HP NFV Director

HP NFV Director

Version 3.0

Release Notes

Edition: 1.0

For Linux (RHEL 6.6) Operating System

June 2015

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Preface

The Release Notes describe critical information related to the HP NFV Director V3.0 on RHEL 6.6 platform.

Note
Please read this document before installing or using this software.

Audience

Here are some recommendations based on possible audience profiles:

- Solution Developers
- Software Development Engineers

Software Versions

The software versions referred to in this document:

Product Version	Supported Operating systems
HP NFV Director Server 3.0	RedHat Enterprise Linux Server Release RHEL 6.6

Table 1 Software versions

Associated Documents

- *HP NFV Director Installation and Configuration Guide*
- *HP NFV Director User Guide – Overview*
- *HP NFV Director User Guide - Advanced*
- *HP NFV Director Integration Guide*
- *HP NFV Director High Availability Installation and Configuration Guide*
- *HP NFV Director VNF On-boarding Guide*
- *HP NFV Director Sizing Guide*
- *HP NFV Director API Reference Guide*
- *HP UCA Automation Installation Guide*
- OSS Open Mediation Installation and Configuration Guide
- *OM Generic SNMP CA Installation and Configuration Guide*
- *OM SiteScope Customization for Generic SNMP CA Installation and Configuration Guide*
- *OM VMWare ESXi Customization for Generic SNMP CA Installation and Configuration Guide*
- *HP SiteScope Deployment Guide*
- *HP Service Activator Installation Guide*

- HP Unified OSS Console Installation Guide

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.

Support

Visit the HP Software Support Online Web site at https://softwaresupport.hp.com for contact information, and details about HP Software products, services, and support.

The Software support area of the Software Web site includes the following:

- Downloadable documentation.
- Troubleshooting information.
- Patches and updates.
- Problem reporting.
- Training information.
- Support program information.

Features

HP NFV Director provides a common point to ensure consistent management and behavior of VNFs, regardless of the vendor, enabling each VNF to efficiently run on heterogeneous hardware platforms and virtualization environments. The NFV Director automatically manages the end-to-end services across VNF, and network services (NS).

The NFV Director is designed to meet the evolving ETSI specifications for the NFV orchestrator. This orchestrator manages and orchestrates virtual network functions and network services, thus providing a global resource management, and consistently applies global, cross-VNF, and VNF-specific policies.

1.1 NFV configuration

- Supports deploying VNF and NS including PNF interaction with custom extensions.

- Supports VNF and NS Descriptor by using internal OpenXML-based format.

- Supports versioning of NS and VNF—Defined using extensible model with a rich set of pre-defined objects and relationships that can be extended.

- Provides OpenXML-based NS Descriptor that is extensible to support other formats, such as TOSCA.

- Manages NS lifecycle, NS creation, tearing down instances and interaction.

- Supports affinity rules (must, must not) on VNF placement—Extensible to support other policies and policies on other objects.

- Supports multiple versions of the same VNF—Extensible to automatically update existing instances.

1.2 NFV monitoring

This module provides the following features:

- Automatic monitoring of NS, VNFs, and NFV computes infrastructure with correlation across end-to-end NFV topology.

- Automation rules for actions such as scale-in, scale-out, scale-up, and scale-down.

- Configurable and extensible set of pre-defined monitoring templates.

- Extensible to monitor virtual and physical network infrastructure.

- Easy to add or customize monitoring of any SNMP source.

- Extensible complex monitoring rules and thresholds.

1.3 VIM related features

VIM supports the following features:

- Support for OpenStack Havana, IceHouse, Juno and others on demand.

- Support for HP Helion 1.0/1.1.1

- No limitation in terms of number and size of datacenters.

- Affinity rules through the use of resource pools.

- Ability to orchestrate WAN and servers that are not under VIM control.

- Multi-vendor, multi-type VIM through plug-in adaptors. The adaptors can augment VIM capabilities.

- Support for unlimited number of VIMs and underlying virtual resources like VMs and can be from different vendors or of different types.

1.4 VNF Manager

The following features are supported by VNF Manager.

- Provide VNF manager feature or work with external VNFM.

- Embedded VNFM can be extended and configured to automate actions.

- Support for direct (VNFM-VIM) and indirect (NFVO as VIM proxy) interaction model with external VNF managers.

- VIM proxy mode model—NFV Director acts as proxy between VNFM and VIM, allowing greater control.

- Extensible to include VNFM-VIM direct model—The NFV Director grants VNFM permission to use resources. VNFM is responsible for directly interacting with the VIM.

- No industry standards are available for VNFM-NFVO interfaces. Hence, integration might require on-demand creation of a VNFM adaptor.

- Hides multiple VIM and VIM interfaces behind a VIM proxy.

- Exposes OpenStack API to VNF Managers for VNF configuration.

1.5 Event correlation and autonomous action

The event correlation and autonomous action supports the following features:

- Extensible to correlate events from different sources (VNFM, EMS, Physical resources) and take Automatic actions.

- Configurable simple automated actions (like scale-out if CPU > 80).

- Extensible more complex physical-to-virtual topology-based automated actions.

1.6 General

- Simple Pay as you grow model with very low entry price for PoC.

- Carrier-grade

- Scalability—HA and geo-redundant configurations are supported

- Northbound APIs allow Integration with existing OSS.

New Features/Enhancements

Following are the new features/enhancements added into the HP NFV Director V3.0.

- New portal integrated with the HP OSS integration strategy
- Ability to enable NFV analytics (with an extra license)
- Provide a renewed NBI rest API
- Performance improvement
- Execution task configuration
- Tracking improvements
- Basic VIM discovery
- Multi SiteScope support
- Exports collected KPIs and Topology
- Monitor tagging in SiteScope

2.1   New portal integrated with the HP OSS integration strategy

Totally renewed GUI.

2.2   Ability to enable NFV analytics (with an extra license)

Ability to enable analytics module that will be available from the same GUI portal that will provide information about instant usage, average usage and historical usage of your resources

2.3   Provide a renewed NBI rest API

Previous web service interface for data manipulation has been replaced for a more rich and performance REST API

2.4   Performance improvement

Performance of data manipulation and DB operations has been increased and now there is the ability to parallelize several task

2.5   Execution task configuration

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.

2.6   Tracking improvements

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

2.7   Basic VIM discovery

VIM resources discovery such as tenant, VM, network, flavor and zones has been incorporated in this version.

2.8   Multi SiteScope support

A single NFVD setup can have multiple SiteScope instances monitoring infrastructure at different level, like Data Center, Server, VIM etc.

2.9   Exports Collected KPIs and Topology

Information about all the KPI breaches and the topology updates on NFVD are collected as CSV file, which can be used for other application integration, such as Analytics.

2.10 Monitor Tagging in SiteScope

Monitors associated to a particular Data Center and Network Service can be grouped in SiteScope with this feature.

Requirements

This chapter provides hardware and software requirements for installing the NFV Director.

Note

- Single-server setup is recommended only for POC and development environment.

- Distributed setup is recommended for pre-production and production.

- NFV Director can also be installed in multiple distribution modes with products installed in multiple combinations in different systems/VMs.

NFV Director is a Virtual Network function that has several VNF components to perform different functions.

Some of the components work on scale using a particular schema and the others use a different one (depending on the particular needs of each component).
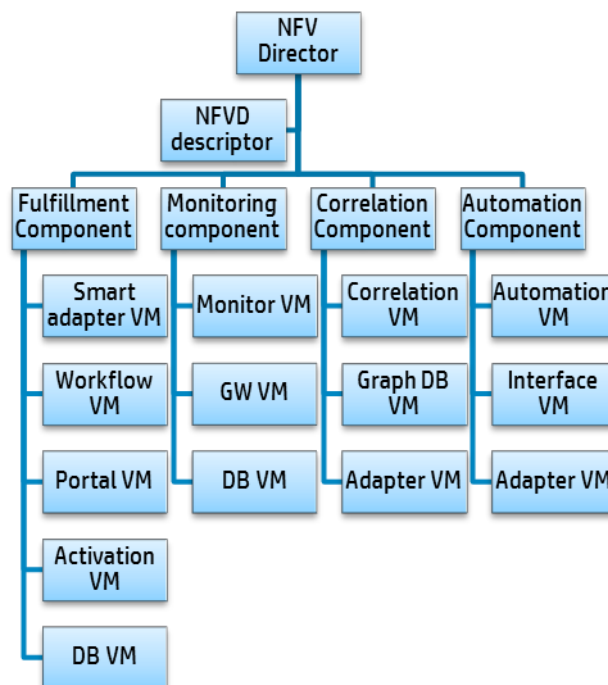

Figure 1 Components of NFV Director

3.1 NFVD Fulfillment

3.1.1 Hardware requirement

The system must meet the following minimum requirements.

- x86-64 platform
- The database system requires room for an Oracle or Postgres plus Advanced Server database instance of at least 2 GB, for Service Activator data.

3.1.1.1 For Single server setup

Components	OS	DB	Server	Core	RAM (GB)	DISK (GB)
HPSA 6.2 EP 6.1 + WSC NFV Director Fulfillment	REDHAT 6.6		VM1 or Blade 1	4 (better 8)	8 (better 16)	140 (better 300)
Fulfillment Database	REDHAT 6.6	Oracle/ PPAS				

Table 2 Fulfillment single server hardware recommendation

The disk space requirements listed above are minimal requirements for Service Activator and NFVD-Fulfillment. Additional disk space may be required for Oracle/Postgres and the Java JDK. To determine minimum disk space requirements for each of these applications, see the pertinent product literature.

3.1.1.2 For distributed server setup

Components	OS	DB	Server	Core	RAM (GB)	DISK (GB)
Fulfillment FrontEnd	REDHAT 6.6		VM1	8	128	320
Northbound Adapters	REDHAT 6.6		VM2	8	128	320
Fulfillment Automation	REDHAT 6.6		VM3	8	128	320
Southbound Adapters	REDHAT 6.6		VM4	8	128	320
Fulfillment Database	REDHAT 6.6	Oracle/ PPAS	VM5	16	256	2000

Table 3 Fulfillment distributed setup hardware recommendation

3.1.2 Software requirement

The following table lists the various software components required for NFVD Fulfillment.

Product	Version	Remark
HP Service Activator	V62-1A	+ Patch V62-1A-5
HP Service Activator Extension Pack	6.1	+ Hotfix EP6.1-2 **NOTE**: Both HPSA EP 6.1 and the hotfix 6.1-2 are available in the NFVD ISO.
Java	SE 6 update 37 JDK or later	**NOTE**: Do not use JDK version 7
RHEL	6.6	And all available patches
Oracle database	11g	Either Oracle DB or PPAS
PPAS database	9.2	Either Oracle DB or PPAS

Table 4 NFVD Fulfillment Software requirements

3.2 NFVD Assurance

3.2.1 Hardware requirement

The system must meet the following minimum requirements.

- x86-64 platform

3.2.1.1 For single server setup

Components	OS	DB	Server	Core	RAM (GB)	DISK (GB)
Monitoring (SiteScope)	Red Hat 6.6					
Correlation & Automation Engine	Red Hat 6.6	Oracle/ PPAS	VM2	4 (better 8)	16	146 (better 300)
Correlation Database	Red Hat 6.6	GRAPH DB Embedded				

Table 5 Assurance single server hardware recommendation

3.2.1.2 For distributed server setup

Components	OS	DB	Server	Core	RAM (GB)	DISK (GB)
Assurance Gateway	Red Hat 6.6		VM1	8	128	320
Monitoring (SiteScope)	Red Hat 6.6		VM2	8	128	320
Correlation and Automation	Red Hat 6.6		VM3	8	128	320

Components	OS	DB	Server	Core	RAM (GB)	DISK (GB)
Engine						
Correlation Database	Red Hat 6.6	GRAPH DB	VM4	16	256	2000

Table 6 Assurance distributed server hardware recommendation

3.2.2 Software requirement

The following tables list the various software components required for NFVD Assurance.

Product	Version	Remark
Assurance Gateway	V3.0	Uses JBoss 7.1.3
Java JRE/JDK	1.7.0.00 (or later)	
RHEL	6.6	And all available patches

Table 7 NFVD Assurance Gateway Software

Product	Version	Remark
HP UCA for EBC	V3.1	+ Patch UCAEBC31SRVLIN_00007
HP UCA for EBC Topology Extension	V3.1	+ Patch UCAEBC31TOPOLIN_00001
UCA Automation Solution	V1.2	+ Patch EBCATM-12LIN-00001
OSS Open Mediation and CA		See Table 9 Open Mediation and Channel Adapters
Java		See Table 9 NFVD Assurance Gateway Software
RHEL		See Table 7 NFVD Assurance Gateway Software

Table 8 UCA Automation software

Product	Version	Remark
OSS Open Mediation	V700	
UCA EBC Channel Adapter	V3.1	
UCA HPSA Channel Adapter	V2.0	
UCA Autoconsole Channel Adapter	V2.0	
Generic SNMP CA	V2.0 Rev B	
SiteScope Customization for Generic SNMP CA	V2.0	
VMware ESXi Customization for Generic SNMP CA	V2.0	
RHEL		See Table 7 NFVD Assurance Gateway Software.

Product	Version	Remark
SiteScope	11.30	

Table 10 SiteScope Software

3.3 NFVD GUI

The specific hardware requirements may vary based on the sizing needed. The system must meet the following recommended requirements. The below recommendation does not consider analytics server.

- x86-64 platform

3.3.1 Hardware requirement

Components	OS	DB	Server	Core	RAM (GB)	DISK (GB)
CouchDB	REDHAT 6.6		VM1 or Blade 1	6	16	100 (better 300)
UOC V2.1.1	REDHAT 6.6					

Table 11 NFVD GUI hardware recommedation

3.3.2 Software requirement

The following table lists the various software components required for NFVD GUI.

Product	Version	Remark
Apache CouchDB	V1.6.0	Available in the UOC V2.1.1 kit
NodeJS	V0.10.38	Available in the UOC V2.1.1 kit
HP Unified OSS Console	V2.1.1	
RHEL	6.6	And all available patches
Graphviz	2.38	http://www.graphviz.org/Download_linux_rhel.php

Table 12 NFVD GUI Software requirements

3.4 Software licensing

Each software mentioned in the *Software Requirements* section should have license. For applying licenses, refer to the individual product installation guides.

3.5 Virtual infrastructure manager and hypervisors

The NFV Director supports through a plug-in extension, any type of VIM and even direct connectivity to hypervisor, although the preferred way (provided out-of-the-box) are any OpenStack VIM.

The NFV Director provides an OpenStack southbound interface (Havana v2 version) that can interface any VIM for supporting that interface.

The NFV director is out-of-the-box multi VIM and selects the VIM depending on the server the VM has been assigned to.

Following Virtual infrastructure Manager and hypervisors are supported:

- HP Cloud System (v8)
- HP Helion
- OpenStack (Icehouse release)
- OpenStack (Juno release)
- VMWare ESXi 5.5
- KVM

Fixed problems

The following problems are fixed in this release since last release.

CR ID	Description
28	OpenStack Memory Monitor does not show any memory_usage data
204	End to end support for physical servers is not currently present in fulfillment.
230	SiteScope requests OpenStack Ceilometer with local zone timestamp
270	Tag based search or filtering in SiteScope Multiview
372	No error is shown, even if self-monitors are deployed with wrong credentials; monitors get deployed but monitoring does not happen
436	Update of deployed OpenStack monitor in assurance is failing at SiteScope level
438	scaleup/down response on UI not proper
439	SCALE_IN removes earlier created VM, and not the latest
458	Orchestration fails if availability zone artifact is not present in the artifact instances
464	All IPADDRESS Artifact must have an Amount of 1. Other values may cause inconsistences between inventory and real IP values.
480	Scale operations are not supported in Network Service
491	Entity range policy with default value>1 set on a VM with networks in template gives out of bounds error

Table 13 Fixed Problems in NFVD 3.0

Known problems

The following problems are found in this release.

CR ID	Description	Workaround
161	Scale-in operation leaves an artficatId group in SiteScope GUI.	Ignore it as it does not have any impact on the functionality.
272	Error in execution when "Image" attribute of VIRTUAL_MACHINE artifact has whitespace.	Do not use space in the Image name.
380	IPAM deployment issue. Script files do not have execute permission.	Manually give +x permission.
744	NFVModel Solution Pack Deploy fails on PPAS	Run the following SQL scripts in the same sequence in etc/sql directory: 03_nfvd_model_create_ppas.sql, 04_nfvd_model_inserts_ppas.sql, populate_catalog_sosa.sql Deploy NFVModel with force option.
742	NFVModel Solution Pack Undeploy fails on PPAS	Undeploy NFVModel with force option. Run the following SQL scripts in the same sequence in etc/sql directory: 02_nfvd_model_delete_ppas.sql, remove_catalog_sosa.sql
743	VNFMANPA Solution Pack Deploy fails on PPAS	Run the following SQL scripts in the same sequence in etc/sql directory: populate-catalog-SOSA.sql, createVNF_preprovision.sql, deleteVNF_preprovision.sql Deploy VNFMANPA with force option.
773	NFVD Landscape XML cannot be loaded using script in non-root setup	Use REST client to load the XML.

Table 14 Known Problems in NFVD 3.0

Known limitations

The following limitations are found in this release.

CR ID	Description
222	Affinity policies Several affinity policies can be applied to different ASSIGNMENT_RELATIONSHIP artifacts, which contain different artifact targets. If several affinity policies are applied to the same artifact, only the first policy is processed and applied, and the rest of the policies are ignored.
224	Assignment Values Policies Each policy assigns values and the last one executed overrides all previous ones, if they interact with the same data.
67	Password is not encrypted in the configuration files.
72	Implement authentication in the web service exposed by Assurance Gateway.
460	Deleting VNF or Network Service does not remove the Network from VIM
479	If an end-to-end process should delete multiple VMs of a VNF, it iterates and tries to delete the VMs, undeploying and stopping the corresponding monitors after deleting the VMs. If undeploying or stopping any of the monitors fails, the workflow returns an error, it stops, and more VMs are not deleted. This results in some VM not getting deleted and the user has to manually invoke from GUI Delete VM operation.
226	Synchronize with Assurance modules In this release, integration with assurance modules is lightly coupled. If fulfillment module creates a VNF instance or a monitor instance on its database, the module notifies the assurance. However, if the notification fails due to loss of connectivity or some other issues, the fulfillment module continues to create VNF and virtual machines and the full replication will be done after connectivity will be restored automatically.
227	Warning messages. In this release, warning messages on some GUI operations are not available. You can use the equivalent Northbound operation to get more information about the errors. You can customize the logs as well.
242	Unable to delete VNF tree if any VM creation fails.
239	Rollback capabilities are limited. NFVD only manages transactionality in sub process. Typically we have: instantiation, assignment and activation.
481	Network Service is restricted to same Tenant
399	Order for triggering POSTPRE_PROCESSING policy should be maintained.
482	Some tasks of VNFM instantiation has to be completed manually: Create relationship between the Manager and Tenants and Resource_Pool Create relationship between instances of templates (descriptors) managed by Manager and Assigment Rules Create a complete Templates for each descriptor

CR ID	Description
483	Parallel activation is not supported.
	Scale up/Scale Down operations are not supported as default services in Helion v1.1.1. Consequently NFVD will not be able to perform these operations on Helion.
	Ceilometer is not supported as default service in Helion v1.1.1. Consequently NFVD will not be able to monitor VNF using Helion. As a workaround NFVD will try to monitor using underlying Hypervisor. So, there is a dependency on monitoring support in Hypervisors.
	Resize from a higher value of virtual disk size to a lower disk size is currently not supported by OpenStack (Juno). Consequently, NFVD will not be able to perform scale down of disk. Reference: https://bugs.launchpad.net/nova/+bug/1353122
	NFVD has not been validated with any vendor VNFM product
	Scales Out and IN over VNFs, are contained inside a Network Service, are not fully supported. Scales operation on this case must be done over the Network Service
552	Orchestration of NS with 1 network and 2 subnets leads to improper network connections
700	SCALE_UP and SCALE_DOWN actions should be supported at VIRTUAL_MEMORY and VIRTUAL_CORE level.
736	SCALE_OUT_AND_CONNECT fails saying template ID not found when a Network is created by Discovery.
769	When a creation of VM gets rolled back, capacity calculation of Analytics is not rolled back.
768	Scale actions not exported to CSV files
757	In NFVD GUI, only 4 lines are displayed in the table when the data contains more than 20 rows
755	Capacity calculations are not working when a scale down happens
516	CREATE_NET does not connect two sub-networks with the same name in templates
550	If there are more than one VNFC/VM under a VNF, Scale up fails if one of the VMs reaches the max scale limit even though there are other VMs that can be scaled up further
556	VNF with networks fails to orchestrate on VIRTUAL_DATACENTER
561	Orchestration of Network Service with VIRTUAL_DATACENTER fails

Table 15 Known Limitations in NFVD 3.0

Deprecations

- Relationship will be restricted ONLY to relationships between artifacts it will NOT be possible to create a relationship between and artifact and an attribute or between an attribute and another attribute

- Previously existing IPAM package has been deprecated as it was not used and was not compliant with NFVD

- GPM is still present but will be deprecated within the next versions of the product to be replaced with and equivalent in the new GUI

- IPaddress artifact is still present but will vary its role in the next version

- VDC artifact is still present but will be deprecated in the next version and only Tenant:Generic will remain

- Old GUI and inventory tree views will be present this version with limited capabilities and will disappear in the next version as they will be fully replaced by the new GUI