



HPE NFV Director

Release Notes

Release 4.1.1

First Edition

Notices

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Contents

Notices	1
Preface.....	3
About this guide	3
Audience	3
Reference Documentation.....	3
Document history	3
Chapter 1 Overview of NFV Director features.....	4
1.1 VNF management	4
1.2 NFV monitoring.....	4
1.3 VIM related features	4
1.4 Event correlation and autonomous action	4
1.5 General	5
Chapter 2 Overview of NFV Director software components	6
2.1 Fulfillment.....	6
2.2 Assurance	6
2.3 NFV Director GUI	7
2.4 Components required for NFV Director OpenStack Discovery	7
2.5 Components required for NFV Director integration with OMi and BSMC (Optional Component).....	7
2.6 Components required for NFV Director integration with DCN (Optional Component)	8
2.7 NFV Director Integration with Storage (Optional Component)	8
2.8 Virtual Infrastructure Manager and Hypervisors	8
2.9 High Availability Monitoring solution tool	8
2.10 Supported browsers.....	9
Chapter 3 New Features/Enhancements	10
3.1 Patchability.....	10
3.2 Upgrade.....	10
3.3 User Documentation	10
Chapter 4 Fixed Problems	11
Chapter 5 Known issues in Installation and configuration.....	12
Chapter 6 Known limitations.....	13
Chapter 7 Known problems	14
Chapter 8 Known deprecations	15
Chapter 9 Security Guidance.....	16
Chapter 10 Verifying HPE Signatures.....	17
10.1 Importing HPE public key	17
10.2 Verifying signature	18

Preface

About this guide

The Release Notes describes information related to the HPE NFV Director V4.1.1 on RHEL 6.6 platform.

NFV Director V4.1.1 is a maintenance release that supersedes NFV Director V4.1 release.

Audience

This Release Notes is aimed at Product Users, Solution Architects, System Integrators, Solution Developers, and Software Development Engineers.

Reference Documentation

Table 1: NFV Director User Document

User Documentation
NFV Director Installation and Configuration Guide
NFV Director Administration Guide
NFV Director On-Boarding Guide
NFV Director User Guide
NFV Director NFVD API Guide
NFV Director NFVD Extension API Guide
NFV Director Tracking API Guide
NFV Director Operations API Guide
NFV Director Resource Modeler Guide
NFV Director vCenter Resource Modeler Guide
NFV Director Troubleshooting Guide
NFV Director VIM Integration Guide
NFV Director Performance and Sizing Guide
NFV Director OpenSource and Third-Party Licenses.pdf

Document history

Table 2: Document history

Edition	Date	Description
1.0	14 October 2016	First Edition

Chapter 1

Overview of NFV Director features

HPE 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 VNFs.

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

NFV Director provides orchestration of multi-vendor VNFs across multiple VIMs, multiple sites and multiple organizations providing a single pane of glass to manage resource consumption and quota usage.

1.1 VNF management

- Supports deploying VNF with custom extensions.
- Supports VNF Descriptor by using internal OpenXML-based format.
- 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 VNFs, and NFV compute 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 RedHat OpenStack 7.0
- Support for OpenStack Kilo and others on demand.
- Support for HPE Helion OpenStack Carrier Grade 2.0.
- Support for VMWare vCenter 5.5.
- 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.

1.4 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.

1.5 General

- Northbound APIs allow Integration with existing OSS.

Chapter 2 Overview of NFV Director software components

This chapter provides overview of various software components of the NFV Director. For further details on various software components, refer to NFV Director Troubleshooting Guide “Verifying various product versions”.



IMPORTANT: Please refer to the NFV Director Installation and Configuration Guide, for resource requirements and installation instructions for each of the NFV Director components.



IMPORTANT: NFV Director components are installed on RHEL 6.6 x86_64.

2.1 Fulfillment

The following table lists the various software components that comprise NFV Director Fulfillment.

Table 3: NFV Director Fulfillment

Product	Version
HPE Service Activator	V62-1A
HPE SA Patch	V62-1A-9
HPE SA Extension Pack	6.1
HPE SA EP Patch	EP6.1-4
Oracle Database	11gR2



NOTE:

Oracle Database is not included in NFV Director software release. It is mandatory to have Oracle Database.

2.2 Assurance

Table 4: NFV Director Assurance Gateway

Product	Version
Assurance Gateway	V4.1.1

Table 5: NFV Director UCA Automation

Product	Version
HPE UCA for EBC	V3.1
HPE UCA for EBC Patch	UCAEBC31SRVLIN_00007
HPE UCA for EBC Topology Extension	V3.1
HPE UCA for EBC Topology Extension Patch	UCAEBC31TOPOLIN_00001
UCA Automation Solution	V1.2
UCA Automation Patch	EBCATM-12LIN-00003
Open Mediation and Channel Adapters	See Table 6

Table 6: NFV Director Open Mediation and Channel Adapter

Product	Version
OSS Open Mediation	V700
UCA EBC Channel Adapter	V3.1
UCA HPSA Channel Adapter	V2.0
UCA Autoconsole Channel Adapter	V2.0
Generic SNMP Channel Adapter	V200L01 RevB
SiteScope Customization for Generic SNMP Channel Adapter	V2.0.0 L01 RevC

VMware ESXi Customization for Generic SNMP Channel Adapter	V2.0
--	------

Table 7: NFV Director SiteScope

Product	Version
HPE SiteScope	11.30
HPE SiteScope hotfix	sis1131concurrent_tmpl_deploy_deleteGroupEx.zip

2.3 NFV Director GUI

Table 8: NFV Director GUI

Product	Version
Apache Couch DB	V1.6.0-1
NodeJS	V0.10.40-1
HPE Unified OSS Console	2.2.9
Graphviz	2.38.0-1
OpenSSL	1.0.1e-42

**NOTE:**

Apache Couch DB is not included in NFV Director software release. It is mandatory to have Apache Couch DB.

2.4 Components required for NFV Director OpenStack Discovery

Table 9: NFV Director OpenStack Discovery

Product	Version
OSS Open Mediation	V700
OpenStack Channel Adapter	1.0.0
Fulfillment Channel Adapter	1.0.0
NFVD Fulfillment	See 0
Oracle Database	See 0
UCA HPSA Channel Adapter	See 2.2
LDAP (OpenLDAP/ActiveDirectory)	OpenLDAP V3

2.5 Components required for NFV Director integration with OMi and BSMC (Optional Component)

Table 10: NFV Director integration with OMi and BSM Connector

Product	Version
OSS Open Mediation	V700
CMDB Channel Adapter	1.0.0
UCA HPSA Channel Adapter	See 2.2
OMi Channel Adapter	1.0.0
NFVD Fulfillment	See 0
Oracle Database	See 0
OMi	10.00/01
BSM-Connector	10.00
BSM-C for OneView Management Pack (MP)	

OMi Management Pack for HP Helion Carrier Grade (MP)	
OMi Management Pack for Nuage DCN (MP)	

2.6 Components required for NFV Director integration with DCN (Optional Component)



NOTE: NFV Director was validated with Alcatel-Lucent Nuage DCN, V3.2.1.1.



NOTE: Table “NFV Director Networking” is provided to indicate the NFVD software component requirements for integration with DCN.

Table 11: NFV Director Networking

Product	Version
OSS Open Mediation	V700
NFVD Fulfillment	See 0
SiteScope	See 2.2
OMi	See 2.5
OMi Management Pack for Nuage DCN (MP)	See 2.5
CMDB Channel Adapter	See 2.5
UCA HPSA Channel Adapter	See 2.2
Generic SNMP Channel Adapter	See 2.2
SiteScope Customization for Generic SNMP Channel Adapter	See 2.2

2.7 NFV Director Integration with Storage (Optional Component)



NOTE: NFV Director V4.1.1 discovers HPE 3PAR Storage. LUN monitoring is supported on 3PAR software version 3.2.2 or above.

2.8 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 (Kilo 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:

- HPE Helion OpenStack Carrier Grade 2.0
- OpenStack Kilo
- RedHat OpenStack 7.0
- VMWare vCenter 5.5

2.9 High Availability Monitoring solution tool

NFV Director V4.1.1 delivers an example High Availability solution tool, nfvd-ha-example-04.01.001-1.el6.noarch.rpm. This example tool provides a reference to monitor assurance components.

For more details, refer to NFV Director High Availability Installation and Configuration Guide.

2.10 Supported browsers



NOTE:

Browser	URL
Microsoft Internet Explorer	http://windows.microsoft.com/en-us/internet-explorer/download-ie
Mozilla Firefox	https://www.mozilla.org/en-US/firefox
Google Chrome	https://www.google.com/chrome

NFV Director Component	Browser	Remarks
NFV D GUI	Microsoft IE	10 or later
	Mozilla Firefox	V32 or later
	Google Chrome	V37 or later
HP Service Activator	Microsoft IE	9 or later
	Mozilla Firefox	All latest versions
	Google Chrome	All latest versions
SiteScope	Firefox / IE	
UCA-EBC	Firefox / Chrome	All latest versions
Neo4J	Firefox / Chrome	All latest versions

Chapter 3 New Features/Enhancements

Since it is a maintenance release, no new capabilities have been introduced with NFV Director V4.1.1.

3.1 Patchability

NFV Director V4.1.1 provides the ability to deliver patches on NFV Director components. These patches will be cumulative in nature, and will be applicable for NFV Director V4.1.1 onwards. Patch instructions will be made available along with the patch that will be released in future, and downloadable from SSO support site.

3.2 Upgrade

NFV Director V4.1.1 provides the ability to upgrade from V4.1 software kit to V4.1.1, and from V4.0 software kit to V4.1.1, without data loss. Refer to the NFV Director Installation and Configuration Guide for details on process to upgrade.

3.3 User Documentation

Following are the new User Documents in NFV Director V4.1.1

- Administration Guide – Separated out administrative tasks from the NFV Director Installation and Configuration Guide.
- VIM Integration Guide - Contains details on resource discovery and all steps required to integrate a VIM with NFV Director.
- Performance and Sizing Guide.

API guides are now available in PDF format, as opposed to online version during previous release.

Chapter 4 Fixed Problems

NFV-D V4.1.1 fixes the following problems:

CR ID	Comments
2217	Stock allocated by a domain manager to an organization is not enforced
2441	Limitations on scale-in feature with VNFs having custom monitors.
2347	When scale-out is invoked, new VM has same name as the one in Base Component.
2425	There are corner cases related to job rollback management where virtual network are not visible in VDC Manager but still visible in Openstack.
2434	Use of nfvd_createVIM.sh command line with -discoverTenant option may lead to corrupted discovery.
2440	Deletion of servers in Datacenter is not properly discovered by incremental discovery. This may lead to artifacts still being managed in NFVD but not available anymore as physical resources on datacenter.
2464	No monitors are deployed when added to VNF in VDC Manager before deploying the VNF.
2466	Failure when deploying VNF composed of VNFC (2 VMs) with monitoring.
2496	Failure when deploying VDC in VCenter when ESXi is described with IP address.
1268	Restrict access to VIM credentials to only those roles which require it
1486	Not able to buy resources across the summary in the shop
2347	SCALE_OUT gets VM Name from base component instead saved template
2410	VNF without heal policy cannot do heal operation
2465	ERROR message displayed when starting GUI services on a Japanese environment
2492	When you login with a organization user and then enter the "Organization management", we get an status code "403"
2507	Job Management displays more details about a job task
2517	ScaleIn does not work when manually invoked from the UI
2541	nfvd-director.sh stop command not show correct status of stopped sitescope
2546	VNF Designer – drag and drop a VNF component doesn't work in left area
2547	Order of VM ethX ports in VNF designer is random
2549	New user email should contain the Organization
2558	Popup window does not auto-close after auto generating a new password.
2561	Does not hide "reset" button when calculate the md5 progress has begun in the action of "create image"
2577	Error in SET_QUOTA Template in VDC activation (>Kilo)
2586	The API of get image visibility is not working
2588/2590	VNF deployment fails when emailing VM credentials
2630	The organization does not have a "DC" when you create a new org even if you select a "datacenter" before creating
2873	Virtual Network template does not allow modification of Network type, Physical Network and Segmentation ID
2875	Wrong templates names for the Port Query workflow

Chapter 5 Known issues in Installation and configuration

After installing NFV-D V4.1.1 software kit, you must apply the instructions listed below for the software to run properly.

CR	Comments
2939 2940 2943 2944	<p>Description:</p> <p>Configurations not updated after UCA Automation patch upgrade.</p> <p>Customer Impact:</p> <p>Closed loop actions on alarms will not work.</p> <p>Workaround:</p> <p>On <AA_HOST> Login: root</p> <ol style="list-style-type: none"> Update UCA Automation version in Orchestra Configuration <ol style="list-style-type: none"> Edit /var/opt/UCA-EBC/instances/default/conf/OrchestraConfiguration.xml. Replace instances of the string "UCA_Automation_Foundation_UCA-V1.2.1-1A" with "UCA_Automation_Foundation_UCA-V1.2.3-1A" Update UCA Automation version in UCA EBC properties <ol style="list-style-type: none"> Edit /var/opt/UCA-EBC/instances/default/conf/uca-ebc.properties Replace instance of the string "UCA_Automation_Foundation_UCA-V1.2.1-1A" with "UCA_Automation_Foundation_UCA-V1.2.3-1A" Update UCA Automation version in Channel Adapter <ol style="list-style-type: none"> Edit /var/opt/openmediation-70/ips/uca-autoconsole-ca-20/etc/config.properties Replace instance of the string "UCA_Automation_Foundation_UCA-V1.2.1-1A" with "UCA_Automation_Foundation_UCA-V1.2.3-1A" Update ActionRegistry <ol style="list-style-type: none"> Run: grep "action-service" /var/opt/openmediation-70/containers/instance-0/ips/uca-ebc-ca-3.1/etc/uca-ebc-ca.properties and retrieve <SERVICE_HOST> and <SERVICE_PORT> Edit /var/opt/UCA-EBC/instances/default/conf/ActionRegistry.xml Locate entry: <MediationValuePack MvpName="nfvd_source" MvpVersion="1.0" <p>And replace line hereunder by:</p> <pre>url="http://<SERVICE_HOST>:<SERVICE_PORT>/uca/mediation/action/ActionService?WSDL"</pre> Redeploy UCA Automation CA: <ol style="list-style-type: none"> /opt/openmediation-70/bin/nom_admin --undeploy-ip-in-container uca-autoconsole-ca-20 /opt/openmediation-70/bin/nom_admin --deploy-ip-in-container uca-autoconsole-ca-20 Restart UCA EBC: /opt/HPE/nfvd/bin/nfv-director.sh -c uca-ebc restart

Chapter 6 Known limitations

CR ID	Comments
2001	<p>Description:</p> <p>Only virtual machines deployed by NFV Director on controlled VIM can be managed.</p> <p>Customer Impact:</p> <p>Control of the VIM (thru quota management, catalog management) is limited. NFV Director cannot get the virtual machine resources utilized in the VIM, If the virtual machine is not deployed/managed by NFVD.</p> <p>Workaround:</p> <p>Make sure that all virtual machines deployed on VIM are deployed by NFV Director.</p>
2385	<p>Description:</p> <p>Management of external storage is limited to use of a pre-defined list of Cinder volume types, which have to be explicitly created on Openstack VIM:</p> <ul style="list-style-type: none"> • Vmware-Quality-A • Kvm-Baremetal-Quality-A • Vmware-Quality-B • Kvm-Baremetal-Quality-B • All-vs-Quality-C <p>Other Cinder volume types defined in VIM are discovered by NFV Director but cannot be used for external storage.</p> <p>Customer impact:</p> <p>VIM IT Admin needs to comply with volume types pre-defined by NFV Director.</p> <p>Workaround:</p> <p>None.</p>
	Baremetal servers are modeled as physical machines, baremetal cannot be deployed.
2690	VNF Firewall deployment failed with errors raised on attach_service_net task
2734	Changes done under instances menu is not reflected into browser
2738	Changing info on VM template through browser leads losing this template in VNFC designer
2822	UI does not refresh the list of datacenters available
2918	Unable to deploy a VM based on standard template : resource assignment error
2922	Deploying a VM with more than 2 monitors triggers only one KPI in SiteScope and in NFVD portal
2924	Monitor with close-loop mode and Type E-mail does not work
2930	Deployment fails with error "Updating extra specs not permitted when flavor is associated to one or more valid instances" but the flavor is not used
2934	Scale up failed because of max reached on core, memory is not at max and the value of amount for memory have change
2879	NFVD does not allow to model and deploy VNFs using / booting from Cinder volumes.

Chapter 7 Known problems

CR ID	Comments
2205	<p>Description:</p> <p>When using "Delete Image" action to delete image, image is deleted from NFV Director portal but remains on file system.</p> <p>Customer impact:</p> <p>Housekeeping of file system is not automatic and requires to be done by explicitly removing file on file system. Impact is minor as long as there is still enough space on file system.</p> <p>Workaround:</p> <p>On NFV-Director Virtual Machine Fulfillment/GUI, login as root:</p> <p>Remove unused images from file system in: <code>/var/opt/uoc2/server/public/addons/plugins/nfvd_portal/image_repository</code></p>
2680	Non explanatory error message is thrown when you try to execute a work over an element which already has a job running over it (on running or error status)
2909	Using NFVD Resource Modeler, some errors may happen when exporting a TLD to xml format
2690	VNF Firewall deployment failed with errors raised on attach_service_net task Note: Fix will be available in next release.
2905	Scale up on VNF which already reached the max memory/core failed but act like scale down on core/memory value. Note: A patch will be available shortly to fix the issue. Please contact OSS Support team for details.
2910	attribute INSTANTIATE.Enable_dhcp of SUBNETWORK:GENERIC attribute must be visible in Virtual Link component Note: A patch will be available shortly to fix the issue. Please contact OSS Support team for details.
2911	NO_GATEWAY option in Virtual Link do not end with no gateway configured in Openstack Note: A patch will be available shortly to fix the issue. Please contact OSS Support team for details.
2912	SRIOV virtual ports cannot be connected to non-physical networks Note: A patch will be available shortly to fix the issue. Please contact OSS Support team for details.
2938	Scale down on VNF which already reached the min memory/core failed but acts like scale up on core/memory values Note: A patch will be available shortly to fix the issue. Please contact OSS Support team for details.
2942	Closed-loop operation with scaleout type is not working Note: A patch will be available shortly to fix the issue. Please contact OSS Support team for details.
2973	adding a monitor to an instance in VDC Manager before deploying the instance do not deploy the montior when deploying the VNF Note: A patch will be available shortly to fix the issue. Please contact OSS Support team for details.
2984	Typo in informative logs displayed on standard output when installing FF patch Note: A patch will be available shortly to fix the issue. Please contact OSS Support team for details.

Chapter 8 Known deprecations

- Load Balancer feature is deprecated in 4.1.1 and will not be available from next versions.

Chapter 9 Security Guidance

The following recommendations have been identified for NFV Director V4.1.1:

CR ID	Comments
1267	<p>Description: Confidential data (passwords in clear text) and non-confidential data is mixed in a configuration file. While access to the file is protected by operating system file access permissions care should however be taken if the configuration file is copied to avoid unintentional exposure of confidential data.</p> <p>Where:</p> <ul style="list-style-type: none"> • /opt/HPE/nfvd/tpp/jboss/standalone/configuration/standalone.xml, datasource block “assurance-DS”. <p>Recommendation: Secure all backups and copies made of the above file.</p>
2736	<p>Description: During initial user creation and registration generated initial user passwords are sent in clear text in emails.</p> <p>Recommendation: Change the password after the first login in the solution. In order to change the password please consult the “NFV Director Troubleshooting guide”, sub-chapter “2.6 troubleshooting Auto-generated passwords”, or the “NFV Director User Guide”, in the sub-chapter “4.1.2 User Password Reset”</p>



NOTE: Refer to the HPE NFV Director Installation and Configuration Guide section 3.3 “Configure the NFVD API to support https” setup NFV Director in HTTPS mode.

Chapter 10 Verifying HPE Signatures



NOTE:

- If you do not already have GnuPG installed, you will have to download and install it. For information about obtaining and installing GnuPG, see <http://www.gnupg.org>
- The wget utility may not be available in the system by default. Install it using yum install

NFV Director components are digitally signed and accompanied by a set of GnuPG keys.

On: <INSTALLER_HOST>

Login: root

10.1 Importing HPE public key

Perform the following steps to import the HPE public key needed for verifying the integrity of the delivered product:

- Create a directory where the HPE public keys will be stored:

```
# mkdir -p signcheck
```

- Download the compressed HPE GPG Public Key, and extract the keys:

```
# cd signcheck
# wget -P signcheck/ https://ftp.hp.com/pub/keys/HPE-GPG-Public-Keys.tar.gz
```

- Uncompress and extract the file content in signcheck directory

```
# gunzip HPE-GPG-Public-Keys.tar.gz
# tar xvf HPE-GPG-Public-Keys.tar
```

We get a list of HPE Public Certificates.

- Run the gpg import command to import the public certificate 2BAF2262.pub:

```
# gpg --import signcheck/2BAF2262.pub
```

- Configure level of trust for the imported key:

```
# gpg --edit-key 2BAF2262

gpg (GnuPG) 2.0.14; Copyright (C) 2009 Free Software Foundation, Inc.
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.
pub 2048R/2BAF2262 created: 2015-12-10 expires: 2025-12-07 usage: SCEA
trust: unknown validity: unknown
[ unknown] (1). Hewlett Packard Enterprise Company RSA-2048-14 <signhp@hpe.com>
Command> trust
pub 2048R/2BAF2262 created: 2015-12-10 expires: 2025-12-07 usage: SCEA
trust: unknown validity: unknown
[ unknown] (1). Hewlett Packard Enterprise Company RSA-2048-14 <signhp@hpe.com>
Please decide how far you trust this user to correctly verify other users' keys
(by looking at passports, checking fingerprints from different sources, etc.)

1 = I don't know or won't say
2 = I do NOT trust
3 = I trust marginally
4 = I trust fully
5 = I trust ultimately
m = back to the main menu
Your decision? 5
```

```

Do you really want to set this key to ultimate trust? (y/N) y
pub 2048R/2BAF2262 created: 2015-12-10 expires: 2025-12-07 usage: SCEA
trust: ultimate validity: unknown
[ unknown] (1). Hewlett Packard Enterprise Company RSA-2048-14 <signhp@hpe.com>
Please note that the shown key validity is not necessarily correct
unless you restart the program.
Command> quit

```

10.2 Verifying signature



NOTE: Repeat the below steps for the following packages:

```

HP_SiteScope_11.30_for_Linux_64bit_T8354-15016.zip
NFVD Resource Modeler-win32.win32.x86_64.zip
NFVD411_BaseProduct.tar
NFVD411_Software.tar
nfvd-ha-example-04.01.001-1.el6.noarch.rpm
nfvd-installer-04.01.001-1.el6.noarch.rpm
sis1131concurrent_templ_deploy_deleteGroupEx.zip

```



NOTE: `<package_name>.sig` files are usually located under Signature directory at the same level as NFV Director deliverables.

- Run the gpg verify command to verify the signature file

```
# gpg --verify <package_name>.sig <package_name>
```

- If signature verification completed successfully, the command output will contain the following lines:

```

gpg: Signature made <DATE> using RSA key ID 2BAF2262
gpg: Good signature from "Hewlett Packard Enterprise Company RSA-2048-14 <signhp@hpe.com>"

```