

# NSLCM API Specification

## V0.1

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# 1.Scope

The scope of the present document is to describe the NSLCM API specification.

## 2.Terms, Definitions and Abbreviations

For the purposes of the present document, the following abbreviations apply:

Abbreviation	
NFVO	Network Functions Virtualization Orchestrator
NSD	Network Service Descriptor
NS	Network Service
VIM	Virtualised Infrastructure Manager
VXLAN	Virtual extensible LAN

Table 2-1 abbreviations

## 3.NS Lifecycle Management Interface

### 3.1 Create NS

IF Definition	Description
URI	http(s)://[hostname][:port]/api/nslcm/v1/ns
Operation	POST
Direction	GUI->NSLCM GSO->NSLCM

### 3.1.1 Request

Parameter	Qualifier	Cardinality	Content	Description
nsdId	M	1	Identifier (Reference to Nsd)	Reference to the NS Descriptor used to create this Network Service instance
nsName	M	1	String	Human readable name of the Network Service instance
description	M	1	String	Human readable description of the Network Service instance

```
{
  "nsdId": "1",
  "nsName": "vCPE_NJ",
  "description": "Nanjing_vCPE"
}
```

### 3.1.2 Response

Parameter	Qualifier	Cardinality	Content	Description
nsInstanceId	M	1	Identifier	Identifier of the instance of a Network Service information element just created.

```
{
  "nsInstanceId": "1"
}
```

## 3.2 Instantiate Network Service

IF Definition	Description
URI	http(s)://[hostname][:port]/api/ns lcm/v1/ns/{nsInstanceId}/Instantiate
Operation	POST
Direction	GUI->NSLCM GSO->NSLCM

### 3.2.1 Request

Parameter	Qualifier	Cardinality	Content	Description
nsInstanceId	M	1	Identifier	Identifier of the instance of the Network Service
locationConstraints	M	0..N	VnfLocationConstraint	Geographic Location constraints of NS
additionalParams	M	0..N	KeyValuePair	Allows the OSS to provide

mForNs				additionalParam at the NS-level (as opposed to the VNF level, which is covered in additionalParamForVnf)
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VnfLocationConstraint:

Parameter	Parameter	Parameter	Parameter	Parameter
vnfProfileId	M	1	Identifier	Identifier (reference to) of a VnfProfile in the NSD used to manage the lifecycle of the VNF instance.
locationConstraints	M	1	LocationConstraints	Defines the location constraints for the VNF instance to be created.

LocationConstraints

Parameter	Qualifier	Cardinality	Content	Description
vimId	M	1	string	vim id

```
{
  "nsInstanceId": "1",
  "LocationConstraints": {
    "vnfProfileId": "zte-CSCF-1.0",
    "locationConstraints": {
      "vimId": "1"
    }
  }
}
"additionalParamForNs": {
  "vCPE": "1111"
}
}
```

## 3.2.2 Response

Parameter	Qualifier	Cardinality	Content	Description
jobId	M	1	Identifier	The identifier of the NS lifecycle job.

```
{
  "jobId": "1"
}
```

}

## 3.3 Scale Network Service

IF Definition	Description
URI	http(s)://[hostname][:port]/api/nslcm/1.0/ns/{nsInstanceId}/scale
Operation	POST
Direction	GUI->NSLCM GSO->NSLCM

### 3.3.1 Request

Parameter	Qualifier	Cardinality	Content	Description
scaleType	M	1	Enum	Indicates the type of scaling to be performed. Possible values: SCALE_NS, SCALE_VNF. See note.
scaleNsData	M	0..1	ScaleNsData	Provides the necessary information to scale the referenced NS instance. It shall be present when scaleType = SCALE_NS. See note.

NOTE: Either scaleNsData or scaleVnfData, but not both, shall be present. In Release 2, only SCALE\_NS is supported.

#### ScaleNsData

Parameter	Qualifier	Cardinality	Content	Description
aspectId	M	1	Identifier of ScalingAspect	Identifier of the ScalingAspect on which the NS instance will be scaled.
numberOfSteps	M	1	Integer	The number of steps that this instance of NS will be scaled on the given scaling aspect

scalingDirection	M	0..1	Enum	Provides the direction of scaling. SCALE_OUT and SCALE_IN are valid values currently.
------------------	---	------	------	---

#### ScaleVnfData

Parameter	Qualifier	Cardinality	Content	Description
vnfInstanceId	M	1	Identifier	Identifier of the VNF instance being scaled.
scaleByStepData	M	0..1	ScaleByStepData	Provides the information needed when scaling by steps. See note.
NOTE: Either scaletoLevelData or scaleByStepData but not both shall be present.				

#### ScaleByStepData

Parameter	Qualifier	Cardinality	Content	Description
type	M	1	Enum	Defines the type of the scale operation requested (scale out, scale in). SCALE_OUT SCALE_IN
aspectId	M	1	Identifier (Reference to ScalingAspect)	Identifier of (reference to) the aspect of the VNF that is requested to be scaled, as declared in the VNFD.
numberOfSteps	M	0..1	Integer	Number of scaling steps. It shall be a positive number. Defaults to 1. The VNF provider defines in the VNFD whether or not a particular VNF supports performing more than one step at a time. Such a property in the VNFD applies for all instances of a particular VNF. See note.
additionalParam	M	0..N	KeyValuePair	Additional parameters passed by the NFVO as input to the scaling process, specific to the VNF instance being scaled.
NOTE: A scaling step is the smallest unit by which a VNF instance can be scaled w.r.t a particular scaling aspect.				



```

{
  "nsInstanceId": "1",
  "scaleType": "SCALE_VNF",
  "scaleNsData": [
    {
      "aspectId": "101",
      "numberOfSteps": "1",
      "scalingDirection": "UP"
    }
  ]
}

```

### 3.3.2 Response

Parameter	Qualifier	Cardinality	Content	Description
jobId	M	1	Identifier	The identifier of the NS lifecycle operation occurrence job.

```

{
  "jobId": "1"
}

```

## 3.4 Query Network Service

IF Definition	Description
URI	http(s)://[hostname][:port]/api/ns lcm/v1/ns/{ nsInstanceId }
Operation	GET
Direction	GUI->NSLCM GSO->NSLCM

### 3.4.1 Request

None

### 3.4.2 Response

Parameter	Qualifier	Cardinality	Content	Description
nsInstanceId	M	1	Identifier	Identifier of this NsInfo information element,

				identifying the Network Service instance
nsName	M	1	String	Human readable name of the Network Service instance
description	M	1	String	Human readable description of the Network Service instance
nsId	M	1	Identifier (Reference to Nsd)	Reference to the NS Descriptor used to instantiate this Network Service
vnfInfo	M	0..N	VnfInfo	A list of information on constituent VNFs of this Network Service.
vlInfo	M	0..N	NsVirtualLink	Information on the virtual links of this Network Service.
vnffgInfo	M	0..N	Vnffg	Information on the VNFFGs of this Network Service
nsState	M	1	Enum	The state of the Network Service. Possible values: INACTIVE (i.e. the Network Service instance is not instantiated or terminated), ACTIVE (i.e. the Network Service instance is instantiated).

### VnfInfo

Parameter	Qualifier	Cardinality	Content	Description
vnfInstanceId	M	1	String	Vnf instance Id
vnfInstanceName	M	1	String	Vnf instance Name
vnfProfileId	M	1	String	vnfd id

### NsVirtualLink

Parameter	Qualifier	Cardinality	Content	Description
vlInstanceId	M	1	String	vld id
vlInstanceName	M	1	String	vl instance name
vldId	M	1	String	vld id
relatedCpInstanceId	M	0..N	CpInfo	cp instance id

## Vnffg

Parameter	Qualifier	Cardinality	Content	Description
vnffgInstanceid	M	1	String	Vnffg instance id
vnfld	M	1..N	String	vnfldInstanceid of vnffg instance
pnfld	M	0..N	String	pnfldInstanceid of vnffg instance
virtualLinkId	M	1..N	String	vlInstanceid of vnffg instance
cpId	M	1..N	String	cpInstanceid of vnffg instance
nfp	M	1..N	String	nfpInstanceid of vnffg instance

## CpInfo

Parameter	Qualifier	Cardinality	Content	Description
cpInstanceid	M	1	String	cp instance id
cpInstanceName	M	1..N	String	name of cp instance
cpId	M	1..N	String	id of cpd

# 3.5 Terminate Network Service

IF Definition	Description
URI	http(s)://[hostname][:port]/api/nsldcm/v1/ns/{ nsInstanceid }/Terminate
Operation	POST
Direction	GUI->NSLCM GSO->NSLCM

## 3.5.1 Request

Parameter	Qualifier	Cardinality	Content	Description
nsInstanceid	M	1	Identifier	Identifier of the Network Service instance to terminate
terminationType	M	1	Enum	forceful graceful
gracefulTerminationTimeout	M	0..1	TimeDuration	seconds

```
{  
  "nsInstanceid": "1",  
  "terminationType": "graceful",  
  "gracefulTerminationTimeout": "60"  
}
```

}

## 3.5.2 Response

Parameter	Qualifier	Cardinality	Content	Description
jobId	M	1	Identifier	The identifier of the NS lifecycle operation occurrence job.

{

  "jobId": "1"

}

## 3.6 Delete NS Operation

IF Definition	Description
URI	http(s)://[hostname][:port]/api/nslcm/v1/ns/{ nsInstanceId }
Operation	Delete
Direction	GUI->NSLCM GSO->NSLCM

### 3.6.1 Request

None

### 3.6.2 Response

None

## 3.7 Get Operation Status

IF Definition	Description
URI	http(s)://[hostname][:port]/api/nslcm/v1/jobs/{jobId}&responseId={ responseId}
Operation	GET
Direction	GUI->NSLCM GSO->NSLCM

### 3.7.1 Request

None

### 3.7.2 Response

Parameter	Qualifier	Cardinality	Content	Description
-----------	-----------	-------------	---------	-------------

jobId	M	1	String	Job ID
responseDescriptor	M	1	ResponseDescriptor	Defines the response info.

#### ResponseDescriptor

Parameter	Qualifier	Cardinality	Content	Description
status	M	1	String	JOB status started processing finished error
progress	M	1	Integer	progress (1-100)
statusDescription	M	1	String	Progress Description
errorCode	M	1	Integer	Errorcode
responseId	M	1	Integer	Response Identifier
responseHistoryList	M	0..n	ResponseHistory	History Response Messages from the requested responseId to latest one.

#### ResponseHistory

Parameter	Qualifier	Cardinality	Content	Description
status	M	1	String	JOB status started processing finished error
progress	M	1	Integer	progress (1-100)
statusDescription	M	1	String	Progress Description
errorCode	M	1	Integer	Errorcode
responseId	M	1	Integer	Response Identifier

```
{
  "jobId" : "1234566",
  "responseDescriptor" : {
    "progress" : "40",
    "status" : "processing",
    "statusDescription" : "OMC VMs are decommissioned in VIM",
    "errorCode" : null,
    "responseId" : "42",
    "responseHistoryList" : [{
      "progress" : "40",
```

```

        "status" : "processing",
        "statusDescription" : "OMC VMs are decommissioned in VIM",
        "errorCode" : null,
        "responseId" : "1"
    }, {
        "progress" : "41",
        "status" : "processing",
        "statusDescription" : "OMC VMs are decommissioned in VIM",
        "errorCode" : null,
        "responseId" : "2"
    }
}
]
}
}

```

## 3.8 Heal NS

IF Definition	Description
URI	http(s)://[hostname][:port]/api/nslcm/v1/ns/{ nsInstanceId }/heal
Operation	Post
Direction	GUI->NSLCM GSO->NSLCM

### 3.8.1 Request

Parameter	Qualifier	Cardinality	Content	Description
healVnfData	M	1	HealVnfData	Defines the information needed to heal a VNF. See note.
NOTE: Either the parameter healNsData or the parameter healVnfData, but not both shall be provided. Currently only healVnfData is supported.				

#### HealVnfData

Parameter	Qualifier	Cardinality	Content	Description
vnfInstanceId	M	1	Identifier	Identifies the VNF instance, part of the NS, requiring a healing action.
cause	M	0...1	String	Indicates the reason why a healing procedure is required.
additionalParams	M	0...1	KeyValuePairs	Additional parameters passed by the NFVO as input to the healing process, specific to the VNF being healed.

--	--	--	--	--

```

{
  " healVnfData":
  {
    "vnfInstanceId":"1",
    "cause":"vm is down",
    "additionalParams":
    {
      "action":"restartvm",
      "actionvminfo":
      {
        "vmid":"33",
        "vmname":"xgw-smp11"
      }
    }
  }
}

```

### 3.8.2 Response

Parameter	Qualifier	Cardinality	Content	Description
jobId	M	1	Identifier	The identifier of the NS healing operation occurrence job.

```

{
  "jobId":"1"
}

```

## 4.NS Package Management Interface

### 4.1 NS Package Onboarding

IF Definition	Description
URI	http(s)://[hostname][:port]/api/nslcm/v1/nspackage
Operation	POST
Direction	GUI->NSLCM GSO->NSLCM

## 4.1.1 Request

Parameter	Qualifier	Cardinality	Content	Description
csarId	M	1	String	NS package id

```
{  
  "csarId": "78ede6f3-66cc-46ab-b748-38a6c010d272",  
}
```

## 4.1.2 Response

Parameter	Qualifier	Cardinality	Content	Description
status	M	1	String	Operation status Value is: success failed
statusDescription	M	1	String	Status description information
errorCode	M	1	String	Error code

```
{  
  "status": "failed",  
  "statusDescription": "Already onBoarded, no need for onBoarding",  
  "errorCode": "409"  
}
```

## 4.2 NS Package Delete

IF Definition	Description
URI	http(s)://[hostname][:port]/api/nslcm/v1/nspackage/{csarId}
Operation	DELETE
Direction	GUI->NSLCM GSO->NSLCM

### 4.2.1 Request

None

### 4.2.2 Response

Parameter	Qualifier	Cardinality	Content	Description
status	M	1	String	Operation status Value is:



				success failed
statusDescription	M	1	String	Status description information
errorCode	M	1	String	Error code

```
{
  "status": "success",
  "statusDescription": "Delete Successfully",
  "errorCode": "200",
}
```

## 4.3 Query NS Package

IF Definition	Description
URI	http(s)://[hostname][:port]/api/nslcm/v1/nspackage/{csarlId}
Operation	GET
Direction	GSO->NSLCM

### 4.3.1 Request

None

### 4.3.2 Response

Parameter	Qualifier	Cardinality	Content	Description
csarlId	M	1	Identifier	Identifier of the on-boarded instance of the package
packageInfo	M	1	PackageInfo	PackageInfo
nsInstanceInfo	M	0...N	NsInstanceInfo	NS instance info

PackageInfo:

Parameter	Qualifier	Cardinality	Content	Description
name	M	1	String	NS package name
provider	M	1	String	NS package provider
version	M	1	String	NS package version
onBoardState	M	1	String	OnBoard state Enum{onBoarded, non-on Boarded}
deletionPending	M	1	Enum	Deletion pending Enum{true, false}
downloadUri	M	1	String	The download uri of NS

				package
nsdId	M	1	String	NSD id
nsdProvider	M	1	String	NSD provider
nsdVersion	M	1	String	NSD version

#### NsInstanceInfo

Parameter	Qualifier	Cardinality	Content	Description
nsInstanceid	M	1	String	NS instance identifier
nsInstanceName	M	1	String	NS instance name

## 5. VNF Package Management Interface

### 5.1 VNF Package Onboarding

IF Definition	Description
URI	http(s)://[hostname][:port]/api/nslcm/v1/vnfpackage
Operation	POST
Direction	GUI->NSLCM GSO->NSLCM

#### 5.1.1 Request

Parameter	Qualifier	Cardinality	Content	Description
csarId	M	1	String	VNF package id
vimIds	O	1..n	Array<String>	VIM IDs
labVimId	O	0..1	String	Lab VIM information

```
{
  "csarId": "78ede6f3-66cc-46ab-b748-38a6c010d272",
  "vimIds": ["67ede6f3-66cc-46ab-b748-38a6c010d456"],
  "labVimId": "90ede6f3-66cc-46ab-b748-38a6c010d789"
}
```

#### 5.1.2 Response

Parameter	Qualifier	Cardinality	Content	Description
jobId	M	1	Identifier	The identifier of the VNF package operation occurrence job.

## 5.2 VNF Package Delete

IF Definition	Description
URI	http(s)://[hostname][:port]/api/nslcm/v1/vnfpackage/{csarId}
Operation	DELETE
Direction	GUI->NSLCM GSO->NSLCM

### 5.2.1 Request

None

### 5.2.2 Response

Parameter	Qualifier	Cardinality	Content	Description
jobId	M	1	Identifier	The identifier of the VNF package operation occurrence job.

## 5.3 Query VNF Package

IF Definition	Description
URI	http(s)://[hostname][:port]/api/nslcm/v1/vnfpackage/{csarId}
Operation	GET
Direction	VNFMDriver->NSLCM GSO->NSLCM

### 5.3.1 Request

None

### 5.3.2 Response

Parameter	Qualifier	Cardinality	Content	Description
csarId	M	1	String	NS package id
packageInfo	M	1	VnfPackageInfo	VNF package information
imageInfo	M	1	ImageInfo	Image file information
vnfInstanceInfo	M	0..N	VnfInstanceInfo	VNF instance information

VnfPackageInfo:

Parameter	Qualifier	Cardinality	Content	Description
-----------	-----------	-------------	---------	-------------

name	M	1	String	VNF package name
provider	M	1	String	VNF package provider
version	M	1	String	VNF package version
onBoardState	M	1	String	OnBoard state Enum{onBoarded,non-onBoarded}
deletionPending	M	1	Enum	Deletion pending Enum{true, false}
downloadUri	M	1	String	The download uri of VNF package
vnfdId	M	1	String	VNFD id
vnfdProvider	M	1	String	VNFD provider
vnfdVersion	M	1	String	VNFD version
vnfVersion	M	1	String	VNF version

**ImageInfo:**

Parameter	Qualifier	Cardinality	Content	Description
index	M	1	String	index
fileName	M	1	String	File name
imageId	M	1	String	Image id
vimId	M	1	String	VIM id
vimUser	M	1	String	VIM user
tenant	M	1	String	tenant
status	M	1	String	File status

**VnfInstanceInfo:**

Parameter	Qualifier	Cardinality	Content	Description
vnfInstanceId	M	1	String	VNF instance identifier
vnfInstanceName	M	1	String	VNF instance name

## 6. VNF Lifecycle Management Interface

### 6.1 Grant VNF lifecycle operation

IF Definition	Description
URI	http(s)://[hostname][:port]/api/nslcm/v1/grantvnf
Operation	POST
Direction	VNFMDriver->NSLCM

#### 6.1.1 Request

Parameter	Parameter	Parameter	Parameter	Parameter

	<b>r</b>			
vnfInstanceId	M	1	String	Identifier of the VNF instance.
vnfDescriptorId	M	1	String	Identifier of the VNF Descriptor
lifecycleOperation	M	1	Enum	Instantiate Scaleout/Scalein Scaleup/Scaledown Terminal
jobId	M	1	String	Identifier of the LCM job
addResource	M	0..N	ResourceDefinition	Defines a list of resource information to be added to VNF instance.
removeResource	M	0..N	ResourceDefinition	Defines a list of resource information to be removed from VNF instance.
additionalParam	M	0..N	KeyValuePair	Additional parameters.

**ResourceDefinition:**

<b>Parameter</b>	<b>Qualifier</b>	<b>Cardinality</b>	<b>Content</b>	<b>Description</b>
type	M	1	Enum	VDU VL CP Storage
resourceDefinitionId	M	1	String	Identifier of this ResourceDefinition information element, unique at least within the scope of the Grant request.
vdu	M	0..1	String	Reference to the related vdu applicable to this resource in the VNFD. Shall only be present if a VDU is applicable to this resource in the VNFD.

```
{
  "vnfInstanceId": "1",
  "vnfDescriptorId": "1",
  "lifecycleOperation": "Instantiate",
  "jobId": "1",
  "addResource": [
    {
      "type": "vdu",
      "resourceDefinitionId": "1",

```

```

    "vdu":"omp"
  },
  {
    "type":"vdu",
    "resourceDefinitionId":"2",
    "vdu":"omp"
  }
]
}

```

## 6.1.2 Response

Parameter	Qualifier	Cardinality	Content	Description
vim	CM	0..N	VimInfo	Provide information regarding VIM instances where the resources are approved to be allocated by the VNFM, and provides parameters to access these VIM instances. Absent in case of rejection or if the VIM information was configured to the VNFM in another way, present otherwise. This parameter shall be supported when VNF-related Resource Management in direct mode is applicable .
vimAssets	M	0..1	VimAssets	Information about assets for the VNF that are managed by the NFVO in the VIM, such as software images and virtualised compute resource flavours.
additionalParam	M	0..N	KeyValuePair	Additional parameters passed by the NFVO, specific to the VNF and the LCM operation.

### VimInfo:

Parameter	Qualifier	Cardinality	Content	Description
vimInfoId	M	1	Identifier	The identifier of this VimInfo instance, for the purpose of referencing it from other information elements.
vimId	M	1	Identifier	The identifier of the VIM.
interfaceInfo	M	0..N	KeyValuePair	Information about the interface to the VIM, including VIM provider type, API version, and protocol type.
accessInfo	M	0..N	KeyValuePair	Authentication credentials for accessing the VIM. Examples may include those to support different authentication schemes, e.g., OAuth, Token, etc.
interfaceEndpoint	M	1	String	Information about the interface endpoint. An example is a URL.

#### InterfaceInfo:

Parameter	Qualifier	Cardinality	Content	Description
vimType	M	1	String	openstack
apiVersion	M	1	String	
protocolType	M	1	String	http https

#### AccessInfo:

Parameter	Qualifier	Cardinality	Content	Description
tenant	M	1	String	Tenant Name of tenant
username	M	1	String	Username for login
password	M	1	String	Password of login user

#### GrantInfo

Parameter	Qualifier	Cardinality	Content	Description
resourceDefinitionId	M	1	Identifier	Identifier of the related ResourceDefinition information element from the Grant request.
reservationId	M	0..1	Identifier	The reservation identifier applicable to the VNFC/VL. It shall be present for new resources when policy is GRANT_RESERVE_MULTI and an applicable reservation exists; shall not be present

				otherwise.
vimId	CM	0..1	Identifier (Reference to VimInfo)	Reference to the identifier of the VimInfo information element defining the VIM under whose control this resource is to be placed. Shall be present for new resources, and shall be absent for resources that have already been allocated.  This attribute shall be supported when VNF-related Resource Management in direct mode is applicable.
resourceProviderId	CM	0..1	Identifier	Identifies the entity responsible for the management of the virtualised resource. Shall be present for new resources, and shall be absent for resources that have already been allocated. This attribute shall be supported when VNF-related Resource Management in indirect mode is applicable.
zoneId	M	0..1	Identifier (Reference to ZoneInfo)	Reference to the identifier of the ZoneInfo information element defining the resource zone into which this resource is to be placed. Shall be present for new resources, and shall be absent for resources that have already been allocated.

#### VimAssets information

Parameter	Qualifier	Cardinality	Content	Description
softwareImage	M	0..N	VimSoftwareImage	Mappings between software images defined in the VNFD and software images managed in the VIM.

#### VimComputeResourceFlavour information



Parameter	Qualifier	Cardinality	Content	Description
vimId	CM	0..1	Identifier	Identifier of the VIM that manages the assets listed in this information element. Shall be supported and present if VNF-related resource management in direct mode is applicable.
vduld				Identifier of the VDU in the VNFD that maps to this flavour
vimFlavourId	M	1	Identifier	Identifier of the compute resource flavour in the resource management layer (i.e. VIM).

### VimSoftwareImage

Parameter	Qualifier	Cardinality	Content	Description
vimId	CM	0..1	Identifier	Identifier of the VIM that manages the assets listed in this information element. Shall be supported and present if VNF-related resource management in direct mode is applicable.
imageName	M	1	Identifier	Identifier of the image name in the VNFD.
vimImageId	M	1	Identifier	Identifier of the image in the resource management layer (i.e. VIM).

## 6.2 Notify LCM Events

IF Definition	Description
URI	http(s)://[hostname][:port]/api/nslcm/v1/vnfs/{vnfInstanceId}/Notify
Operation	POST
Direction	VNFMDriver->NSLCM

### 6.2.1 Request

Parameter	Qualifier	Cardinality	Content	Description
status	M	1	Enum	Indicates whether this notification reports about the start of a lifecycle operation or the result of a lifecycle operation:

				start result
vnfInstanceId	M	0..1	Identifier	The identifier of the VNF instance affected, if defined at the time this notification is generated.
operation	M	1	String	The lifecycle operation. Instantiate Scaleout/Scalein Scaleup/Scaledown Terminal
jobId	M	1	String	Identifier of the LCM job
affectedVnfc	M	0..N	AffectedVnfc	Reference to VNFC instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation.
affectedVI	M	0..N	AffectedVirtualLink	Reference to VL instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation.
affectedVirtualStorage	M	0..N	AffectedVirtualStorage	Reference to virtualised storage instances that were affected during the lifecycle operation, if this notification represents the result of a lifecycle operation.

#### AffectedVnfc

Parameter	Qualifier	Cardinality	Content	Description
vnfcInstanceId	M	1	Identifier	Identifier of the VNFC instance
vduld	M	1	Identifier	Identifier of the VDU in the VNFD.
changeType	M	1	Enum	Signals the type of change : added removed, modified
vimid	M	1	String	Identifier of vim.
vmid	M	1	String	Identifier of virtual machine.
vmname	M	1	String	Name of virtual machine.

#### AffectedVirtualLink

Parameter	Qualifier	Cardinality	Content	Description
vlInstanceId	M	1	Identifier	Identifier of the VL instance.
vldid	M	1	Identifier	Identifier of the VLD in the VNFD.
changeType	M	1	Enum	Signals the type of change : vl_added vl_removed, vl_modified
networkResource	M	1	ResourceHandle	Network Resource

#### AffectedVirtualStorage

Parameter	Qualifier	Cardinality	Content	Description
vsInstanceId	M	1	Identifier	Identifier of the virtual storage resource instance.
vsdId	M	1	Identifier	Identifier of the virtualStorageDescriptor in the VNFD.
changeType	M	1	Enum	Signals the type of change : added removed, modified
storageResource	M	1	ResourceHandle	Type=volume

#### ResourceHandle

Parameter	Qualifier	Cardinality	Content	Description
resourceType			Enum	vm volume network port
resourceId	M	1	Identifier	Identifier of the resource in the scope of the VIM
resourceName	M	1	String	Resource name in the vim

{

  "status": "result"

  "vnfInstanceId": "1"

  "operation": "Instantiate"

  "jobId": "1"

  "affectedVnfc": [

```
{
  "vnfcInstanceId": "vFW",
  "vduld": "vFW",
  "changeType": "added",
  "vimid": "1",
  "vmid": "1",
  "vmname": "vm1"
}
]
"affectedVI": [
  {
    "vllInstanceId": "1",
    "vldid": "1",
    "networkResource": {
      "vimid": "1",
      "resourceType": "vm",
      "resourceId": "298d198d-aa60-48af-a9f4-638f8f274afa",
      "resourceName": "vFW"
    }
  }
]
}
```

## 6.2.2 Response

None