
HP NFV Director



HP NFV Director

Version 2.0

Release Notes

Edition: 1.0

For Linux (RHEL 6.4) Operating System

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Preface

The Release Notes describe critical information related to the HP NFV Director V2.0 on RHEL 6.4 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 2.0	RedHat Enterprise Linux Server Release RHEL 6.4

Table 1 Software versions

Associated Documents

- *HP NFV Director Installation and Configuration Guide*
- *HP NFV Director User and Administrator Guide*
- *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 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*

Typographical Conventions

Courier Font:

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

Italic Text:

Filename, 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.
- 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 V2.0.

- Network Service
- Virtual Network Function Manager
- Support for OpenStack Juno, Icehouse, HP Helion
- Provision to perform Pre/Post VM/VNF creation activities
- Self monitoring of NFV Director
- Support for High Availability
- State Change Propagation

2.1 Network Service

Lifecycle Orchestration of Network Service and VNF Virtual Link.

2.2 Virtual Network Function Manager

- Generic or VNF-specific VNF Manager functionality
- Integration with external VNF Manager
 - Support for NFVO-VNFM-VIM interaction model

2.3 Support for OpenStack Juno, Icehouse, HP Helion

- Support for OpenStack Juno VIM
- Support for OpenStack Icehouse VIM
- Support for HP Helion VIM
- Guest OS monitoring via VIM Ceilometer or through KVM or VMWare hypervisors

2.4 Provision to perform Pre/Post VM/VNF creation activities

Ability to execute custom pre- and post- state change routines and scripts.

2.5 Self-monitoring of NFV Director

Monitoring of the NFV Director components such as database server (Oracle/EnterpriseDB), HP Service Activator, UCA-EBC, GraphDB (Neo4J), OM, Assurance Gateway and SiteScope.

2.6 Support for High Availability

NFVD Solution is compliant to High Availability in Active-Passive mode.

2.7 State Change Propagation

State change notifications, generated by VM, VNF, VNFM and NS are appropriately reflected in the NFVD solution.

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).

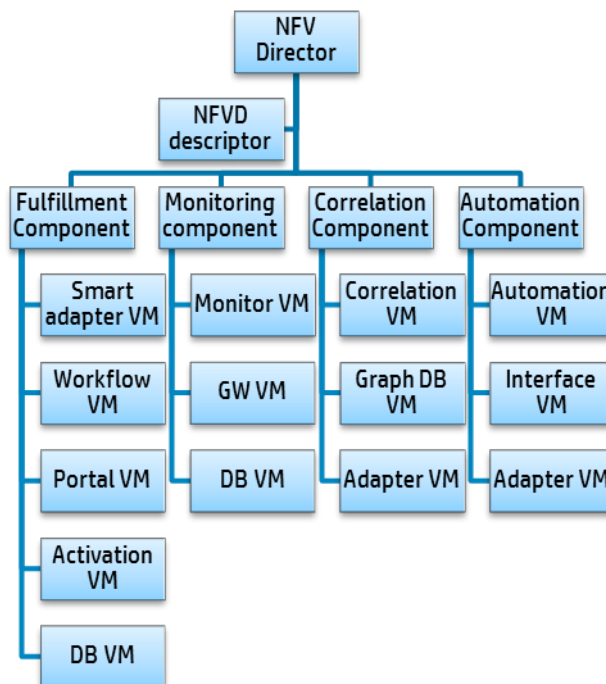


Figure 1 Components of NFV Director

3.1 NFVD Fulfillment

3.1.1. Hardware requirement

3.1.1.1 For Single server setup

The system must meet the following minimum requirements.

- x86-64 platform
- Red Hat Enterprise Linux 6.4
- The database system requires room for an Oracle or Postgres plus Advanced Server database instance of at least 2 GB, for Service Activator data.

Component s	OS	DB	Server	Core	RAM	DISK
HPSA 6.2 EP 6.2 + WSC NFV Director Fulfillment	REDHA T 6.4		VM1 or Blade 1	4 (better 8)	8 (better 16)	140 (better 300)
Fulfillment Database	REDHA T 6.4	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

The specific hardware requirements may vary based on the sizing needed. The system must meet the following recommended requirements:

- x86-64 platform
- Red Hat Enterprise Linux 6.4
- The database system requires room for an Oracle or Postgres Plus Advanced Server database instance of at least 20 GB for Service Activator data.

Component s	OS	DB	Server	Core	RAM (GB)	DISK (GB)
Fulfillment FrontEnd	REDHAT 6.4		VM1	8	128	320
Northbound Adapters	REDHAT 6.4		VM2	8	128	320
Fulfillment Automation	REDHAT 6.4		VM3	8	128	320

Component s	OS	DB	Server	Core	RAM (GB)	DISK (GB)
Southbound Adapters	REDHAT 6.4		VM4	8	128	320
Fulfillment Database	REDHAT 6.4	Oracle/PPAS	VM6	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
Java	SE 6 update 37 JDK or later	NOTE: Do not use JDK version 7
RHEL	6.4	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

3.2.1.1 For single server setup

If all the components of NFVD Assurance are installed on the same system, then the system must meet the following minimum requirements.

- x86-64 platform
- Red Hat Enterprise Linux 6.4

Component s	OS	DB	Server	Core	RAM	DISK
Monitoring (SiteScope)	Embedded		VM2	4 (better 8)	16	146 (better 300)
Monitoring Database (metrics DB)	Embedded	Embedded				
Correlation & Automation Engine	Embedded	Oracle/PPAS				

Components	OS	DB	Server	Core	RAM	DISK
Correlation Database	Embedded	GRAPH DB				
		Embedded				

Table 5 Assurance single server hardware recommendation

3.2.1.2 For distributed server setup

If the different components of NFVD Assurance are installed on disparate systems, see the following subsections for individual system requirements.

Component s	OS	DB	Server	Core	RAM (GB)	DISK (GB)
Assurance Gateway	Red Hat 6.4		VM1	8	128	320
Monitoring (SiteScope)	Red Hat 6.4		VM2	8	128	320
Monitoring Database	Red Hat 6.4		VM3	16	256	2000
Correlation and Automation Engine	Red Hat 6.4		VM4	8	128	320
Correlation Database	Red Hat 6.4	GRAPH DB	VM6	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	V2.0	Uses JBoss 7.1.3
Java JRE/JDK	1.7.0.00 (or later)	
RHEL	6.4	And all available patches

Table 7 NFVD Assurance Gateway Software

Product	Version	Remark
HP UCA for EBC	V3.1	+ Patch UCAEBC31SRVLIN_00005
HP UCA for EBC Topology Extension	V3.1	
UCA Automation Solution	V1.1	
OSS Open Mediation and CA		See Table 9 Open Mediation and Channel Adapters

Product	Version	Remark
Java		See Table 7 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	
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

Table 9 Open Mediation and Channel Adapters

Product	Version	Remark
SiteScope	11.20	+ Patch HPSiS1124_11.24

Table 10 SiteScope Software

3.2.2.1 Software licensing

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

3.3 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	Remarks
202	If Monitor Deployment fails no error message is returned to Fulfillment from Assurance gateway	
275	IP addresses assigned to VMs are different than in the instances	
324	Two range policies under the same parent, fails	
220	Assurance jboss server logs does not have the date details	
109	Error message should be propogated properly back in response.	
238	Remote GraphDB Support for UCA EBC Value Packs	
232	Create tree structure for an instantiated VNF	
268	Change default name for NFVAutomation solution pack to NFVAuto	
297	Unable to activate monitoring on resync	
98	metricsDB does not support Oracle	

Table 11 Fixed Problems in NFVD 2.0

Known problems

The following problems are found in this release.

CR ID	Description	Workaround
59	When uploading artifact definitions XML from GUI, an error message appears even when the artifact definition is successfully uploaded.	Ignore the error message.
161	Scale-in operation leaves an artifactId group in SiteScope GUI.	Ignore it as it does not have any impact on the functionality.
162	Artifact Instance tree does not refresh automatically after a scale-in operation.	Refresh the tree manually.
205	Sometimes, the Inventory tree displays the following error message: <code>Tree cannot be refreshed.</code> This error is a database error from HPSA.	Re-open that specific view.
436	Dynamic update of running/deployed openstack monitor artifact attribute values (like frequency) fails to reflect in SiteScope	Monitor can be manually undeployed/deployed using NFVD web service interface to make the changes effective

Table 12 Known Problems in NFVD 2.0

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.
28	OpenStack Memory Monitor does not show any memory_usage data.
38	Column names are lost when you move to subsequent pages in UCA Automation Console UI.
67	Password is not encrypted in the configuration files.
72	Implement authentication in the web service exposed by Assurance Gateway.
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.
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.

CR ID	Description
272	Error in execution when the Image attribute of the VIRTUAL_MACHINE artifact contains whitespace.
459	Deleting Network Service does not remove its children.
460	Deleting VNF or Network Service does not remove the Network from the VIM.
480	Scale operations are not supported in Network Service
481	Network Service is restricted to same Tenant
458	Orchestration fails if availability zone artifact is not present in the artifact instances.
438	Scale-up and scale-down responses on UI are not correct. It prints null.
399	Order for triggering POSTPRE_PROCESSING policy should be maintained.
380	IPAM deployment issue. Script files do not have execute permission.
372	Errors do not appear even if self-monitors are deployed with wrong credentials; monitors are deployed but monitoring does not happen.
464	All IPADDRESS artifacts must have an Amount of 1. Other values might create inconsistencies between inventory and real IP values.
204	End-to-end support for physical servers is not currently available in Fulfillment.
221	Unable to upload multiple definitions in IE or Firefox standard versions.
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 Assignment Rules Create a complete Templates for each descriptor
483	Parallel activation is not supported.
	Scale up/Scale Down operations are not supported in Helion v1.0. Consequently NFVD will not be able to perform these operations on Helion.
	Helion v1.0 does not support Ceilometer. 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

Table 13 Known Limitations in NFVD 2.0