HP NFV Director



HP NFV Director

Version 1.0

Installation Guide

Edition: 1.1

For the Linux (RHEL6.4) Operating System

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Preface

This manual describes the pre-installation requirements and provides the installation instructions for Network Function Virtualization Director (NFVD). It also encompasses the configuration and management guide.

Intended Audience

The audience for this guide is the System Integrators (SI). System Integrators must have the knowledge of HP UCA Automation, NOM, Sitescope, HPSA, Oracle/EnterpriseDB, VMware, KVM, OpenStack, and Cloud System.

Software Versions

The term UNIX is used as a generic reference to the operating system, unless otherwise specified.

The software versions referred to in this document are as follows:

Product Version	Supported Operating sys- tems
HP NFV Director 1.0	RHEL Release 6.4

Table 1 Software Versions

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.

Associated Documents

The following documents contain useful reference information:

References

- HP UCA Automation V1.0 Installation Guide
- OSS Open Mediation V620L01Installation and Configuration Guide
- OM Generic SNMP CA Installation and Configuration Guide
- OM HP SiteScope Customization for Generic SNMP CA Installation and Configuration Guide
- OM HP VMware ESXi Customization for Generic SNMP CA Installation and Configuration Guide
- HP SiteScope Deployment Guide

- HP Service Activator Installation Guide
- HP Service Activator Solution Separation and Deployment Manager Guide
- Unified Correlation Analyzer for Event Based Correlation V3.0 Installation Guide

Support

Please visit our HP Software Support Online Web site at <u>www.hp.com/go/hpsoftwaresupport</u> 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.

Install Location Descriptors

The following names are used throughout this guide to define install locations.

Descriptor	What the Descriptor represents
\${OM_INSTANCE}	/var/opt/openmediation-V62/containers/ <instance-#></instance-#>
\${UCA_AUTOMATION_CONSOLE_HOME}	This directory contains the UCA Automation UI de- ployment. The path refers to /opt/UCA-ATM
\${UCA_EBC_HOME}	The root directory of UCA-EBC. The default value is /opt/UCA-EBC
\${UCA_EBC_INSTANCES}	This directory may contain multiple instances of UCA- EBC where the value packs are deployed. The path refers to \${UCA_EBC_DATA}/instances/default
\${ACTIVATOR_OPT}	The base install of Service Activator. The UNIX® location is /opt/OV/ServiceActivator

Table 2 Install Location Descriptors

Chapter 1

Introduction

This document describes the procedure for installation and configuration of NFV Director V1.0 product.

1.1 Getting started

Installation of NFV Director can be broadly divided into two parts:

- 1. NFVD-Fulfillment
- 2. NFVD-Assurance

These in turn consists of the following products:

- 1. NFV-D Fulfillment
 - HP Service Activator v6.2
 - HP Service Activator Extension Pack v6.1
 - CR Model Solution Pack
 - IPAM Solution Pack
 - MSA Solution Pack
 - GPM Solution Pack
 - NFVDLF Solution Pack
 - NFVModel Solution Pack
 - NFVAutomation Solution Pack
 - OpenStack Client Solution Pack
 - RestPA Solution Pack
- 2. NFV-D Assurance
 - HP UCA Automation v1.0
 - HP UCA Automation Console v1.0
 - HP Service Activator v6.2
 - HP UCA for EBC v3.0
 - HP UCA for EBC v3.0 Topology Extension
 - OSS Open Mediation v6.2
 - UCA-EBC CA
 - UCA Autoconsole CA
 - UCA-HPSA CA
 - o Generic SNMP CA
 - OM HP SiteScope Customization for Generic SNMP CA
 - OM HP VMware ESXi Customization for Generic SNMP CA
 - Assurance Gateway v1.0
 - Site Scope v11.23

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Hardware and software prerequisites, for all of these components are covered in a separate section, which is followed by the installation procedure.

Various software components of NFVD-Fulfillment and NFVD-Assurance can be either installed; one each for fulfillment, and assurance or in distributed mode, where they can be installed across many hardware/VMs. NFVD can be installed in multiple distribution modes with products installed in multiple combinations in different systems/VMs. Distributed mode setup is described in For distributed server setup section in detail. Also, see the respective product documentation for more details.

Two sample deployment architectures are as depicted in the following figures.

Figure 1 NFVD Deployment Architecture – Single Server has NFVD Fulfillment components in one system, and NFVD Assurance components in another system.

Note: Single Server setup is appropriate only for POC and development environment. The setup is not recommended for pre-production or the production environment.

Figure 2 NFVD Deployment Architecture – Distributed depicts NFVD Assurance components distributed in different systems, such as NFVD Assurance Gateway, UCA Automation, and SiteScope.



Figure 1 NFVD Deployment Architecture – Single Server



Figure 2 NFVD Deployment Architecture – Distributed

Chapter 2

Preparing to install

This chapter provides an overview of the hardware and software requirements to install NFVD. After meeting all the requirements described in this chapter, proceed to the instructions in <u>Installing and Configuring the Product</u> to complete your NFVD installation.

NFV Director is a Virtual Network function itself 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 particular requirements of each component).



Figure 3 NFV Director sample schema

2.1 NFVD Fulfillment

2.1.1 Hardware requirement

2.1.1.1 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.

Components	OS	DB	Server	Core	RAM	DISK
HPSA 6.2						
EP 6.2 + WSC	REDHAT 6.4					
NFV Director Fulfillment			VM1 or Blade 1	4 (better 8)	8 (better	140 (better 300)
Fulfillment Database	REDHAT 6.4	Oracle/ PPAS			10)	

Table 3 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.

2.1.1.2 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.

Compo- nents	OS	DB	Server	Core	RAM	DISK
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
Southbound Adapters	REDHAT 6.4		VM4	8	128	320
Fulfillment Database	REDHAT 6.4	Oracle/ PPAS	VM6	16	256	2000

 Table 4 Fulfillment distributed setup hardware recommendation

2.1.2 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-2
HP Service Activator Extension Pack	6.1	+ Hotfix EP6.1-1
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 5 NFVD Fulfillment Software requirements

2.2 NFVD Assurance

2.2.1 Hardware requirement

2.2.1.1 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

Components	OS	DB	Server	Core	RAM GB	DISK GB
Monitoring (SiteScope 11.23)	Embedded					
Monitoring Database (metrics DB)	Embedded	Embedded				146
Correlation & Automation Engine	Embedded	Oracle/ PPAS	VM2	4 (bet- ter 8)	16	(better 300)
Correlation	Embedded	GRAPH DB				
Database		Embedded				

 Table 6
 Assurance single server hardware recommendation

2.2.1.2 For distributed server setup

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

Compo- nents	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 Engine	Red Hat 6.4		VM4	8	128	320
Automation Engine	Red Hat 6.4		VM5	8	128	320

Correlation Database	Red Hat 6.4	GRAPH DB	VM6	16	256	2000
HPSA 6.2	Red Hat 6.4		VM7	8	128	320
Automation HPSA Da- tabase	Red Hat 6.4	Oracle/ PPAS	VM8	8	128	320

Table 7 Assurance distributed server hardware recommenda	tion
--	------

2.2.2 Software requirement

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

Product	Version	Remark
Assurance Gateway	V1.0	Uses JBoss 7.1.3
Java	SE 6 update 37 JDK or later	NOTE: Do not use JDK version 7
RHEL	6.4	And all available patches

Table 8 NFVD Assurance Gateway Software

Product	Version	Remark
HP UCA for EBC	V3.0	+ Patch UCAEBC30SRVLIN_00006
HP UCA for EBC Topology Extension	V3.0	+ Patch UCAEBC30TOPOLIN_00001
HP UCA Automation Console	V1.0-REV A	+ Patch EBCATMLIN_00001
HP Service Activator	V62-1A	+ Patch V62-1A-2
Oracle database	11g	Either Oracle DB or PPAS
PPAS database	9.2	Either Oracle DB or PPAS
OSS Open Mediation and CA		See Table 10 Open Mediation and Channel Adapters
Java		See Table 8 NFVD Assurance Gate- way Software
RHEL		See Table 8 NFVD Assurance Gate- way Software

Table 9 UCA Automation software

Product	Version	Remark
OSS Open Mediation	V620-01	+ Patch OSSOPENMEDIATIONLNX_00002
UCA EBC Channel Adapter	V3.0	
UCA HPSA Channel Adapter	V1.0	Available in UCA Automation Patch EBCAT- MLIN_00001
UCA Autoconsole Channel Adapter	V1.0	Available in UCA Automation Patch EBCAT- MLIN_00001
Generic SNMP CA	V1.0	
SiteScope Customization for Generic SNMP CA	V1.0	
VMware ESXi Customization for Generic SNMP CA	V1.0	
RHEL		See Table 8 NFVD Assurance Gateway Soft- ware

Table 10 Open Mediation and Channel Adapters

Product	Version	Remark
SiteScope	11.20	+ Patch Sitescope11.23_00276

Table 11 SiteScope Software

Chapter 3

Installing and configuring the product

Extract the files contained in JK596-15001 ISO file to a location of your choice (%INSTALLA-TION_DIR%). The following folder structure is created:

%INSTALLATION_DIR%/ReadMe
%INSTALLATION_DIR%/OpenSource
%INSTALLATION_DIR%/Binaries
%INSTALLATION_DIR%/Documentation

3.1 Installing the NFVD Fulfillment components

For HPSA 6.2-1A installation instructions, see HP Service Activator Installation Guide Edition: V62-1A.

For HPSA Hotfix V62-1A-2 installation instructions, see HPSA Hotfix Installation Guide Edition: V62-1A-2.

NOTE: After installing HPSA, import and deploy the CRModel solution pack. During the installation of the HPSA Hotfix, choose Yes when you are prompted to upgrade the CRModel patch.

3.1.1 HPSA Extension Pack (EP) installation

For HPSA Extension Pack V6.1 installation instructions, see HPSA Extension Pack Installation Guide Release V6.1.

For HPSA Extension Pack Hotfix EP6.1-1 installation instructions, see HPSA Extension Pack Hotfix Installation Guide Edition: EP6.1-1.

3.1.2 Generate xmaps database model

Execute the following SQL script in your HPSA database installation instance:

/var/opt/OV/ServiceActivator/xmaps/xmaps.sql

3.1.3 Importing and deploying fulfillment solutions and patches

NFVD Fulfillment solution consists of the following components. The following sections explain the installation and configuration process.

- Mount the ISO image JK596-15001.iso.
- Go to the Binaries directory to find the following RPM file:

nfvd-fulfillment-01.00.000-1.el6.noarch.rpm

• Install the rpm by running the following command:

```
rpm -ivh nfvd-fulfillment-01.00.000-1.el6.noarch.rpm
```

- The following HPSA Solution packs are extracted into /opt/HP/nfvd/fulfillment directory.
 - o IPAM.zip
 - o AD.zip
 - MSA-1.2.2.zip
 - MSA1.2.3.zip Patch
 - o NFVModel.zip
 - NFVAutomation.zip
 - NFVDLF.zip
 - RESTPA.zip
 - OSPLUGIN.zip

Follow the instructions in the subsequent sections to setup the NFVD Fulfillment solution.

3.1.3.1 Importing solution packs

Import the following fulfillment solutions in the sequence as shown below. For instructions on using the Import HPSA Solution, see the Local Solution Deployment Operations section in Using the Deployment Manager chapter of the HP Service Activator Solution Separation and the Deployment Manager Guide.

NOTE: In order to launch the deployment manager UI tool, go to the directory /opt/OV/ServiceActivator/bin, and then launch the UI. Some issues are observed while deploying solution packs, specifically, when the UI is launched using the absolute path.

Solution Pack Zip	File Location
CRModel	<u>Note</u>
IPAM.zip	/opt/HP/nfvd/fulfillment
AD.zip	/opt/HP/nfvd/fulfillment
MSA-1.2.2.zip	/opt/HP/nfvd/fulfillment
MSA1.2.3.zip	/opt/HP/nfvd/fulfillment
(Patch)	
NFVModel.zip	/opt/HP/nfvd/fulfillment
NFVAutomation.zip	/opt/HP/nfvd/fulfillment
NFVDLF.zip	/opt/HP/nfvd/fulfillment
RESTPA.zip	/opt/HP/nfvd/fulfillment
OSPLUGIN.zip	/opt/HP/nfvd/fulfillment
Table 40 NEV/D Eulfillion	

Table 12 NFVD Fulfillment Solution Pack locations

NOTE: Importing MSA-1.2.2.zip prompts a pop-up message that the Solution name MSA-1.2.2 is missing. Edit the Solution name to MSA, and click OK.

🕅 HP Service Activator Deployment Manager					
File <u>D</u> eployment <u>V</u> erification <u>C</u> onfiguration <u>Wizards</u> <u>H</u> elp					
* 🛃 42432 🗟					
Local Deployment	Import Solution	on			
Create Solution Skeleton	Select mode				
Denloy Local Solution	From zin/tar file				
 Undeploy Local Solution 	Inpt/OV/ServiceActivator/SolutionPacks/MSA-1.2.2.zip	Browse			
 Delete Local Solution 		Diorisem			
 Import Solution 	From alrectory	_			
 Export Solution 		Browse			
Patch Operations					
Create Patch Skeleton	Missing Solution Name	×			
 Deploy Patch 	Missing Solution Name				
 Undeploy Patch 	The ZIP/TAR file does not contain a deployment descrip	to			
Delete Patch	r with a solution name. Please enter the name of the soluti				
Import Patch	on.				
 Export Patch 					
Customization Operations	Solution name: MSA-1.2.2				
 Create Customization Skeleton 					
 Deploy Customization 					
Undeploy Customization					
Delete Customization	OK Cancel				
 Import Customization Export Customization 					

Figure 4 Import MSA Solution Pack

Missing Solution Name				
The ZIP/TAR file does not contain a deployment descripto r with a solution name. Please enter the name of the soluti on.				
Solution name: MSA				
OK Cancel				

Figure 5 Edit Solution Name MSA-1.2.2 to MSA

NOTE: Importing NFVAutomation.zip prompts a pop-up message that the Solution name NFVAutomation is missing. Edit the Solution name to NFVAuto, and click OK.

	Missing Solution Name				
	The ZIP/TAR file does not contain a deployment descripto r with a solution name. Please enter the name of the soluti on.				
141	olution name: NFVAuto				
	OK Cancel				

Figure 6 Edit Solution Name NFVAutomation to NFVAuto

NOTE: Importing AD.zip prompts a pop-up message that the Solution name AD is missing. No need to edit the Solution. Leave it as suggested – AD, and click OK.

3.1.3.2 Deploying the solutions

Deploy the previously imported Solutions in the same sequence as listed in <u>Importing Solu-</u> tions section. For instructions on deploying the HPSA solution, deploy solutions; see the Local Solution Deployment Operations section in Using the Deployment Manager chapter of the HP Service Activator Solution Separation and the Deployment Manager Guide.

NOTE: Check Create inventory tables option while deploying solution packs.

NOTE: MSA solution pack has a patch. Once you have deployed the MSA solution pack, import and deploy the MSA patch, before deploying any other solution pack. Instructions to import and deploy a HPSA patch is explained in Import MSA patch and Deploy MSA patch sections.

Solution Pack Name	Database System	File
CRMadal	Oracle	deploy_oracle.xml
CRIVIOUEI	PPAS	deploy_ppas.xml
IPAM	Oracle/PPAS	deploy.xml
AD	Oracle/PPAS	deployUnix.xml
MSA Solution Pack	Oracle/PPAS	deployUnix_6_1.xml
MSA Patch	Oracle/PPAS	deployUnix_6_x.xml
NFVModel	Oracle/PPAS	deploy.xml
NIE) (Automotion	Oracle	Deploy_ORACLE.xml
NEVAutomation	PPAS	Deploy_PPAS.xml
NFVDLF	Oracle/PPAS	deploy.xml
RESTPA	Oracle/PPAS	deploy.xml
OSPLUGIN	Oracle/PPAS	deploy.xml
		· · · ·

Choose the following file for deployment when prompted:

Table 13 NFVD Solution Pack and Patch Deployment Files

Note: Verify if there is execute permission for the .sh files in

/opt/OV/ServiceActivator/solutions/<SolutionName>/* directories. If not add +x permissions, before deploying.

A sample procedure to deploy the solution is as follows:

- Launch the deploymentmanager tool from /opt/OV/ServiceActivator/bin/
- Set the DB user and password in System Database Connection under Preferences. Click OK to verify.
- Select Deploy Local Solution option under Local Deployment in the UI. Choose the Solution Name from the drop down list, choose an appropriate deployment file, choose the Create inventory tables checkbox, and then click deploy solution.

🕼 HP Service Activator Deployment Manager 📃 🗖 🗙			
File Deployment Verification Co	nfiguration <u>W</u> izard	s <u>H</u> elp	
* 1 4269 🗟			
Local Deployment		Deploy Solution on Local Server	
Solution Operations			
 Create Solution Skeleton 	Solution name:	CRModel 🗸	
 Deploy Local Solution 			-
 Undeploy Local Solution 	Deployment file:	//ServiceActivator/solutions/CRModel/deploy_oracle.xml Browse	
Delete Local Solution			
Import Solution	Do not deploy y	workflows, plug-ins, inventory trees or compound tasks	
Export Solution		······	
Patch Operations	📃 Do not deploy 9	6QL	
 Create Patch Skeleton 	🔲 Do not back up		
Deploy Patch			
 Undeploy Patch 	Force		
Delete Patch	🗹 Create inventor	y tables	
Import Patch Emport Patch			
• Export Pattin			
Customization Operations			
Create Customization Skeleton			
 Deploy Customization 			
Undeploy Customization			
Delete Customization		Deploy solution	
Fynort Customization	1.0.0		
Preferences	[Jun 28, 2014 11:4 [Jun 28, 2014 11:4]	0:11 AMJDB User: npsa 5:24 AMJIActionILocal copy solution from /opt/OV/ServiceActivator/Solutio	onPack
List Solutions	s/CRModel.zip.	5:35 AM1Action canceled	
Local Deployment	[Jun 28, 2014 11:4	5:35 AM]Importing operation is aborted.	
Remote Deployment	[Jun 28, 2014 11:5. s/CRModel.zip.	3:42 AM [[Action]Local copy solution from /opt/OV/ServiceActivator/Solutio	onPack
Verification	[Jun 28, 2014 11:5] [Jun 28, 2014 11:5]	3:48 AM]Solution required files copying completed successfully! 3:48 AM]Solution created successfully.	
Configuration			-
Local Deployment - Deploy Local So	lution		

Figure 7 Deploy Solution Pack

3.1.3.3 Import MSA patch

The Solution MSA has a patch. This patch has to be imported and deployed. For instructions on importing a patch, see the Patch Operations section in Using the Deployment Manager chapter of the HP Service Activator Solution Separation and the Deployment Manager Guide.

3.1.3.4 Deploy MSA patch

Once the MSA patch has been imported, deploy the patch by following the instructions in Patch Operations section of Using the Deployment Manager chapter of the HP Service Activator Solution Separation and the Deployment Manager Guide.

NOTE: Check the Do not deploy SQL option in the UI before deploying the MSA patch.

🕅 HP Service Activator Deployment Manager			
Elle Deployment Verification Configuration Wizards Help			_
*			
Local Deployment Solution Operations		Deploy Local Patch	
 Create Solution Skeleton 	Solution name:	MSA 💌	
 Deploy Local Solution Undeploy Local Solution 	🔲 Run in check me	ode	
 Delete Local Solution 	Check Against—		
 Import Solution 	Current v	ersion: MSA 1.2.2	
 Export Solution 	⊖ Earlier ve	rsion:	
Patch Operations			
 Create Patch Skeleton 	Datch	MS4123	
 Deploy Patch 	ralli.	M3A 1.2.3	
Undeploy Patch	Deployment file:	r/solutions/MSA/patches/MSA1.2.3/deployUnix_6_x.xml Browse	
Delete Patch Journal Database			
Import Patch Export Patch	Do not deploy v	vorknows, plug-ins, inventory trees or compound tasks	
	🗹 Do not deploy S	QL	
Customization Operations			
 Create Customization Skeleton 			
 Deploy Customization 			
Undeploy Customization			
Delete Customization		Deploy patch	
Import Customization Export Customization			
Export Customization	Log		

Figure 8 Deploy MSA Patch

3.2 Undeploying and uninstalling the NFVD Fulfillment components

NFVD Fulfillment RPM can be uninstalled by running the rpm -ev option.

Run the following command to uninstall the NFVD Fulfillment RPM:

• rpm -ev nfvd-fulfillment-01.00.000-1.el6.noarch

In order to undeploy the NFV Director fulfillment Solution Packs, follow the HP Service Activator Solution Separation and the Deployment Manager Guide.

You can choose to also delete the Patch and Solution, so that the directory /opt/OV/ServiceActivator/solutions also deletes the solution directory completely.

NOTE: Before undeploying the solution packs that have some Patch associated, you must undeploy the patch first. Else, the solution name does not appear in the Undeploy option.

3.3 Configuring the NFVD Fulfillment solution

3.3.1 Micro-workflow manager configurations

NOTE: Some of the modules may already be present in the mwfm.xml. Make sure not to duplicate them in the file. Always add the new module blocks at the end of the file.

1. Delete or comment the configuration from the mwfm.xml file

Operating System	Path
Linux	<pre>/etc/opt/OV/ServiceActivator/config/mwfm.xml</pre>

<Module>

<Name>transaction_manager</Name>

<Class-Name>com.hp.ov.activator.mwfm.engine.module.DBTransactionModule</Class-Name> </Module>

Table 14 mwfm.xml transaction manager module

Include the configurations into mwfm.xml file 2.

Operating System	Path
Linux	/etc/opt/OV/ServiceActivator/config/mwfm.xml

Add the following modules between <Engine> </Engine> tag:

<Module> <Name>ConcurrentWorkflowsModule</Name> <Class-Name>com.hp.spain.engine.module.concurrentworkflows.RemoteAsynchronousWorkflowLockImpl</Class-Name> <Param name="mwfm_name" value="localmwfm"/> <Param name="remote_url" value="//localhost:2000/concurrent_workflows"/> <Param name="db" value="db"/> <Param name="cleaning_interval" value="3600000"/> </Module>

Table 15 mwfm.xml ConcurrentWorkflowsModule

<Module>

<Name>LockModule</Name> <Class-Name>com.hp.spain.engine.module.lock.manager.LockModule</Class-Name>

<Param name="locker_name" value="MWFM-0"/>

<Param name="locker_service_ip_address" value="127.0.0.1"/>

<Param name="unlock_pending_period" value="60000"/>

<Param name="lock_manager_service_url" value="rmi://127.0.0.1:1220/RmiLockManagerService"/>

<Param name="persistence_dir_path" value="/var/opt/OV/ServiceActivator/tmp/lockers"/>

<Param name="lock_waiter_mode" value="enqueue_jobs"/>

<Param name="bean_helper_must_check_locks" value="true"/>

<Param name="debug" value="false"/>

</Module>

Table 16 mwfm.xml LockModule

<Module>

<Name>transaction_manager</Name>

<Class-Name>com.hp.spain.engine.module.wftransaction.WFTransactionManagerModule</Class-Name> <Param name="persistence_dir_path" value="/var/opt/OV/ServiceActivator/tmp/wftransactions"/> </Module>

Table 17 mwfm.xml transaction manager module

<Module>

<Name>wsc</Name> <Class-Name>com.hp.ov.activator.mwfm.engine.module.wsc.WSCModule</Class-Name> <Param name="database_module" value="db"/>

</Module>

Table 18 mwfm.xml wsc module

<Module>

<Name>NfvManagerModule</Name>

<Class-Name>com.hp.ov.activator.mwfm.engine.module.nfv.NfvManagerModule</Class-Name>

<Param name="language_Code" value="en_EN" />

<Param name="master" value="true" />

<Param name="database_module" value="db"/>

<Param name="engine_conf_file" value="/etc/opt/OV/ServiceActivator/config/nfv_manager.xml"/>

</Module> Table 19 mwfm.xml NfvManagerModule

<Module> <Name>TMPCModule</Name>

<Class-Name>com.hp.ov.activator.mwfm.engine.module.tmpc.TMPCModule</Class-Name>

<Param name="database_module" value="db"/>

</Module>

Table 20 mwfm.xml TMPCModule

<Module>

<Name>TMPCModuleRMIAccess</Name>

<Class-Name>com.hp.ov.activator.mwfm.engine.module.tmpc.TMPCModuleRMIAccess</Class-Name>

<Param name="access_uri" value="//localhost:2000/TMPCModule"/>

<Param name="db" value="db"/>

</Module>

Table 21 mwfm.xml TMPCModuleRMIAccess Module

<Module>

<name>sosa asvnc responser</name>
<class-name>com.hp.spain.engine.module.sosa.SosaAsyncResponserImpl</class-name>
<param name="errors_async_persistence_file" td="" val-<=""/>
ue="/var/opt/OV/ServiceActivator/tmp/errors_async_responser.dat"/>
<param name="write in queue" value="false"/>
<param name="sosa_async_queue" value="sosa_async_queue"/>
Table 22 mwfm.xml sosa_async_responser Module

Uncomment the existing authenticator module and add teams enabled Param.

5
<module></module>
<name>authenticator</name>
<class-name>com.hp.ov.activator.mwfm.engine.module.umm.DatabaseAdvancedAuthModule</class-name>
<param name="mwfm_remote_url" value="//localhost:2000/wfm"/>
<param name="expiry_days" value="90"/>
<param name="expiry_alert_days" value="10"/>
<param name="reuse_interval" value="3"/>
<param name="password_validation" value="true"/>
<param name="teams_enabled" value="true"/>
Table 23, mwfm xml authenticator Module

Table 23 mwfm.xml authenticator Module

3. Create the following folder and file:

mkdir /var/opt/OV/ServiceActivator/tmp/wftransactions

echo 1 > /var/opt/OV/ServiceActivator/tmp/wftransactions/wftransaction.sequence
t the following file:

4. Edit the following file:

/etc/opt/OV/ServiceActivator/config/OpenStack.properties

Change the following values for the user and clear text password of your HPSA installation:

mwfwUser=#hpsauser mwfwPassword=#hpsapassword

3.3.2 SOSA configurations

1. Include the following configurations into sosa.xml file

Operating System	Path
Linux	/opt/OV/ServiceActivator/EP/SOSA/conf/sosa.xml

Add the following Module between <Modules> </Modules> tag.

If HPSA is using Oracle database: <Module name="NfvManagerModule" className="com.hp.sosa.modules.nfvmanagermodule.NfvManagerModule"> <Parameter name="db.pool.name" value="db_sosa_nfv_manager_module" /> <Parameter name="db.user" value="#db_user" /> <Parameter name="db.password" value="#db_encripted_password" />
<Parameter name="db.jdbc.driver" value="oracle.jdbc.driver.OracleDriver" /> <Parameter name="db.driver.name" value="jdbc:oracle:thin" /> <Parameter name="db.url" value="jdbc:oracle:thin:@(DESCRIPTION=(LOAD_BALANCE=on)(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=#db_host)(PORT=#db_port)))(CONNECT_DATA=(SERVICE_NAME=#db_service_name)))" /> <Parameter name="db.initialsize" value="2" /> <Parameter name="db.maxactive" value="4" />
<Parameter name="db.maxidle" value="4" /> <Parameter name="db.minidle" value="0" /> <Parameter name="db.maxwait" value="2000" /> <Parameter name="language_Code" value="en_EN" /> <Parameter name="master" value="true" /> <Parameter name="engine.conf.file" value="/etc/opt/OV/ServiceActivator/config/nfv_manager.xml"/> </Module> Table 24 sosa.xml NfvManagerModule for Oracle



<module classname="com.hp.sosa.modules.nfvmanagermodule.NfvManagerModule" name="NfvManagerModule"></module>
<parameter name="db.pool.name" value="db_sosa_nfv_manager_module"></parameter>
<parameter name="db.user" value="#db_user"></parameter>
<parameter name="db.password" value="#db_encripted_password"></parameter>
<parameter name="db.jdbc.driver" value="com.edb.Driver"></parameter>
<parameter name="db.driver.name" value="jdbc:edb"></parameter>
<parameter name="db.url" value="jdbc:edb://#dbhost:#dbport/#db_service_name"></parameter>
<parameter name="db.initialsize" value="2"></parameter>
<parameter name="db.maxactive" value="4"></parameter>
<parameter name="db.maxidle" value="4"></parameter>
<parameter name="db.minidle" value="0"></parameter>
<parameter name="db.maxwait" value="2000"></parameter>
<parameter name="language_Code" value="en_EN"></parameter>
<parameter name="master" value="true"></parameter>
<parameter name="engine.conf.file" value="/etc/opt/OV/ServiceActivator/config/nfv_manager.xml"></parameter>

Table 25 sosa.xml NfvManagerModule for PPAS

2. Edit sosa.xml and change the following values to the correct one in your own system:

Variable	Description
#db_user	HPA Database Username
#db_encripted_password	HPSA Database encrypted password.
	To encrypt the database password, execute the following script:
	Linux:
	/opt/OV/ServiceActivator/bin/crypt –encrypt <db_password></db_password>
#db_host	Ip Address of the server where HPSA Database is located
#db_port	Port where HPSA Database is listening (Oracle de- fault port is 1521, Postgres default port is 5444)
#db_service_name	Service name of the instance of HPSA Database

Table 26 sosa.xml NfvManagerModule parameters

3. Edit sosa.xml file and set the variable jetty.server in sosaModule module to true:

<Parameter name="jetty.start" value="true" />
Table 27 sosa.xml sosaModule

4. Include the following configuration into sosa conf.xml file.

Operating System	Path
Linux	/opt/OV/ServiceActivator/EP/SOSA/conf/sosa_conf.xml

Add the following between <Queues> and </Queues> tag:

<queue classname="com.hp.sosa.modules.sosamodule.queues.basic.BasicQueue" name="nfvd"></queue>	
<parameter name="queue.threads" value="3"></parameter>	
<parameter name="queue.synchronous" value="true"></parameter>	
<sae load_threshold="0" medium_load="100" name="NFVD_SA_EXECUTOR"></sae>	

Table 28 sosa_conf.xml nfvd Queue

Modify the basic <Queue> value of queue.threads to 1, and add the

queue.max.parallelism parameter:

Table 29 sosa_conf.xml basic Queue

Add the following between <ServiceActionExecutors> and </ServiceActionExecutors> tag: <ServiceActionExecutor name="NFVD_SA_EXECUTOR" class-Name="com.hp.sosa.modules.sosamodule.executors.nfvd.ServiceActionExecutorNFVD"

max_parallelism="0" />

Table 30 sosa_conf.xml NFVD_SA_EXECUTOR

Add the following Protocol Adapter configuration between <ProtocolAdapters> and </ProtocolAdapters> tag:



Table 31 sosa_conf.xml NGWSProtocolAdapter

<ProtocolAdapter className="com.hp.sosa.modules.sosamodules.protocoladapters.rest.ProtocolAdapterRest" name="Rest_PA"> <Parameter name="pooling.mode" value="false"/> <Parameter name="host" value="0.0.0.0"/> <Parameter name="port" value="8765"/> <Parameter name="web.apth" value="action"/> <Parameter name="web.app" value="./webapps/restServer"/> <Parameter name="web.app" value="./webapps/restServer"/> <Parameter name="min.threads" value="0"/> <Parameter name="max.threads" value="10"/> </ProtocolAdapter>

Table 32 sosa_conf.xml ProtocolAdapterRest

Change the following values in sosa conf.xml:

<ServiceActionExecutor name="MWFM_SA_EXECUTOR" class-Name="com.hp.sosa.modules.sosamodule.executors.mwfm.MwfmServiceActionExecutor" max_parallelism="0"> <Parameter name="host" value="127.0.0.1"/> <Parameter name="port" value="2000"/> <Parameter name="user" value="#hpsa_user"/> <Parameter name="password" value="#hpsa_encrypted_password"/> <Parameter name="async_interval" value="60" /> <Parameter name="aunch_retries" value="1" /> <Parameter name="launch_retries" value="1" /> <Parameter name="itimeout" value="false" /> <Parameter name="timeout" value="30000" /> <Parameter name="timeout_interval" value="30000" /> </ServiceActionExecutor>

Table 33 sosa_conf MWFM_SA_EXECUTOR

Variable	Description
#hpsa_user	HPA Username
#hpsa_encrypted_password	HPSA encrypted password.
	To encrypt the password, execute the following script:
	Linux:
	/opt/OV/ServiceActivator/bin/crypt - encrypt <hpsa_password></hpsa_password>

Add the following PerformanceStatusManager configuration between <Managers> and </Managers> tag:

<Manager className="com.hp.sosa.modules.sosamodule.managers.performance.PerformanceStatusManager" name="PERFORMANCE_STATUS">

<Parameter name="performance.manager.interval" value="60000"/>

<Parameter name="performance.manager.service.order.only.root" value="false"/> </Manager>

Table 34 sosa_conf.xml PerformanceStatusManager configuration

NOTE: The PerformanceStatusManager configuration is optional; it is only to avoid PerformanceStatus java.rmi.NotBoundException: performanceStatusService being printed in server.log continuously.

5. Include the following configurations into alias.xml file.

Operating Sys- tem	Path
Linux	/opt/HP/jboss/standalone/deployments/hpsa.ear/ep.war/WEB- INF/alias.xml

Add the following entry between <alias-definition> </alias-definition> tag:

<a>lias>
<datasource-name>hpsa/jdbc/uiDB</datasource-name>
<datasource-alias>reportmodule</datasource-alias>
Table 35 alias.xml reportmodule

3.3.3 NFVD Fulfillment specific configurations

Edit the following configuration in nfv manager.xml file

Operating System	Path	

Linux

<pre><?xml version="1.0"?></pre>
<configuration xmins="http://engine.nfv.activator.ov.hp.com/conf"></configuration>
<defaultconfiguration></defaultconfiguration>
<configurationtype></configurationtype>
local mode="SINGLE">
<pre><pre><pre><pre><pre><pre><pre><pre></pre></pre></pre></pre></pre></pre></pre></pre>
<class>com.hp.ov.activator.nfv.dao.impl.replicate.ReplicateDAOFactory</class>
<pre><pre>cparameters></pre></pre>
<pre><pre>cparame-</pre></pre>
ter> <name>RedoLogOutputDirectory</name> <value>#BI_files_path</value>
<pre><pre>cparame-</pre></pre>
ter> <name>RedoLogSaveTimeoutThreshold</name> <value>60000</value>
<pre><pre>cparame-</pre></pre>
ter> <name>RedoLogSaveCommitSizeThreshold</name> <value>1</value>
<pre><pre>parame-</pre></pre>
ter> <name>SOSAFwdEndpoint</name> <value>http://#assurance_host:#assurance_port/ae-services-</value>
impl/NGWSService/NGWSServiceImpl
<pre><parameter><name>SOSAFwdUser</name><value>#assurance_user</value></parameter></pre>
<
ter> <name>SUSAF wdUserid</name> <value>#assurante_userid</value>
<parameter><name>SOSAFwdSave1imeout1nresnoid</name><value>u</value></parameter>
cparame- tag non-second Surger Commit Sign Threshold (some surgers) to (solve a foregoing to the second
ter> <name>SUSAF woSaveCommitSize1nresnoid</name> <value>1</value>
<pre><rentified= <pre>conde onError="DISCARD"></pre></rentified= </pre>
 <remote> <url>str1234</url> <url>str1234</url> <url>str1234</url> <url>str12it=2</url></remote> <url>str12it=2</url> <url>str12it=2</url> <url>str12it=2</url> <url>str12it=2</url>

Table 36 nfv_manager.xml

Variable	Description
#BI_files_path	Local path where Business Intelligence files are stored.
	For example: /var/opt/BI/
	NOTE: create the above directory
#assurance_host	NFVD-Assurance Server hostname or ip
#assurance_port	NFVD-Assurance notifications WS port. This is the port where NFVD Assurance Gateway JBoss Admin console is listening
#assurance_user	NFVD-Assurance user. Currently not used
#assurance_userid	NFVD-Assurance userid. Currently not used

Table 37 nfv_manager.xml parameters

3.3.4 Deploying NFVD maps

Use Diagram Deployer to deploy the NFV Director maps by executing the following commands on the HPSA server:

cd /opt/OV/ServiceActivate	or/bin/
----------------------------	---------

./DiagramDeployer -deploy -dbHost #db_host -dbName #db_service_name -dbPort #db_port -dbUser #db_user - dbPassword #db_password

/opt/OV/ServiceActivator/solutions/NFVModel/etc/config/xmaps/ARTIFACT_TEMPLATES.xml

/DiagramDeployer -deploy -dbHost #db_host -dbName #db_service_name -dbPort #db_port -dbUser #db_user dbPassword #db_password

/opt/OV/ServiceActivator/solutions/NFVModel/etc/config/xmaps/ARTIFACT_INSTANCES.xml

Table 38 Commands to deploy NFVD map

Where:

Variable	Description
#db_user	HPA Database Username
#db _password	HPSA Database clear text password.
#db_host	Ip Address of the server where HPSA Database is located.
#db_port	Port where HPSA Database is listening (Oracle de- fault port is 1521, Postgres default port is 5444).
#db_service_name	Service name of the instance of HPSA Database.

Table 39 NFVD Map parameters

3.4 Starting and stopping the NFVD Fulfillment and Extension Pack

3.4.1 Start NFVD Fulfillment

/etc/init.d/activator start

3.4.2 Stop NFVD Fulfillment

/etc/init.d/activator stop

3.4.3 Start/Stop SOSA

cd \${ACTIVATOR_OPT}/EP/SOSA/bin
./sosa.sh start/stop

3.4.4 Start/Stop LockManager

cd \${ACTIVATOR_OPT}/EP/LockManager/bin
StartServer.sh | StopServer.sh

3.4.5 Start/Stop ECP

cd \${ACTIVATOR_OPT}/EP/ECP/bin
StartServer.sh | StopServer.sh

3.5 Starting protocol adapters and queues

Once the product is configured, the following actions must be taken.

3.5.1 Start NFVD Fulfillment HPSA and extension pack

- Start NFVD Fulfillment.
- Start SOSA, LockManager and ECP.

3.5.2 Enable protocol adapter and queues

- Open a Web Browser and type Solution Container URL (<u>http://<#hpsa sys-tem>:<#hpsa port>/ep/jsp/future-gui/hpac.jsp</u>).
- Login with your HPSA administrator user credentials.
- Go to Administrator \rightarrow Sosa3 \rightarrow Protocol Adapter \rightarrow List.



Figure 9 SOSA > Protocol Adapter > List

- For every Protocol Adapter that is not in running state:
 - o Select the desired Protocol Adapter.
 - o Select Resume under the Actions menu.

List of protocol adapters								
Name	Running	Status	Number of listeners					
RmWFLTService	false	paused	2					
Rest_PA	false	pause	0					
NGWS_PA	false	pause	2					
	3 rect	ords found, showing all records. Page 1 Export: CSV Excel XML						

Figure 10 SOSA > Protocol Adapter Status

Protocol Adapter:	
» Name: » Class Name:	NGWS_PA com.hp.sosa.modules.sosamo
» Actions	
» Pause	
» Resume	
» Remove	

Figure 11 Protocol Adapter Resume Action

• Select Administrator \rightarrow Sosa3 \rightarrow Queue \rightarrow List.

» File » AD	» Search	» SNMP Tool	» Configuration	on Management	» Administrator	» Inventory	» Da	taCenters	» Tenants	» VirtualDat	aCenters	» vApps	» Help	
Protocol Adap	ter:				» Users		>>							
» Name: » Class Name:		NGWS_PA com.hp.sosa.mo	odules.sosamo	♦ Running: ♦ Status:	» Roles » Teams		» »	o Nu	mber of Listene	r:	2			
					» Applications » Inventory views		»							
					» Filters		»							
» Actions					» Stored searche	s	*							
					» Audited actions » Report Module		»							
					» ECP		»							
					» Sosa3		»	» Protoco	Adapter	20	1			
					» Snmp Administ	ration	»	» Queue			wlist			
					» WSC		»	» Manage	r		<i>»</i> 2.01			
					» MSA		>	» Service	Action Execu	tor "				
								» Catalog		»				
								» Time W	indow Module	>				
								» Global N	Лар					
								» History		>				
								» Perform	ance					
								» TPS		>				
Figure	12 S	OSA > Q	ueue >	List										

• Select every locked/closed queue and proceed to unlock/open by selecting Unlock/Open from the Actions menu.

» File	» AD	» Search	» SNMP	Tool	» Configurat	ion Man	agement	» Administr	rator	» Inventory	» Data
Queue:											
» Name:			nfvd				Consume	ers:		3	
» Class I » Uplock	Name:		com. felse	hp.sosa	a.modules.sosam	odule	Consume Consume	ers Running:		3	
» Openeo	d:		true								
A	_										
» Actio	ns		1								
» Open											
» Close	9										
» Unloc	:k										_
» Lock					Ope	ned	U	nlocked			Consum
» Remo	ove				true		false		3		
» Remo	ove Exe	cutor									
» Add E	Executo	r									
» Open	subque	eue									
» Close	e subque	eue			Locked	A	ailable		Curre	ent Executio	ng
» Unloc	:k subqi	eue		fa	lse	true		0			
» Lock	subque	ue									

Figure 13 Queue Unlock

3.5.3 Load artifact definitions

The NFVD Fulfillment solution requires the default artifact definitions to be loaded in order to properly manage VNF and all its components:

- Open a Web Browser and type HPSA UI (<u>http://<#hpsa system>:<#hpsa port>/activator</u>).
- Login using your HPSA username/password.

hp NFV DIRE	CTOR	
C		
@ Copyright 2013 Howfort Log In	Packard Davelopment Company, L.P.	All rights
User Name Password		
	Log in	License Information

V62-1A

Figure 14 NFVD Fulfillment Login

	CTOR			
Work Area Jobs Messages Audit Messages Track Activations Workflows Services Inventory Service Instances Logs Search Logs Search Logs Search Coder View Business Calendar ⊡ Xmaps Tools ♥ Refresh ON Self Management →	inventory Cla VDC/Templates	ss Views VDC/D ies	Instance Views AD/AD Configurat AD/AD Configurat AD/ADProcessDe AD/ADProcessIns CRModel/Equipme CRModel/Parameter MSA/ParameterMin MSA/Parameters NFV/Parameters NFV/Services NFV/Fequipment NFV/Model/NFVDV VDC/Templates VDC/DataCenter VDC/Tenants VDC/VirtualDC VDC/VirtualDC VDC/Vapp IPAM/Resources IPAM/Parameters	ion finitionTree stanceTree nt ers aload odel odel /iew

• Open the NFVModel/NFVDView Inventory Tree View.

Figure 15 NFVD Fulfillment Inventory List

• Right click Artifact Definitions branch, and select Multiple Upload Artifact Definition.

	CTOR		
Work Area 🛛 🔻 🔻	Inventory	Class Views	Instance Views
Jobs Messages Audit Messages Track Activations Workflows	- VDC/VAP	pp × NFVMod VDirector Definitions Artifact Defi	el/NFVDView 🔦
Services Inventory Service Instances Logs Search Logs Service Order View Business Calendar T Xmaps	± 🚞	Instances Templates	 Create Artifact Definition Upload Artifact Definitions Download Artifact Definitions Multiple Upload Artifact Definition
Tools ▽ Refresh ON Self Management △			

Figure 16 Multiple Upload Artifact Definition

• Click Browse and select all artifact definitions in:

/opt/OV/ServiceActivator/solutions/NFVModel/etc/LoadXML/DEFINITIONS/ARTIFACT S/*xml.

Note: Use Mozilla Firefox to perform this operation. If you are using the browser in a remote system, you will need to transfer the artifact definitions from

/opt/OV/ServiceActivator/solutions/NFVModel/etc/LoadXML/DEFINITIONS/ARTIFACT
S/*xml location.

	CTOR	
Work Area 🛛 🗢 🔻	Inventory Class Views Instance Views	
Work Area ✓ Jobs Messages Audit Messages Track Activations Workflows Services Inventory Service Instances Logs Search Logs Search Logs Search Logs Search Cogs Service Order View Business Calendar	Inventory Class Views Instance Views Inventory Class Views Instance Views Image: State of the state of th	Multiple Upload Artifact Definition 🐁 Upload Artifact Definition Select file to upload : Examinar. No se han seleccionado archivos. Submit
Tools ⊽ Refresh ON Self Management		

Figure 17 Select Artifact Definitions

• Click Submit.

	ector	
Work Area 🛛 🤝	Inventory Class Views Instance Views	
Jobs Messages Audit Messages Track Activations Workflows Services Inventory Service Instances Logs Service Order View Business Calendar E Xmaps NFV Tools Self Management	NEV/Services × NEVMode//NEVDView •	Multiple Upload Artifact Definition 4. 1022 DFF_CUCATIONIXMI (text/xmi) - 5152 bytes, last modified: 12/6/2014 1025 DFF_GENERIC_INTERFACE.xml (text/xmi) - 3057 bytes, last modified: 12/6/2014 1027 DFF_GENERIC_INTERFACE.xml (text/xmi) - 3057 bytes, last modified: 12/6/2014 1030_POLICY_VALUE_GENERATION.xml (text/xmi) - 3057 bytes, last modified: 12/6/2014 1031_POLICY_VALUE_GENERATION.xml (text/xmi) - 4633 bytes, last modified: 12/6/2014 1032_POLICY_ENTUTY_ARNOE.Xml (text/xmi) - 3733 bytes, last modified: 12/6/2014 1032_POLICY_OVER_SUBCRPTION.xml (text/xmi) - 4633 bytes, last modified: 12/6/2014 1032_POLICY_OVER_SUBCRPTION.xml (text/xmi) - 3733 bytes, last modified: 12/6/2014 1034_POLICY_OVER_SUBCRPTION.xml (text/xmi) - 3453 bytes, last modified: 12/6/2014 1036_DEF_ENPOWIT.xml (text/xmi) - 3733 bytes, last modified: 12/6/2014 1036_DEF_ENPOWIT.xml (text/xmi) - 3209 bytes, last modified: 12/6/2014 1036_DEF_ENPOWIT.xml (text/xmi) - 3209 bytes, last modified: 12/6/2014 1036_DEF_ENPOWIT.xml (text/xmi) - 3209 bytes, last modified: 12/6/2014 1039_DEF_BADINGT.xml (text/xmi) - 3209 bytes, last modified: 12/6/2014 104_DEF_MOINTER.xml (text/xmi) - 4216 bytes, last modified: 12/6/2014 104_DEF_MOINTER.xml (text/xmi) - 4224 bytes, last modified: 12/6/2014 104_DEF_MOINTER.xml (text/xmi) - 4216 bytes, last modified: 12/6/2014 104_DEF_MOINTER.xml (text/xmi) - 4216 bytes, last modified: 12/6/2014 104_DEF_MOINTER.xml (text/xmi) - 4224 bytes, last modified: 12/6/2014 104_DEF_MOINTER.xml (text/xmi) - 4216 bytes, last modified:

Figure 18 Upload Selected Artifact Definitions

• Repeat the same process for the following files:

/opt/OV/ServiceActivator/solutions/NFVModel/etc/LoadXML/DEFINITIONS/RELATION
SHIPS/*.xml

3.5.4 Edit the NFVD Assurance monitor notifications URL

The NFVD Fulfillment solutions require the URL of NFVD Assurance for monitoring the notification purposes. Complete the following steps to configure this data:

- Open a Web Browser and type HPSA UI (<u>http://<#hpsa system>:<#hpsa port>/activator</u>).
- Login using your HPSA username and password.
- Open MSA/ResourceModel Inventory tree View.

	ECTOR				
Work Area Jobs Messages Audit Messages Track Activations Workflows Services Inventory Service Instances Logs Search Logs Search Logs Service Order View Business Calendar	Inventory IPAM/Reso IPAM/Reso I (R) R	Class ^v ources X esources	Views IPAM/F	Instance Views AD/AD Configura AD/ADProcessD AD/ADProcessIn CRModel/Equipn CRModel/Parame CRModel/NNMiD IPAM/Resources IPAM/Parameter MSA/Parameter	tion efinitionTree stanceTree hent eters ataload S Model
Tools S Refresh ON	7			NFVModel/NFVD	odel View
Self Management	2				

Figure 19 MSA Resource Model Inventory Model

• Navigate through the tree until you find EndPoint:

NGWS_ASSURANCE. Resources → Regions → NFV_ficticious_region → Networks NFV_ficticious_region → SoapServer → NetworkElement: NFVD_Assurance → EndPoint: NGWS_ASSURANCE

• Edit the Url field with the NFVD Assurance Monitor notifications URL:

http:// <#assurance_host>:<#port>/ae-servicesimpl/NGWSServiceService/NGWSServiceImpl

• Set timeout to 600000.

MSA/ResourceModel 🔩	Edit Endpoint 🔸				
	Update WSCEndpoint				
Regions	Namo	Value .	Description		
Sector Se	Name	value	Description		
Network: NFV_ficticious_Network	EndpointId *	26	Unique identifier		
	TargetEquipment *	NGWS_ASSURANCE	Name of the target equipment		
	UserName		Username for authentication		
HttpServer	Password		Password for authentication		
Community of the second s	Description		Description		
E D SoapServer	Keystore		Key store for authentication		
Image: Participation of the second seco	KeyPwd		The key password for authentication		
 	praxy		Proxy address		
	ProxyPort	0	Proxy port		
	certificate		Security certificate for authentication		
	Url *	<your_endpoint_url></your_endpoint_url>	The endpoint URL		
	KeyStoragePwd		The key store password		
	Timeout	0	Timeout in milliseconds		
	WscServiceId *	NGWS_ASSURANCE V	The service this endpoint implements		
	NetworkElementId *	NFVD_Assurance V	The network element this endpoint belongs to		
	Poolid	✓	Foreign key to make the association between endpoint and pool		
	MaxConcurrence	0	Maximum number of concurrent request tha can be handled		
		OK	Reset		

Figure 20 Edit NGWS_Assurance URL and timeout

3.6 Installing the NFVD Assurance base products

The following table summarizes the various ports used by the different components in NFVD Assurance. You may want to keep it handy and write down the details during deployment for future reference. Note that the below ports are mentioned only for illustration.

Product	Component	Example Port	URL
	SiteScope User Inter- face	8088	http:// <host ip="" or="">:<port>/SiteScope. Run /opt/HP/SiteScope/bin/config_tool.sh to change ports.</port></host>
	Tomcat shutdown	28005	
Sitoscopo	Tomcat AJP connector	28009	
Silescope	JMX console port	28006	
	Classic user interface	8888	
	Classic user interface (secure)		
	SSL port	8443	
	UCA-EBC JMS Broker port	61666	
UCA EBC Server	UCA-EBC JMX RMI port	1100	
	UCA GUI port	8090	http:// <host or<br="">IP>:<port>/#EXPERT:APPLICATION:M ONITORING</port></host>

UCA-EBC To-	Neo4J Rest http/GUI http	7474	http:// <host ip="" or="">:<port>/webadmin</port></host>
pology Extension	Neo4J backup port	6362	
	Workflow Manager port	2000	
	Resource Manager port	9223	
HPSA	System DB listener port	1521/5444	1521 for Oracle/5444 for PPAS
	Web Server port	9090	http:// <host ip="" or="">:<port>/ activa- tor/jsp/login.jsp</port></host>
UCA Automation	Jetty Server hosting UI	9080	http:// <host ip="" or="">:<port>/ UCAAutoma- tion</port></host>
	Shutdown Jetty server	8079	
	UCA automation port	12500	
sole CA	UCA Console port	9080	Same as UCA Automation "Jetty Server host- ing UI" port
UCA EBC CA	UCA EBC JMS broker port	61666	
	Action Service port	26700	
UCA HPSA CA	HPSA UCA Automation Sync Service port	8191	
Generic SNMP CA	SNMP trap receiver	162	
	JBoss HTTP connection	18080	http:// <host ip="" or="">:<port></port></host>
	JBoss AS remoting	9999	
Assurance	JBoss AS remoting	4447	
	JBoss AS Management Admin console	9990	Management access: <user> / <password></password></user>

 Table 40
 NFVD Assurance ports

NOTE : Both HPSA and NFVD Assurance run on JBoss. To avoid port conflict with HPSA JBoss, if deployed on the same server, NFVD Assurance ports are reconfigured in the /opt/HP/nfvd/bin/nfvd_agw_env.sh.

NOTE : Both HPSA and SiteScope default User Interface (Web Server) port is 8080. You may want to change default port in one of the products to avoid conflicts, if both are installed on the same server.

Product	Start	Stop	Remark
Sitescope	/opt/HP/SiteScope/start	/opt/HP/SiteScope/stop	Path: /opt/HP/Sitescope
UCA EBC Server	/opt/UCA-EBC/bin/uca- ebc start	/opt/UCA-EBC/bin/uca- ebc stop	Run the start/stop commands as 'uca' user. Path: /opt/UCA-EBC
HPSA	/etc/init.d/activator start	/etc/init.d/activator stop	status and restart are other options. Path: /opt/OV/ServiceActivator, /etc/opt/OV/ServiceActivator, /var/opt/OV/ServiceActivator /opt/HP/jboss
Oracle	/etc/init.d/oracle start	/etc/init.d/oracle stop	status and restart are other options
PPAS	/etc/init.d/ppas-9.2 start	/etc/init.d/ppas-9.2 stop	status and restart are other options
UCA Automation	/opt/UCA-ATM/bin/ ucautomation-ui start	/opt/UCA-ATM/bin/ ucautomation-ui stop	Path: /opt/UCA-ATM
NOM	/opt/openmediation- V62/bin/nom_admin start-container –all	/opt/openmediation- V62/bin/nom_admin shutdown-containerall	
JBoss NFVD Assurance	/opt/HP/nfvd/bin/nfv- director.sh –a start –c nfvd-agw	/opt/HP/nfvd/bin/nfv- director.sh -a stop –c nfvd-agw	Path: /opt/HP/nfvd

 Table 41 NFVD Assurance start/stop scripts

3.6.1 HP UCA automation

NOTE: After installing HP UCA Automation V1.0, follow Chapter 3 of UCA Automation Installation Guide, and then install the UCA Automation mandatory patch EBCATMLIN_00001, and then proceed with deployment and configuration steps, by following the patch installation guide EBCATMLIN_00001.txt.

For HP UCA Automation V1.0 installation instructions, see the HP UCA Automation V1.0 - Installation Guide V1.1.

Installation of HP UCA Automation product involves the installation of products as listed in **Table 9 UCA Automation software**.

For UCA Automation patch EBCATMLIN_00001 installation, see the Patch Installation Guide EBCATMLIN_00001.txt

3.6.1.1 HP UCA Automation configuration for NFVD

Once HP UCA Automation solution and patch has been installed, configure the solution as follows to adapt to the NFVD solution:

 Install the HP UCA Automation Foundation VP by placing the VP in the /var/opt/UCA-EBC/instances/default/valuepacks directory. In the UCA-EBC portal <u>http:// <#UCA EBC Server host>:<#UCA GUI</u> <u>Port>/#EXPERT:APPLICATION:MONITORING</u>, login as admin or admin operator to view the list of VPs.

UCA for Ev	ent Based Correlation			Welcome: admin (Administrator) Logo u		
	UCA-EBC:default > Application > Monitoring					
V A UCA-EBC:default	Monitoring Troubleshooting Tools					
Application	UCA for EBC Status					
🏄 Users						
Actions	Application running (SUD) (Result)					
Topology Management						
∧ ■ UCA_Automation_Foundati	ValuePacks Status					
	Value Pack *	Version	Status	Actions		
OCA_NEVD_ProblemDetec	UCA_Automation_Foundation_UCA	V1.0.1-1A	NotDeployed	Deploy		
∧ ■ UCA_NFVD_PublishToNor						

FIYUIE ZI LISI IIISIAIIEU UUA EDU VAIUE FAUN

2. Deploy the HP UCA Automation Foundation VP, by clicking the ${\tt Deploy}$ button.

UCA for Ev	vent Based Correlation			Welcome: admin (Administrator)		
	UCA-EBC:default > Application > Monitoring					
V 🛧 UCA-EBC:default	Monitoring Troubleshooting Tools					
Application	UCA for EBC Status					
🎎 Users	A selection working (Ston) Restart					
Actions						
Topology Management	Notes Barbarbarbarbarbarbarbarbarbarbarbarbarba					
∧ ♥ UCA_Automation_Foundati	ValuePacks Status		- Longer	From star		
	Value Pack *	Version	Status	Actions		
 OCA_NEVD_ProblemDetec 	UCA_Automation_Foundation_UCA	V1.0.1-1A	Stopped	Start Undeploy		
A UCA_NEVD_PublishToNor						

Figure 22 List Deployed UCA EBC value Pack

3. Select UCA_Automation_Foundation_UCA-V1.0.1-1A \rightarrow Value Pack \rightarrow Configuration option. It lists the Standard Configuration as follows:



Figure 23 UCA EBC – TeMIP mediationFlow

4. Select the tree mediation Flows → mediationFlow [TeMIP_FlowManagement]. Choose the Edit option, and click Delete to delete this mediationFlow.



Figure 24 UCA EBC Remove TeMIP mediationFlow

5. Select Save Modifications to File and Apply them to Value Pack button.

UCA for Even	Based Correlation		
	UCA_Automation_Foundation_UCA-V1.0.1-1A > Vi	alue Pack > Configuration	
∧ ★ UC4-EBC:default	Monitoring Configuration Troublesho	potog	
UCA_Automation_Foundation_U Value Pack	Standard Configuration Save As		
actionrequest	N 10 10 + 13 21 4 X 21 6	R	List of Mediation Flows for the ValuePack.
actionresponse	Mediation Flows Configuration	Save Modifications to	
∧ ⑧ UCA_NFVD_ProblemDetection_	d mediationFlows	Entential Martine - Interfering First A	
∧ ● UCA_NEVD_PublishToNomBus-		Pack	

Figure 25 UCA EBC save modification

6. Now, select UCA_Automation_Foundation_UCA-V1.0.1-1A \rightarrow Action-request \rightarrow Filter Configuration option. Choose the filters \rightarrow topFilter [Foundation] \rightarrow allCondition.

UCA for Event	Based Correlation	
	UCA_Automation_Foundation_UCA-V1.0.1-1A + UCA_Automation_Foundation_UC Monitoring Configuration Troubleshooting	A action registed in Configuration
- CUCA_Automation_Foundation_U	Standard Configuration Specific Configuration Nitter Configuration Nation 1	Configuration Temporar Configuration
	N .	To match this Filter element, all conditions must match. Equivalent to a logical AND
CCA,NEVD,ProblemDetection, CUCA,NEVD,PublishTohlomBus	iii ∰ filere iii ∰ tupfiler(frundaler) iii ∰ stupfiler(frundaler)	
	ating/iterStatement	

Figure 26 UCA EBC UCA Automation Foundation VP filter

7. Click the Edit option, and select Add new entry button.

DO UCA for Even	t Based Correlation	
	VCA, Automation, Francesco, SCA, V1.8.1.1A. + UCA, Automation, Francesco, J7 Monitoring Configuration, Transmissionating	Chadrongaet - Configuration
 Cuck_Addimates_Pownadian_U Value Paci 	Daniel Conference Secto Conference Mile Conference Mecon	Configuration Templer Configuration
activereguest	NON + 30 OX 3 HH	To match this Pitter element, all conditions must match. Equivalent to a logical AND.
· E UCA_NFIO_ProblemDetection_	(2) with optional assessing	Faire admittante in the second s
 COLUCA, 167-C, Puttern Toriandian 	Scenario Filera Configuration * = Stress = Stresf fee ("Austration = Stresf fee ("Austration Stresf fee fee fee fee fee fee fee fee fee	• Priorischeine jallzeiten, angleichneten, nichtelben, nichtlich, andritechannen, angefächsterent, erfriedbannent

Figure 27 UCA EBC add new filter

8. Select notCondition from the drop box, set the radio button for with optional element, and click the Create Entry button.

UCA for Even	t Based Correlation
	UCA_Automation_Foundation_UCA-V1.0.1-1A > UCA_Automation_Foundation_UC
∧ ★ UCA-EBC:default	Monitoring Configuration Troubleshooting
V 🔊 UCA_Automation_Foundation_U	Standard Configuration Specific Configuration Filter Configuration Mapper C
Value Pack	
actionrequest	 < ∞ ∞ < ∞ ∞ <
actionresponse	New: notCondition 🗸 🛟 🛞
∧ ● UCA_NFVD_ProblemDetection_	with optional elemen Create Entry
A SUCA_NEVD_PublishToNomBus-	Scenario Filters Configuration *
	dl filters dl topFilter [Foundation]
	🖃 🍓 allCondition
	distringFilterStatement

Figure 28 UCA EBC filter create condition

9. Clicking the Create Entry button generates three statements under the notCondition. They are dateFilterStatement, intFilterStatement and stringFilterStatement.

UCA for Event	t Based Correlation
∧ ♣ UCA-EBC:default	UCA_Automation_Foundation_UCA-V1.0.1-1A > UCA_Automation_Foundation_UC Monitoring Configuration Troubleshooting
 UCA_Automation_Foundation_U Value Pack actionrequest 	Standard Configuration Specific Configuration Filter Configuration Mapper C
actionresponse UCA_NFVD_ProblemDetection_ UCA_NFVD_PublishToNomBus-	Scenario Filters Configuration A
	allCondition ontCondition dateFilterStatement distringFilterStatement etrinoFilterStatement

Figure 29 UCA EBC create entry under notCondition

10. Select the dateFilterStatement and the intFilterStatement and remove them.

UCA for Eve	ent Based Correlation
	UCA_Automation_Foundation_UCA-V1.0.1-1A > UCA_Automation_Foundation_UCA
∧ ♠ UCA-EBC:default	Monitoring Configuration Troubleshooting
V CA_Automation_Foundation_	Standard Configuration Specific Configuration Filter Configuration Mapper C
Value Pack	
actionrequest	N ⊗ ⊗ ⇒ 3 6 ♦ X 2 H H
actionresponse	Scenario Filters Configuration * Remove entry
☆ ● UCA_NFVD_ProblemDetection	😑 🗟 fiters
^ ♥ UCA_NFVD_PublishToNomBus	G do topFilter [Foundation] G do allCondition
	🖃 😣 notCondition
	💑 intFiterStatement
	d stringFilterStatement
	💑 stringFilterStatement

Figure 30 UCA EBC remove unnecessary conditions

11. For the stringFilterStatement, select the fieldname as additionalText, operator as contains and key in fieldValue as Publish-VP.

10 UCA for Even	Based Correlation			
	UCA_Automation_Foundation_UCA-V1.0.1-1A > UCA_Automation_Foundation_U	CA.actionrequest > Cor	figuration	
∧ ★ UCA-EBC default	Monitoring Configuration Troubleshooting			
I UCA_Automation_Foundation_U	Standard Configuration Specific Configuration Filter Configuration Mapper	Configuration Temple	de Configuration	
O Value Pack	A second s	and the second second		
actionrequest	S 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Filter elemen	t based on String information	
actionresponse	Scenaro Fiters Configuration *			
∧ ■ UCA_NEVD_ProblemDetection_	🗟 💑 förs	New attribute		
∧ ■ UCA_NFVD_PublishToNomBus	B B Confilter [foundation] B B A anCondition			
	🗄 🔒 natCondition	fieldName	additionalText	10
	👗 stringFiterStatement	operator	contains w	
	d stringFiterStatement	feidValue	Publish-VR	-





UCA for Even	Based Correlation						
	UCA_Automation_Foundation_UCA-V1.0.1-1A > UCA_	Automation_Foundat	ion_UCA	A actionrequest + Cor	figuration		
↑ ♦ UCA-EBC default	Monitoring Configuration Troubleshootin	ng					
🗠 🌮 UCA_Automation_Foundation_U	Standard Configuration Specific Configuration Filter	Configuration 1	apper C	onfiguration Templa	de Configuration		
O Value Pack	in the second	CONTRACTOR					
actionrequest	 < 0 a + 3 a + X ≥ H 			Filter element	t based on Strin	information	
actionresponse	Scenario Fitters Configuration *	Save Modifications to					
∧ (CA_NEVD_ProblemDetection_)	E S fiters File and Apply			New attribute		1	
∧ ■ UCA_NFVD_PublishTeNomBus	E de toofitter [Foundation]	Pack					
	🗟 😔 notCondition			fieldflame	addtionalText		
	🙇 stringFiterStatement			operator	contains	(w)	
	atropfiterStatement			feidValue	Publish-VP		

Figure 32 UCA EBC Save filter

13. Start the UCA Automation Foundation Value Pack.

DO UCA for Event	Based Correlation			West-same antime Automaticant Lopost
- A CONSIGNMENT	UCA GIC select - Approximit - Homory Mandaceg Transmissionling Trans			
O Application	ICA for THE Instan			
B. Uters	Contraction (Sec. Sec.)			
O Actional	A distant must have been a			
O Topotop Management				
- IT UCA Adortation Foundation U	ValuePacks Status			
a station and a sub-	Vale Fed.*	Verset	Datas	Actives
- C. NCV MAD AND ADDRESS AND ADDRESS A	SCA, Automation, Franceston, 2004	97.5.5.64	Al Exercise ark survey. Film is dealed.	Stop
· R. UCL, MVD, Pankettahandhan	sta_sht/d_/hoter/Detector_Valuepack	18	O Althonarios als running. Flow is descent	Street.
	staurid, nateriologika	18	O At Statements are survive. Piper's dealers:	315p Resolutionda

Figure 33 UCA EBC start Value Pack

3.6.1.2 HP UCA-EBC configuration for NFVD

Edit the /var/opt/UCA-EBC/instances/default/conf/ActionRegistry.xml file and add the following block at the end of the file:



3.6.2 Generic SNMP channel adapter

For Generic SNMP Channel Adapter installation instructions, see NOM Installation and Configuration Guide and Generic SNMP CA Installation Guide Version V100L01.

3.6.2.1 Generic SNMP CA SiteScope customization

For Generic SNMP Channel Adapter SiteScope Customization installation, see Open Mediation HP SiteScope Customization for Generic SNMP CA Installation and Configuration Guide Version V100L01.

3.6.2.2 Generic SNMP CA VMware ESXi customization

For Generic SNMP Channel Adapter VMware ESXi Customization installation, see Open Mediation HP VMware ESXi Customization for Generic SNMP CA Installation and Configuration Guide Version V100L01.

All the installed packages in NOM are listed as follows:

<pre># ./nom_admin</pre>	list-ip
INSTALLED	generic-snmp-ca-V10
INSTALLED	nom-basic-smx-components
INSTALLED	nom-basic-smx-components-sdk
INSTALLED	nom-sdk
INSTALLED	smx-basic-components
INSTALLED	smx-extra-components
INSTALLED	snmp-customization-sitescope-V10
INSTALLED	snmp-customization-vmware-V10
INSTALLED	uca-autoconsole-ca-V10
INSTALLED	uca-ebc-ca-3.0
INSTALLED	uca-hpsa-ca-V10

Figure 34 List of Channel Adapters

3.6.3 HP SiteScope

For HP SiteScope 11.23 installation instructions, see HP SiteScope Release Notes.

Follow the HP SiteScope patch installation instructions to install the HP SiteScope patch.

NOTE: SiteScope may have issue installing on RHEL 6.4. Use the following command to launch the installer in such a case:

HPSiteScope_11.20_setup.bin LAX_VM <Path to 64 bit JVM>/bin/java OR install the 32-bit X11 libraries on the system. Example: libX11-1.5.0-4.el6.i686, libX11-common-1.5.0-4.el6.noarch.

3.7 Installing and configuring the NFVD Assurance solution

NFVD Assurance solution consists of the following five components. The following sections explain the installation and configuration process.

- Mount the ISO image JK596-15001.iso.
- Go to the Binaries directory to find the following NFVD Assurance specific RPM files:
 - o nfvd-assur-gw-base-01.00.000-1.el6.noarch.rpm
 - o nfvd-assur-gw-tpp-01.00.000-1.el6.noarch.rpm
 - o nfvd-assur-gw-core-01.00.000-1.el6.noarch.rpm
 - o nfvd-correlation-01.00.000-1.el6.noarch.rpm
 - o nfvd-monitors-01.00.000-1.el6.noarch.rpm

NOTE: Install the five components in the same sequence as listed above. Installation and configuration procedure for each component is explained in the following sections.

3.7.1 Installing assurance gateway scripts

The NFVD Assurance Gateway scripts are available as nfvd-assur-gw-base-01.00.000-1.el6.noarch.rpm RPM file.

To install the package, complete the following steps as a root user:

- Transfer the file nfvd-assur-gw-base-01.00.000-1.el6.noarch.rpm to a RHEL system, and place it under a directory: For example: /tmp
- 2. Run the following command to install the package:

rpm -ivh nfvd-assur-gw-base-01.00.000-1.el6.noarch.rpm NFV-Director start/stop script is available as: /opt/HP/nfvd/bin/nfv-director.sh

The command installs the nfv-director.sh script at /opt/HP/nfvd/bin directo-

ry.

3. Verify if the package is successfully installed:

```
# rpm ---qa | grep -i nfvd
nfvd-assur-gw-base-01.00.000-1.el6.noarch
```

Installing this package creates the scripts to start, stop and check status of NFV Director components.

3.7.2 NFVD Assurance third-party products

NFVD Assurance Third-Party Products is available as nfvd-assur-gw-tpp-01.00.000-1.el6.noarch.rpm.

To install the package, complete the following steps as a root user:

 Transfer the file nfvd-assur-gw-tpp-01.00.000-1.el6.noarch.rpm to a RHEL system, and place it under a directory:

For example: /tmp

2. Run the following command to install the package:

rpm -ivh nfvd-assur-gw-tpp-01.00.000-1.el6.noarch.rpm

This command installs the package under /opt/HP/nfvd/tpp directory.

3. Verify if the package is successfully installed:

rpm --qa | grep -i nfvd nfvd-assur-gw-base-01.00.000-1.el6.noarch nfvd-assur-gw-tpp-01.00.000-1.el6.noarch

3.7.3 Installing Assurance gateway core

The NFVD Assurance gateway is available as nfvd-assur-gw-core-01.00.000-1.el6.noarch.rpm RPM file.

To install the package, complete the following steps as a root user:

1. Transfer the file nfvd-assur-gw-core-01.00.000-1.el6.noarch.rpm to a RHEL system, and place it under a directory:

For example: /tmp

2. Run the following command to install the package

rpm -ivh nfvd-assur-gw-core-01.00.000-1.el6.noarch.rpm

This command installs the package under

/opt/HP/nfvd/tpp/jboss/standalone/deployments directory.

3. Verify if the package is successfully installed:

rpm ---qa | grep nfvd nfvd-assur-gw-base-01.00.000-1.el6.noarch nfvd-assur-gw-core-01.00.000-1.el6.noarch nfvd-assur-gw-tpp-01.00.000-1.el6.noarch

NOTE: Both HPSA and NFVD Assurance run on JBoss. To avoid port conflict with HPSA JBoss, if deployed on the same server, NFVD Assurance ports in are reconfigured in the /opt/HP/nfvd/bin/nfvd agw env.sh.

If you wish to change the NFVD Assurance ports, edit the

/opt/HP/nfvd/bin/nfvd_agw_env.sh, and restart the NFVD Assurance gateway application.

NFVD_JBOSS_MANAGEMENT_NATIVE_PORT=19999 NFVD_JBOSS_MANAGEMENT_HTTP_PORT=19990 NFVD_JBOSS_MANAGEMENT_HTTPS_PORT=19443 NFVD_JBOSS_HTTP_PORT=18080 NFVD_JBOSS_HTTPS_PORT=18443 NFVD_JBOSS_AJP_PORT=18090 NFVD_JBOSS_OSGI_HTTP_MANAGEMENT_PORT=18090 NFVD_JBOSS_REMOTING_PORT=14447 NFVD_JBOSS_TXN_RECOVERY_ENV_PORT=14712 NFVD_JBOSS_TXN_STATUS_MANAGER_PORT=14713

3.7.3.1 Artifact definition and relation notification

When the NFVD Fulfillment creates, modifies or deletes any artifact definition or any relationship, notification is sent to the NFVD Assurance gateway.

Assurance gateway takes appropriate create, modify or delete operation in the Neo4J graph database.

The details to access the Neo4J graph database is maintained in the property file: /var/opt/HP/nfvd/conf/topology.properties

```
# The Neo4J Db connection protocol
neo4j.protocol=http
# Specify the HTTP server port and host supporting data, administrative, and UI access
neo4j.host=localhost
neo4j.port=7474
# For Neo4J data retrievals
neo4j.db=db
neo4j.data=data
# Used for Junit
neo4j.host.test=localhost
neo4j.port.test=17373
```

Figure 35 topology.properties

Update the neo4j.host, neo4j.port attribute values in the topology.properties to reflect the Neo4J graph DB host and port respectively.

3.7.3.2 Synchronize NFVD Assurance and Fulfillment

When the NFVD Assurance Gateway application starts, there may be a need to synchronize with NFVD Fulfillment on the infrastructure operations that Fulfillment carried out and Assurance may have missed out.

This can be achieved by the resynch functionality of NFVD Assurance gateway. On start up, Assurance gateway reads the parameters in the file:

/var/opt/HP/nfvd/conf/fulfillment.properties to determine whether to sync at start up. If the flag RESYNC_AT_STARTUP is set to true, Assurance gateway makes the web service call exposed by Fulfillment to get the details and synchronizes the topology database.

- 1. Modify the value set at RESYNC AT STARTUP to true to resynchronize at start up.
- 2. Modify the value 127.0.0.1 set in the FULFILLMENT_URL to point to NFVD Fulfillment system.
- 3. Modify the value FULFILLMENT_CONNECTION_TIMEOUT, to set the connection time limit for the given fulfillment URL (value in milliseconds).
- 4. Modify the value FULFILLMENT_RESPONSE_TIMEOUT, to set the web response time limit for the configured fulfillment URL (value in milliseconds).

```
# Configure RESYNC_AT_STARTUP as true/yes, for synchronization during Assurance startup
RESYNC_AT_STARTUP=false
# Provide the fulfillment URL to sync the data
FULFILLMENT_URL=http://127.0.0.1:8071/ngws/service?wsdl
# Fulfillment URL connection timeout limit in millisecond, default 1.5 min
FULFILLMENT_CONNECTION_TIMEOUT=90000
# Fulfillment URL response for query timeout limit in millisecond, default 1.5 min
FULFILLMENT_RESPONSE_TIMEOUT=90000
```

Figure 36 fulfillment.properties

Resync operation can be performed manually as well. Set the <code>RESYNCH_AT_STARTUP</code> value to false.

For details, see the HP NFV Director User Guide 1.1.

3.7.4 Installing UCA automation NFVD packs

The UCA Automation NFVD correlation value packs (UCA-EBC) and domain solution packs (HPSA) is available as nfvd-correlation-01.00.000-1.el6.noarch.rpm RPM file.

To install the package, complete the following steps as a root user:

• Transfer the file nfvd-correlation-01.00.000-1.el6.noarch.rpm to a RHEL

system, and place it under a directory:

For example: /tmp

- Run the following command to install the package:
 - # rpm -ivh nfvd-correlation-01.00.000-1.el6.noarch.rpm

This command installs the package under /opt/HP/nfvd/correlation directory.

• Verify if the package is successfully installed:

rpm --qa | grep --i nfvd nfvd-assur-gw-base-01.00.000-1.el6.noarch nfvd-correlation-01.00.000-1.el6.noarch

nfvd-assur-gw-core-01.00.000-1.el6.noarch

nfvd-assur-gw-tpp-01.00.000-1.el6.noarch

• Go to the directory /opt/HP/nfvd/correlation.

There is one HPSA NFVD domain Solution Pack, and two UCA for EBC Value Packs in the directory.

- o UCA AUTOMATION HPSA NFVD VP-V10-1A.zip
- o UCA_NFVD_ProblemDetection_Valuepack-vp-1.0.zip
- o UCA_NFVD_PublishToNomBus-vp-1.0.zip

3.7.4.1 Installing UCA Automation NFVD HPSA SP

- Copy the UCA_AUTOMATION_HPSA_NFVD_VP-V10-1A.zip to /opt/OV/ServiceActivator/SolutionPacks.
- Import the Solution Pack using the HPSA deploymentmanager tool. It can be verified by checking that the directory NFVD has been created in /opt/OV/ServiceActivator/solutions directory.
- It creates NFVD solution under /opt/OV/ServiceActivator/solutions directory.
- Deploy the Solution Pack using the HPSA deploymentmanager tool.

Once the UCA Automation HPSA Solution Packs for NFVD are deployed, we get the following Inventory views in the HPSA inventory.



Figure 37 UCA Automation HPSA Inventory View

Open the UCA/Parameters → Parameters → Workflow templates to view the workflow being invoked for the identified NFVD Action.
 When the UCA Automation Console invokes the UCA Automation HPSA via the NOM bus, the requests are made to the workflow listed in the file /var/opt/openmediation-V62/containers/instance-0/ips/uca-hpsa-ca-V10/etc/config.properties → hpsa.controller.workflow.name attribute. It is UCAController in this case.
 UCAController workflow in turn calls the workflow as configured in the UCA/Parameters → Workflow templates for each action. It is fixed as NFVD_Controller in this case.

Inventory Class Views Instance Views			
NFVD/Parameters $ imes$ UCA/NetworkResources $ imes$ UCA/ActionFramework $ imes$ UCA/F	View NFVD SCALE_OUT_CPU SCAL	E_OUT NFVD_Controller 🐀	
🗆 🧔 Parameters		View W	orkflowTemplate
🗄 🎟 Global Parameters			
🖃 🥨 Workflow Templates 👻	Name	Value	Description
NFVD SCALE_OUT_CPU SCALE_OUT NFVD_Controller	ServiceType *	NEVD	Type of Service
NFVD SCALE_IN_CPU SCALE_IN NFVD_Controller *	Problem *	SCALE_OUT_CPU	Problem Alarm symptom
NFVD SCALE_UP_CPU SCALE_UP NFVD_Controller *	ActionName *	SCALE_OUT	Action name
NFVD SCALE_DOWN_CPU SCALE_DOWN NFVD_Controller *	Workflow *	NFVD_Controller	Name of workflow
NFVD SCRIPT_CPU SCRIPT NFVD_Controller *			
NFVD SCALE_UP_Memory SCALE_UP NFVD_Controller			
NFVD SCALE_DOWN_Memory SCALE_DOWN NFVD_Controller			
NFVD SCALE_IN_Memory SCALE_IN NFVD_Controller *			
NFVD SCALE_OUT_Memory SCALE_OUT NFVD_Controller			
NFVD SCRIPT_Memory SCRIPT NFVD_Controller *			
NFVD SCALE_UP_NetworkRx SCALE_UP NFVD_Controller *			
NFVD SCALE_DOWN_NetworkRx SCALE_DOWN NFVD_Controller			
NFVD SCALE_IN_NetworkRx SCALE_IN NFVD_Controller			
NFVD SCALE_OUT_NetworkRx SCALE_OUT NFVD_Controller			
NFVD SCRIPT_NetworkRx SCRIPT NFVD_Controller *			
NFVD SCALE_UP_NetworkTx SCALE_UP NFVD_Controller *			
NFVD SCALE_DOWN_NetworkTx SCALE_DOWN NFVD_Controller *			
NFVD SCALE_IN_NetworkTx SCALE_IN NFVD_Controller *			
NFVD SCALE_OUT_NetworkTx SCALE_OUT NFVD_Controller *			
NFVD SCRIPT_NetworkTx SCRIPT NFVD_Controller *			
NFVD SCALE_UP_DiskRead SCALE_UP NFVD_Controller *			
NFVD SCALE_DOWN_DiskRead SCALE_DOWN NFVD_Controller			
NFVD SCALE_IN_DiskRead SCALE_IN NFVD_Controller *			
NFVD SCALE_OUT_DiskRead SCALE_OUT NFVD_Controller *			
NFVD SCRIPT_DiskRead SCRIPT NFVD_Controller *			

Figure 38 UCA Automation HPSA – UCA/Parameters > Workflow

- Open the UCA/ActionFramework \rightarrow Diagnostics Actions Framework
 - \rightarrow Problems to view the mapping between Problem and NFVD Action.

inventory (Sides views instance views			
NFVD/Paramet	ers $ imes$ UCA/NetworkResources $ imes$ UCA/ActionFramework $ imes$ UCA/F	View SCALE_DOWN_CPU	J 🔩	
🗆 🔏 Diagn	ostics Actions Framework 🍸			View Problem
🕀 📌 Ac	tions 🕆			
🖸 📌 Ac	tions-Resources 🍸	Name	Value	Description
🗆 🔏 Pr	oblems ~	ld *	103	Primary key
🖸 🖓	SCALE_DOWN_CPU V	Name *	SCALE DOWN CPU	Problem Alarm symptom
🗆 🗿	SCALE_DOWN_DiskRead 👻	Service *	NEVD	Service Type that Problem is associated with
🗆 🗿	SCALE_DOWN_DiskWrite *	ActionName *	SCALE_DOWN	Action to diagnose the problem
🗆 🗿	SCALE_DOWN_Memory *	PrimaryProblem *	false	Indicates if this is the Primary problem
🗆 🔒	SCALE_DOWN_NetworkRx *	RootProblem *	false	Indicates if this is the Root Level problem
🗆 🗿	SCALE_DOWN_NetworkTx ~	ActionTraversalPa	th None	This attribute is significant only for secondary problems which originate
🗆 🗿	SCALE_IN_CPU V			eitner true or taise depending upon result of originating action. Fo
🗆 😚	SCALE_IN_DiskRead T			
🗆 😚	SCALE_IN_DiskWrite T			
🗆 😚	SCALE_IN_Memory ~			
🗆 😚	SCALE_IN_NetworkRx T			
🗆 😚	SCALE_IN_NetworkTx T			
🗆 😚	SCALE_OUT_CPU V			
D 😚	SCALE_OUT_DiskRead 🔻			
🗆 ?	SCALE_OUT_DiskWrite V			
🗆 ?	SCALE_OUT_Memory V			
🗆 ?	SCALE_OUT_NetworkRx *			
2 3	SCALE_OUT_NetworkTx *			
0 7	SCALE_UP_CPU V			
0 7	SCALE_UP_DiskRead 👻			
2 7	SCALE_UP_DiskWrite T			
2 7	SCALE_UP_Memory V			
2 7	SCALE_UP_NetworkRx *			
🗆 😚	SCALE_UP_NetworkTx *			
2 7	SCRIPT_CPU V			
2 7	SCRIPT_DiskRead V			
0 7	SCRIPT_DiskWrite			

Figure 39 View UCA/ActionFramework > Diagnostics Actions Framework > Problems

- Open the UCA/ActionFramework \rightarrow Diagnostics Actions Framework
 - \rightarrow Actions to see list of NFVD Actions.

Inventory Class Views Instance Views			
NFVD/Parameters $ imes$ UCA/NetworkResources $ imes$ UCA/ActionFramework $ imes$ UCA/P	View SCALE_DOWN 🔩		
Diagnostics Actions Framework		View Auto	omationAction
SCALE_DOWN	Name	Value	Description
E SCALE_IN SCALE_OUT	ld * Name *	101 SCALE DOWN	Primary key Action name
E F SCALE_UP *	Description	Decrease allocated resource e.g CPU or storage	Action description
E P SCRIPT V	Type	test	Type of test
Actions-Resources *	ActionMode	Closed Loop	Action mode open or closed loop
🗄 🗿 Problems 👻	OutputParser	None	Parser to parse output of an Action
	DispatchType	HPSA	Where is Action dispatched for executon
	Cost		Cost accosiated with this Action



The workflow NFVD_Controller calls the child workflow as listed in the NFVD/Parameters \rightarrow Parameters \rightarrow Workflow templates for each Action. These workflows make appropriate NBI call to NFVD Fulfillment solution based on the type of action, as shown in the following two scenarios.

Inventory Class Views Instance Views			
NFVD/Parameters × UCA/NetworkResources ×	View SCALE_UP 🔩		
🖃 🚞 Parameters		Vi	ew Workflow Templates
🖃 🌉 Workflow Templates 🕆			
SCALE_UP ~	Name	Value	Description
🖸 🧔 SCALE_DOWN 🔨	Action *	SCALE UP	Action name
🖸 🧟 SCALE_IN 🕆	Workflow *	NEVD InvokeNEVDirectorNBI	Name of the workflow
LI 🐶 SCALE_OUT 🔨			

Figure 41 NFVD/Parameters > Parameters > Workflow templates with NBI action

Inventory Class Views Instance Views			
NFVD/Parameters 🗙 UCA/NetworkResources 🗙	View SCRIPT 🔩		
🗆 🚞 Parameters		1	/iew Workflow Templates
🖃 🥦 Workflow Templates 🕆			
SCALE_UP *	Name	Value	Description
SCALE_DOWN *	Action *	SCRIPT	Action pame
SCALE_IN *	Workflow *	NFVD_ExecuteScripts	Name of the workflow
SCALE_OUT *			
SCRIPT V			

Figure 42 NFVD/Parameters > Parameters > Workflow templates with Script action

- The workflows NFVD_InvokeNFVDirectorNBI and NFVD_ExecuteScripts make use of the \${ACTIVA-TOR_OPT}/solutions/NFVD/etc/config/nfvd_config.properties to invoke the NFVD Fulfillment webservice calls to request for VM operations.
- Modify only the parameters sosa_service_url and shell_path.

sosa_service_url: URL representing the NFVD Fulfillment Web Service. Edit
the URL to replace <localhost> and <port> with hostname/IP of the NFVD
Fulfillment system and NFVD Fulfillment HPSA port.

 ${\tt shell_path}: {\tt Represents}$ the shell to be used for executing the SCRIPT action.

#NFVD Fullfilment SOSA webservice details sosa_user=foo sosa_service_url=http://<#NFVD Fulfillment Server>:8071/ngws/service?wsdl #in milliseconds sosa_ws_connection_timeout=900000 sosa_ws_read_timeout=900000 #activation parameters to SOSA mode=parallel onerror=rollback persistence=enable #Scripts execution details shell_path=/bin/sh #shell_path=c:/cygwin/bin/sh

3.7.4.2 Installing UCA automation NFVD UCA for EBC value packs

Note: See HP UCA Automation configuration for NFVD for UCA for EBC GUI options to deploy and start Value Packs. The following description explains the command line options.

1. Install the Value Packs.

Copy the two UCA for EBC value packs UCA_NFVD_ProblemDetection_Valuepack-vp-1.0.zip and UCA_NFVD_PublishToNomBus-vp-1.0.zip to \${UCA_EBC_INSTANCE}/valuepacks directory on the UCA for EBC system.

UCA for Event	Based Correlation			
	UCA-EBC > Application > Monitoring			
V A-EBC:default	Monitoring Troubleshooting Tools			
Application	UCA for EBC Status			
🎉 Users	Application supplies Stop Restart			
Actions				
Topology Management	Malua Danka Statua			
∧ ♥ UCA_Automation_Foundation_U	valuePacks status			
	Value Pack A	Version	Status	Actions
OCA_NEVD_ProblemDetection_	UCA_Automation_Foundation_UCA	V1.0-1A	NotDeployed	Deploy
	UCA_NFVD_ProblemDetection_Valuepack	1.0	NotDeployed	Deploy
	UCA_NFVD_PublishToNomBus	1.0	NotDeployed	Deploy

Figure 44 UCA EBC Install Value packs

2. Deploy the Value Packs.

Deploy the Value Packs listed above into the $\{UCA_EBC_INSTANCE\}/deploy$ directory using uca-ebc-admin administration tool. As UCA user, deploy the two Value Packs.

# 0	cd /var/opt/UCA-EBC/instances/default/valuepacks/
#]	ls
UC/	A_Automation_Foundation_UCA-vp-V1.8-IA.zip UCA_NFVD_ProblemDetection_Valuepack-vp-1.0.zip UCA_NFVD_PublishToNomBus-vp-1.0.zip
# :	su - uca
\$ 0	cd /opt/UCA-EBC/bin/
\$./uca-ebc-admindeploy -vpn UCA_NFVD_ProblemDetection_Valuepack -vpv 1.0
INF	F0 - Value Pack name: UCA_NFVD_ProblemDetection_Valuepack-1.0 has been successfully deployed
\$./uca-ebc-admindeploy -vpn UCA_NFVD_PublishToNomBus -vpv 1.0
INF	FO - Value Pack name: UCA_NFVD_PublishToNomBus-1.0 has been successfully deployed

Figure 45 UCA EBC Deploy Value Packs

DCA for Event	Based Correlation			Welcome: admin ((Administrator)
	UCA-EBC > Application > Monitoring				
V 🛧 UCA-EBC:default	Monitoring Troubleshooting Tools				
Application	UCA for EBC Status				
🎒 Users	Application supping Stop Restart				
Actions					
Topology Management	Malua Basha Status				
∧ ♥ UCA_Automation_Foundation_U	valuePacks status				
	Value Pack A	Version	Status	Actions	
 OCA_NEVD_ProblemDetection_ 	UCA_Automation_Foundation_UCA	V1.0-1A	Stopped	Start	Undeploy
	UCA_NFVD_ProblemDetection_Valuepack	1.0	Stopped	Start	Undeploy
	UCA_NFVD_PublishToNomBus	1.0	Stopped	Start	Undeploy

Figure 46 UCA EBC List Value packs

3. Start the Value Packs.

If UCA for EBC is stopped, restarting UCA for EBC will load all value packs deployed in the \${UCA_EBC_INSTANCE}/deploy folder. If UCA for EBC is running, use uca-ebc-admin option to start the VPs.

[uca\$./uca-ebc-adminstart -vpn UCA_NFVD_ProblemDetection_Valuepack -vpv 1.0 INFO - Starting [UCA_NFVD_ProblemDetection_Valuepack, 1.0, all scenarios] INFO - Status: [UCA_NFVD_ProblemDetection_Valuepack, 1.0, all scenarios]Value pack has been successfully started. Status of th value pack: Running	e
[uca\$./uca-ebc-adminstart -vpn UCA_NFVD_PublishToNomBus -vpv 1.0 INFO - Starting [UCA_NFVD_PublishToNomBus, 1.0, all scenarios] INFO - Status: [UCA_NFVD_PublishToNomBus, 1.0, all scenarios]Value pack has been successfully started. Status of the value pac : Running	

Figure 47 UCA EBC Start Value Packs

3.7.5 Installing NFVD SiteScope monitors

NOTE: If VMware monitors need to be deployed, manual import of the VMware certificate into SiteScope is a mandatory requirement.

The NFVD SiteScope monitor is available as nfvd-monitors-01.00.000-1.el6.noarch.rpm RPM file.

To install the package, complete the following steps as a root user:

1. Transfer the file nfvd-monitors-01.00.000-1.el6.noarch.rpm to a RHEL sys-

tem, and place it under a directory:

For example: /tmp

2. Run the following command to install the package:

rpm -- ivh nfvd-monitors-01.00.000-1.el6.noarch.rpm

This command:

- Copies config_tool_params.txt to /opt/HP/nfvd/templates. Manually copy it to <SITESCOPE_HOME>/examples/silent_config_tool directory.
- Copies SiteScope jars to /opt/HP/nfvd/newconfig. Manually copy them to <SITESCOPE HOME>/java/lib/ext directory.
- 3. Verify if the package is successfully installed:

rpmqa grep -i nfvd
nfvd-assur-gw-base-01.00.000-1.el6.noarch
nfvd-correlation-01.00.000-1.el6.noarch
nfvd-assur-gw-core-01.00.000-1.el6.noarch
nfvd-assur-gw-tpp-01.00.000-1.el6.noarch
nfvd-monitors-01.00.000-1.el6.noarch

3.7.6 Import SiteScope templates and configurations

There are two ways to import SiteScope templates and configurations. One way is to run a script that will automatically import the templates and configurations, and overwrite the

existing configurations in SiteScope. Second option is to manually import the required templates and configurations as per the requirement.

3.7.6.1 Manual import

Take the following steps in order to perform manual import of SiteScope templates and configurations:

- 1. Login to Sitescope: <u>http://<#SiteScope Host>:<SiteScope User Interface</u> port>/SiteScope/servlet/Main.
- 2. Navigate to Preferences \rightarrow Infrastructure Preferences \rightarrow General Settings tab and check the Accept untrusted SSL certificates option if unchecked.

Ø SiteScope		User: SiteScope Administrator	Logout
Page Options - Help -			
Certificate Management	Infrastructure Preferences		
Common Event Mappings	Eind: O Find Next O Find Previous E Highlight Match Case		
Credential Preferences			
M Email Preferences	General Settings		
General Preferences			
S HTTP Preferences	Accept untrusted SSL certificates		
Fin High Availability Preferences	BSM downtime retrieval frequency (minutes): 15		
Infrastructure Preferences	Data acquisition API single request size (MB):		
Integration Preferences	Data acquisition API total requests size (MB): 100		
E Log Preferences	Default collection method for Microsoft Windows Resources monitor: pdh		
Pager Preferences	Delay between host resolution requests (milliseconds): 0		
SNMP Preferences	Destroy process by external command		
Schedule Preferences	Disable quotes for cmd.exe		
Search/Filter Tags	DNS name tags: Name:,Nombre:,Navn:,Nome:,Nom :,Nomlu00FF:		
	DNS server tags: Server:,Serveur,Serveur,Serveur/u00FF:		
	Don't check default thresholds		
"" Remote Servers	Email character set:		
Templates	Email subject character set:		
Preferences	Enable downtime mechanism		
Server Statistics	Enable report credentials to BSM		
Tools	Fnable topology collection in standalone deploye	ment	
»	Save Cancel Restart Sit	eScope	

Figure 48 SiteScope > Infrastructure Preferences > General Settings

 Navigate to Preferences → Infrastructure Preferences → Custom Monitor Settings tab and check the Allow Network Access and Reload classes and jars on each monitor run checkboxes.

1 SiteScope	User: SiteScope Administrator	Logout
Page Options - Help -		
Certificate Management	Infrastructure Preferences	
Common Event Mappings	🔀 Eind: 🔄 Find Next 🕞 Find grevious 📃 Highlight 🗌 Match Case	
Credential Preferences	Custom Monitor Satisone	
Email Preferences		
General Preferences	Allow network access	
S HTTP Preferences	Disable custom monitors while publish changes	
High Availability Preferences	Enable custom monitors debugging	
Infrastructure Preferences	Maximum number of counters: 1000	
S Integration Preferences	Maximum number of oueries: 10	
Log Preferences	V Below classes and lars on each monitor run	
Pager Preferences		
SNMP Preferences		1
Schedule Preferences	Alert Settings	1
Search/Filter Tags	Multi-View Settings	
Monitore		1
	_ Template Settings	1
"o" Remote Servers		1
Templates	Persistency Settings	
Preferences	Report Settings	1
Server Statistics		1
Tools	Baseline Settinos	1 💌 🔤
»	RA Save Cancel Restart SiteScope	- 1
•		

Figure 49 SiteScope > Infrastructure Preferences > Custom Monitor Settings

- 4. Save the configuration.
- 5. Navigate to Preferences \rightarrow SNMP Preferences \rightarrow Select New icon

Ø SiteScope			Us	er: SiteScope Administrator	Logout
Page Options 👻 Help 👻					
 Certificate Management Common Event Mappings Credential Preferences 	SNMP Preferences Send SNMP Traps Preferences	<u>255</u> ngs ▼			
M Email Preferences	Name	Host	Port	Description	
General Preferences Thereforences					
High Availability Preferences					
- Infrastructure Preferences					
S Integration Preferences					
E Log Preferences					
E Pager Preferences	4				
SNMP Preferences	Receive SNMP Trans Preferen	ncos			
Schedule Preferences	* / X % %	1005			
Search/Filter Tags	Name	Host	Port	Description	
Monitors					
Remote Servers					
Templates					
Preferences					
Server Statistics					
Tools					
,	5				

Figure 50 SiteScope > SNMP Preferences

6. Fill in the details in the SNMP Trap window that opens. Make sure to key in the Enterprise-specific SNMP trap ID as 11, and other SNMP object ID as .1.3.6.1.4.1.11.2.53.2.2.3.1.2.1. Set the Send to host IP address to point to the host where Generic SNMP CA is configured.

🗐 New SNMP Trap			x
General settings		*	ľ
		,	
* Name:	SNMPTarget		
Description.	SNMP Trap Destination		
		_	1
Preferences settin]s	8	
Main Setting	5		
* Send to host:	0.0.0 Point to the SNMP Target and port		
* SNMP port:	162 Where traps have to be sent		
SNMP Conne	ection Settings		
Timeout (seco			
Number of ret	ies: 2 Make these connection		
* Community:	public settings		
SNMP version	v2 v		
Authentication	algorithm: MD5 V		
User name:			
Password:			
Privacy algorit	hm: DES 💌		
Privacy passv	lord:		
Context name			
Context engin	> ID:		
Advanced Se	ttings		
SNMP trap ID	Generic SNMP trap ID		
	Enterprise-specific SNMP trap ID	de	
SNMP object I	D: O Preconfigured SNMP object ID HP OpenView Event Value 11 Uncheck the radio button		
	Other SNMP object ID 1.3.6.1.4.1.11.2.53.2.2.3.1.2.1 Check the radio button and		
	Add System OID as a prefix to SNMP Trap		
SNMP Source	Monitored Host		
Search/Filter Tags		Ľ	
24		ale	_
Ľ/-		alb	

Figure 51 SiteScope > SNMP Preferences > New SNMP Trap

7. Click OK. You can see an entry created in the SNMP Preferences page.

😥 SiteScope			Us	ser: SiteScope Administrator	Logout
Page Options - Help -					
Certificate Management Common Event Mappings Credential Preferences Candential Preferences Common Event Mappings Credential Preferences Intrastructure Preferences Infrastructure Preferences	SNMP Preferences Send SNMP Traps Preference * 2 X I Traps Preference Name SNMPTarget	Ng • Host	Port 162	Description SNMP Trap Destination	
Integration Preferences Log Preferences Pager Preferences Secoldule Preferences Secoldule Preferences Secoldule Preferences	Receive SNMP Traps Preferent	ices			
- · · · · · · · · · · · · · · · · · · ·	Name	Host	Port	Description	
Monitors Remote Servers Templates Server Statistics Freferences Server Statistics Serve					

Figure 52 SiteScope > SNMP Preferences >Send SNMP Trap Preferences

 Navigate to Templates context and select SiteScope root folder from the left pane tree and select Import → Template option.

	Ø SiteSco	оре		
	Page Options 👻	Help 🔻		
Ι	* • 🖺 •	* * T - G 🖸	λ .	SiteScope Templates
	□- □ SiteScope	* New Paste Ctrl-V	plates	* ∥ ≍ 또 Name
		Import I	Template	Solution Templates
	E-C Solutio	Expand All	Content Package	je Pemplate Examples
				Monitor Deployment Wizard Templates
				NFVDirector
	Monitors			
	Remote Serv	vers		
	Templates			
	Preferences			
	Cerver Statis	tics		
	Tools			

Figure 53 SiteScope > Import Template

9. Browse to the location where the file SiteScope_Templates is placed and choose the same. If you have launched the browser from your Desktop system, you may have to transfer the SiteScope_Templates from the system where you have installed the RPM from the /opt/HP/nfvd/templates location.

File name C:\SiteScope_Templates Image: Complete	HP SiteScope Template Import		X
	File name	C:\SiteScope_Templates	Browse
		OK	Canad

Figure 54 SiteScope > Import Template SiteScope_Templates

10. Click OK to import the templates. You will see the imported templates under NFVD directory.



Figure 55 SiteScope > NFVDirector Template listing

11. From the imported templates, select the VM_MONITORS tree and select Import→Content Package option.

Ø SiteScop	ре						
Page Options 🔻	Help 🔻						
* • 🖺 • 🔺	* 🔻 - 🔁 🕻	Q		Te	emplate	e Container VI	M_MONITORS
SiteScope SiteScope SiteScope SiteScope SiteScope SiteScope SiteScope SiteScope Solution	Deployment Wizard Te ctor IT_MONITORS MONITORS * New Paste Delete Copy Cut Deploy Template	Ctrl-V Ctrl-V Ctrl-D Ctrl-C Ctrl-C Ctrl-X			Varia *	able Values Name: Description: rch/Filter Tag:	VM_MONITORS Template container for vm monitors s
	Import	•	Template	e			
	Export	Þ	Content	Package			
	Generate XML						
	Expand All						

Figure 56 SiteScope > Import Content Package

12. Browse and point to the Openstack_VM_Templates zip file and click OK. If you have launched the browser from your Desktop system, you may have to transfer the SiteScope_Templates from the system where you have installed the RPM from the /opt/HP/nfvd/templates location.

HP SiteScope Import Content Package		x
File name	C:\Openstack_VM_Templates.zip	Browse
	ОК	Cancel <u>H</u> elp

Figure 57 SiteScope > Import Content Package Openstack_VM_Templates.zip

13. Once imported, Openstack **templates will be listed under** OPENSTACK_VM **tree**.

Ø SiteScope	
Page Options 🔻 Help 👻	
* • 🖺 • 🙁 🔻 🐨 - 🔂 Q-	Template Container VM_MONITORS
 □-● SiteScope ● ☆ Monitor Deployment Wizard Templates □ ☆ NFVDirector □ ☆ HOST_MONITORS □ ☆ NFVI_MONITORS 	Variable Values * Name: VM_MONITORS
DiskWrite → → → → → → → → → → → → → → → → → → →	Search/Filter Tags

Figure 58 SiteScope > NFVDirector Templates > OpenStack Templates

14. Restart SiteScope.

3.7.6.2 Automatic import

NOTE: If the automatic import script is executed, you will need to reapply the license file again and the existing administrator credentials will be erased.

In order to automatically import all the settings that were carried out during Manual Import, Automatic Import of SiteScope template and configuration can be performed. However, it is advisable to perform automatic import only if it is a new SiteScope installation as it would overwrite any other configurations already performed on SiteScope, including overwriting the administrator username and password.

Automatic import can be performed by running the following command:

/opt/HP/nfvd/bin/sitescope_config_import.sh

Script would not be executed if the SiteScope application is running.

3.7.6.3 Assurance gateway configuration for SiteScope

The file /var/opt/HP/nfvd/conf/monitoring.properties must be edited to set the following attributes:

- sitescope.login SiteScope Administrator user name
- sitescope.password SiteScope Administrator password
- sitescope.host SiteScope server
- sitescope.port SiteScope port

#Hypervisor Properties

The VMWARE_Handler property indicates the attribute in the Virtual Machine from where the VM name has to be used ## by the Assurance Gateway for deploying the monitor VMWARE_Handler=HYPERVISOR.NAME

The KVM_Handler property indicates the attribute in the Virtual Machine from where the VM name has to be used ## by the Assurance Gateway for deploying the monitor KVM_Handler=HYPERVISOR.NAME

The OPENSTACK_Handler property indicates the attribute in the Virtual Machine from where the VM name has to be used ## by the Assurance Gateway for deploying the monitor OPENSTACK_Handler=HYPERVISOR.ID

In the absence of above Handler properties, GENERAL.NAME attribute in the Monitor Handler of the VNFD will be ## used to identify the VM name for deploying the monitor

The KVM_HOSTNAME property indicates the attribute in the KVM host from where the host name has to be used by ## the Assurance Gateway for deploying the monitor KVM_HOSTNAME=HYPERVISOR.HOSTNAME

The VMWARE_HOSTNAME property indicates the attribute in the VMWare host from where the host name has to be ## used by the Assurance Gateway for deploying the monitor VMWARE_HOSTNAME=HYPERVISOR.HOSTNAME

Specify the Sitescope login details
sitescope.login=
sitescope.password=
Specify the sitescope server port and host
sitescope.host=localhost
sitescope.port=8088
Configure if SSL is required
sitescope.useSSL=false

Figure 59 monitoring.properties

3.7.6.4 Enabling database logging on SiteScope

1. SiteScope has a provision to store the monitor logs into the database. It is an optional feature that can be enabled by running the following script:

/opt/HP/nfvd/bin/metricsDBConfig.sh

Before running this script, SiteScope application must be stopped. It would create a database table SITESCOPELOG, which enables the logging preferences.

- 2. Once you run the script, start SiteScope and login to the portal.
- 3. Go to $Preferences \rightarrow Log Preferences$ to verify that the Database Logging Preferences has been set.

A sample preference setting is as shown in the following figure:

Scope Log File Preferences	
Daily logs to keep: 40 Maximum size of logs (MB): 0	•
Disable separate logging for mon	itors
abase Logging Preferences	
abase Logging Preferences	
abase Logging Preferences	jdbc:postgresql://127.0.0.1:5432/postgres/
abase Logging Preferences Database connection URL: Database driver:	jdbc:postgresql://127.0.0.1:5432/postgres/ org.postgresql.Driver
abase Logging Preferences Database connection URL: Database driver: Database user name:	jdbc:postgresql://127.0.0.1:5432/postgres/ org.postgresql.Driver postgres
abase Logging Preferences Database connection URL: Database driver: Database user name: Database password:	idbc:postgresql://127.0.0.1:5432/postgres/ org.postgresql.Driver postgres

Figure 60 SiteScope > Log Preferences

3.8 Stop and Start NFVD Assurance gateway

Various components of the NFVD can be started and stopped by using the script /opt/HP/nfvd/bin/nfvd-director.sh

Usage: nfv-director.sh [OPTIONS...]

-a start | stop | restart | status

[-c] [activator | sosa | ecpool | lockmgr | ppasdb | openmediation | sitescope | uca-ebc | uca-atm | nfvd-agw]

For more details, see the HP NFV Director User Guide.

NOTE: Use the option nfvd-agw to start or stop the NFVD Assurance gateway.

3.9 Uninstalling the NFVD Assurance solution

NFVD Assurance RPMs can be uninstalled by running the rpm -ev option.

Run the following commands to uninstall the various NFVD Assurance solutions:

- rpm -ev nfvd-assur-gw-core-01.00.000-1.el6.noarch
- rpm -ev nfvd-assur-gw-tpp-01.00.000-1.el6.noarch
- rpm -ev nfvd-monitors-01.00.000-1.el6.noarch
- rpm -ev nfvd-correlation-01.00.000-1.el6.noarch
- rpm -ev nfvd-assur-gw-base-01.00.000-1.el6.noarch

Note that uninstalling the nfvd-monitors-01.00.000-1.el6.noarch does not remove the configuration settings performed on the SiteScope system.

3.10 Various log file locations in NFVD Assurance

Product	Logs Location
Sitescope	/opt/HP/SiteScope/logs/
HPSA	/var/opt/OV/ServiceActivator/log/ <hostname></hostname>
HPSA	/opt/HP/jboss/standalone/log/
UCA-EBC	/var/opt/UCA-EBC/instances/default/logs/
Open Mediation	/var/opt/openmediation-V62/log/
Open Mediation Service Mix	/var/opt/openmediation-
Open Mediation Service Mix	V62/containers/instance-<#>/data/log
UCA Automation	/var/opt/UCA-ATM/logs/
NFVD Assurance Gateway	/opt/HP/nfvd/tpp/jboss/standalone/log

Table 42 Various log locations

NOTE: Periodic cleanup or archiving of the log files in the above directories is recommended.

Chapter 4

Code signing

This Software Product from HP is digitally signed and accompanied by Gnu Privacy Guard (GnuPG) signatures. HP strongly recommends using signature verification on its products, but there is no obligation. Customers will have the choice of running this verification as per their IT policies.

Installing and configuring Gnu Privacy Guard 4.1 (GnuGP)

If you do not already have GnuGP installed, you will have to download and install it. For information about obtaining and installing GnuGP, see http://www.gnupg.org

Before verifying the signatures delivered on the HP Service Activator DVD, configure GnuGP to accept the HP signature. To do this, complete the following steps.

- 1. Log in to your system.
- 2. Get the HP public key from the following location:

https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=HPLinuxCodeSigni ng

- 3. Save the key as hpPublicKey.pub.
- 4. Import the key into GnuPG by running the following command: gpg --import hpPublicKey.pub

Verifying the authenticity and integrity of the 4.2 software

The following procedure allows you to assess the integrity of the software before installing it, by verifying the signatures of the software packages.

4.2.1 Red Hat Enterprise Linux 6.4

1. From a command prompt, go to the Binaries directory on the DVD, and run the following command:

gpg --verify <Binary File>.sig <Binary File> where <Binary File> is one of the following:

Binary File	Component Name
nfvd-assur-gw-tpp-01.00.000- 1.el6.noarch.rpm	NFVD Assurance 3 rd party products

nfvd-assur-gw-core-01.00.000- 1.el6.noarch.rpm	NFVD Assurance Gateway		
nfvd-assur-gw-base-01.00.000- 1.el6.noarch.rpm	NFVD Start/Stop Scripts		
nfvd-correlation-01.00.000-1.el6.noarch.rpm	UCA Automation NFVD domain solution packs		
nfvd-monitors-01.00.000-1.el6.noarch.rpm	SiteScope NFVD monitors		
nfvd-fulfillment-01.00.000-1.el6.noarch.rpm	NFV Director Fulfillment solution packs		
Table 12 Pinarias List for Signature			

 Table 43 Binaries List for Signature

2. Look for the following output from the gpg command:

gpg: Good signature from "Hewlett-Packard Company (HP Code signing Service)"