: Parent Artifact with instanceId %INPUT_PARENTARTIFACTID% does not exist in the system.
- 1002: Template ID is a mandatory parameter.

- 1003: TemplateID %INPUT_TEMPLATEID% does not exist.

- 1004: Error Assign Workflow does not run ok.

- 1005: Error Validation Workflow does not run ok.

- 1006: The instance creation was not possible. The validation failed.

- 1007: Error storing relationship. Parent = %INPUT_PARENTARTIFACTID%, child = %VAR_ARTIFACT.Id%, type = %VAR_RELATION.Type%

- 1008: Unexpected error executing child workflow.

- 1009: Error creating policies

- 1010: Unexpected error executing child workflow.

2.1.3.2 Successful Ends

- 0: Workflow ends ok

2.2 WF_NFVD_CREATE_POLICY_INSTANCES

2.2.1 General Description

This workflow is a child workflow of WF_NFVD_CREATE_INSTANCES_FROM_TEMPLATE. The workflow creates the instances of the policy templates in a Create Instance from Template operation.

2.2.2 Using the Workflow

This workflow is automatically launched when the WF_NFVD_CREATE_INSTANCES_FROM_TEMPLATE workflow is running.

2.2.3 Results

2.2.3.1 Errors

- 2001: Unexpected error executing child workflow

2.2.3.2 Successful ends

- 0: Workflow ends ok

2.3 WF_NFVD_INSTANCE_VALIDATION

2.3.1 General Description

Workflow launched inside of the Create Instance from Template execution. It is used to set the attributes of the instances to create according to the policy (POLICY:ENTITY_ASSIGN).

2.3.2 Using Workflow

This workflow is automatically launched when the WF_NFVD_CREATE_INSTANCES_FROM_TEMPLATE workflow is running, only if assigned policies exist.

2.3.3 Results

2.3.3.1 Errors

- 13001: Mandatory input parameter INPUT_TEMPLATEARTIFACTID is not present
- 13002: Mandatory input parameter INPUT_INSTANCEARTIFACTID is not present
- 13003: ERROR Artifact Template with templateId = %INPUT_TEMPLATEARTIFACTID% does not exist in the system
- 13004: Mandatory policy attribute TYPE is not present
- 13005: ERROR Assign workflow do not run OK
- 13006: ERROR Assign Script do not run ok
- 13007: ERROR Java Assignment was not be ok

2.3.3.2 Successful ends

- 0: Workflow ends ok

2.4 WF_NFVD_DELETE_INSTANCE

2.4.1 General Description

This workflow deletes a complete instance tree from the parent to the children.

2.4.2 Using Workflow

To launch it, use the following procedure:

5. Right-click the instance that is the parent of the tree and which should be deleted.
6. Select the **Delete Artifact Instance Tree** from the pop-up menu.
7. Click **OK**.

2.4.3 Results

2.4.3.1 Errors

- 3001: instanceID (mandatory) not present
- 3003: Unexpected error executing child workflow WF_NFVD_DELETE_INSTANCE
- 3004: child workflow error - %wf_ret_error_description%`
- 3005: error deleting instance %VAR_ARTIFACT.Id%
- 3006: ERROR WF_NFVD_ASSURANCE_MONITOR was not run ok
- 3007: ERROR WF_NFVD_DEACTIVATE_VM_CS8 was not run ok%

2.4.3.2 Successful Ends

- 0: Workflow ends ok

2.4.3.3 Warnings

- 0: artifact with instanceID %INPUT_INSTANCEID% not found

2.5 WF_NFVD_SCALE_OUT

In a scenario, where you have 1 Virtual Machine 1 child element (for example, 1 Virtual Core), by launching the Scale-out workflow, you can increase the number of Virtual Cores in an amount indicated by the Range Policy.

2.5.1 Using the Workflow

1. Right-click the instance that you want to increase the amount.

2. Select the **Scale In** option in the pop-up menu.

3. Click **OK**.

2.5.2 Results

2.5.2.1 Errors

- 4001: ArtifactInstanceId is a mandatory input parameter

- 4002: Artifact Instance with instanceId = %INPUT_INSTANCEARTIFACTID% does not exist in the system

- 4003: Scale out operation is only supported for instances created from template. InstanceId = %INPUT_INSTANCEARTIFACTID%

- 4004: Recursive call failed

- 4005: Malformed Template: The number of children of tempalteId = %VAR_TEMPLATE_PR.Id% is not 1

- 4006: Malformed template: parent (%VAR_ARTIFACT_TEMPLATEID%) of the policy (%VAR_TEMPLATE_PR%), must be parent of the OVER Child (%VAR_TEMPLATE_PR_OVER_CHILD%) too

- 4007: ERROR Create Instance From Template WF

- 4008: ERROR Create New Child Relationship

2.5.2.2 Successful Ends

- 0: Workflow ends ok

- 0: OK. SCALE OUT Operation was not possible to do in all artifacts.

2.6 WF_NFVD_SCALE_IN

This workflow is the opposite of the Scale Out operation. In the previous example, to decrease the number of Virtual Cores in an amount indicated by the POLICY:ENTITY_RANGE, launch the workflow over the Virtual Core.

For more information about Policy Range, refer to the NFVD User Guide – Advanced.

2.6.1 Using the Workflow

4. Right-click the instance to be decreased.

5. Select the **Scale In** option.

6. Click **OK**.

2.6.2 Results

2.6.2.1 Errors

- 5001: Mandatory input parameter ArtifactInstanceId is nor present
- 5002: Artifact Instance with instanceId = %INPUT_INSTANCEARTIFACTID% does not exist in the system
- 5003: ERROR Delete Instance From Template WF
- 5004: Recursive call failed

2.6.2.2 Successful Ends

- 0: Workflow ends ok
- 0: Fin flujo OK. SCALE IN Operation was not possible to do in all artifacts.

2.7   WF_NFVD_SCALE_UPDOWN

Talking about of the Virtual Core of the example, suppose that its speed is 2 GHz (this amount is stored in the attribute Amount inside of the INFO Category).

Launching the Scale Up/Down operation it is possible to increase (SCALE_UP) or decrease (SCALE_DOWN) the Virtual Core speed.

2.7.1 Using the Workflow

To launch this operation, right-click on the instance to do the scale and select Scale Up/Down in the pop-up menu. When the form appears on the right-hand side, the empty fields must be filled.

First, choose your operation, typing SCALE_UP or SCALE_DOWN into the field named Scale Operation.

The function of the last field gives the possibility to do the operation over all the tree starting by the instance where you apply the scale. Type TRUE if you want this, otherwise type FALSE.

Finally click **OK** to start the operation.

2.7.2 Results

2.7.2.1 Errors

- 9001: Mandatory input parameter INPUT_INSTANCEARTIFACTID is nor present.