



VM Lifecycle Management Commands

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vm_lifecycle flavors

To create a flavor, use the **vm_lifecycle flavors** command in global configuration mode. To remove a flavor, use the **no** form of the command.

```
vm_lifecycle flavors flavor flavor-name vcpus vcpus memory_mb memory_mb root_disk_mb
root_disk_mb ephemeral_disk_mb ephemeral_disk_mb [swap_disk_mb swap_disk_mb]
```

```
no vm_lifecycle flavors flavor
```

Syntax Description	flavor	<i>flavor-name</i>	Specifies the flavor name.
	vcpus	<i>vcpus</i>	Specifies the number of vCPUs.
	memory_mb	<i>memory_mb</i>	Specifies the memory size in megabytes.
	root_disk_mb	<i>root_disk_mb</i>	Specifies the virtual root disk size in megabytes.
	ephemeral_disk_mb	<i>ephemeral_disk_mb</i>	Specifies the size of a secondary ephemeral data disk.
	swap_disk_mb	<i>swap_disk_mb</i>	(Optional) Specifies the size of swap space allocation.

Command Default None

Command Modes Global configuration (config)

Command History

Release	Modification
3.5.1	This command was introduced.

Usage Guidelines When deploying or modifying a VM, you can specify a flavor in active state. To verify that the VM flavor is created, use the following commands in privileged EXEC mode:

```
show running-config vm_lifecycle flavors [flavor flavor-name]
```

```
show vm_lifecycle opdata flavors [flavor flavor-name]
```

Example

```
nfviz(config)# vm_lifecycle flavors flavor my_small vcpus 2 memory_mb 4096 root_disk_mb
8192 ephemeral_disk_mb 0
swap_disk_mb 0
nfviz(config-flavor-my_small)# commit
```

vm_lifecycle images

To register a VM image, use the **vm_lifecycle images** command in global configuration mode. To remove the VM registration, use the **no** form of the command.

```
vm_lifecycle images image image-name src file-path [properties property property-name value value]
```

```
no vm_lifecycle images image image-name
```

Syntax Description	Parameter	Description
	image <i>image-name</i>	Specifies the image name.
	src <i>file-path</i>	Specifies the location of the image.
	property <i>property-name</i>	Specifies the name of the property to replace the corresponding value inside the tar.gz while registering the image. For detailed information about all supported properties, see the <i>Usage Guidelines</i> section.
	value <i>value</i>	Specifies the property value to be replaced inside the tar.gz.

Command Default None

Command Modes Global configuration (config)

Command History

Release	Modification
3.5.1	This command was introduced.

Usage Guidelines A VM image registration is done only once per VM image. You can perform multiple VM deployments using the registered VM image.

The following table provides information about the resources supported or required for the VM operation.

Table 1: VM Image Properties

Property	Description
vnf_type	Specifies the VM functionality. Possible values are router, firewall, Windows, Linux, and custom_type. Router and firewall are predefined types.
name	Specifies the name associated with the VM packaging. This name is referenced for VM deployment.
version	Specifies the version of the package.
bootup_time	Specifies the bootup time of the VNF before it can be reachable through ping . You can specify any value in seconds. Specify value of -1 to not monitor the VM.

Property	Description
root_file_disk_bus	Specifies the root image disk bus. Valid values are virtio, scsi, and ide.
disk_x_file_disk_bus	Specifies the disk bus for additional disk image. The VM package supports up to 10 disks to be bundled into the package such as disk_1_file_disk_bus, disk_2_file_disk_bus, and disk_10_file_disk_bus. Valid values are virtio, scsi, and ide.
root_image_disk_format	Specifies the root image disk format. Valid values are qcow2 and raw.
disk_x_image_format	Specifies the image format for additional disk image. The VM package supports up to 10 disks to be bundled into the package such as disk_1_image_format, disk_2_image_format, and disk_10_image_format. Valid values are qcow2 and raw.
console_type_serial	Enables the serial console. Valid values are true and false.
vcpu_min	Specifies the minimum vCPUs required for a VM operation.
vcpu_max	Specifies the maximum vCPUs supported by a VM.
memory_mb_min	Specifies the minimum memory in MB required for VM operation.
memory_mb_max	Specifies the maximum memory in MB supported by a VM.
root_disk_gb_min	Specifies the minimum disk size in GB required for VM operation.
root_disk_gb_max	Specifies the maximum disk size in GB supported by a VM.
vnic_max	Specifies the maximum number of vNICs supported by a VM.
sriov_supported	Enables SRIOV support by VM interfaces. Valid values are true and false.
sriov_driver_list	Specifies the list of drivers to enable the SRIOV support.
pcie_supported	Enables the PCI passthrough support by VM interfaces. Valid values are true and false.

Property	Description
pcie_driver_list	Specifies the list of vNICs to enable the PCI passthrough support.
bootstrap_cloud_init_drive_type	Mounts the day0 configuration file as disk. Default is CD-ROM.
bootstrap_cloud_init_bus_type	Default is IDE.
bootstrap_file	Specifies the bootstrap file.
custom_property	Specifies the custom properties that can be defined within the custom_property tree. For example, for ISRV, the technology packages are listed in this block. If the Cisco Enterprise NFV portal is used to deploy the VM, the portal prompts you for inputs for custom properties fields, and can pass the values to the bootstrap configuration.
profiles	Specifies the list of VM deployment profiles. Minimum one profile is required.
default_profile	Specifies the default profile that is used when no profile is specified during deployment.
monitoring_supported	Specifies that the VM supports monitoring to detect failures. Valid values are true and false.
monitoring_methods	Specifies the method to monitor a VM. Currently, only ICMP ping is supported. This parameter is required if the monitoring_supported parameter is set to true.
low_latency	Specifies if a VM's low latency (for example, router and firewall) gets dedicated resource (CPU) allocation. Otherwise, shared resources are used. Valid values are true and false.
privileged_vm	Allows special features like promiscuous mode and snooping. Valid values are true and false. The default value is false.
virtual_interface_model	Specifies the virtual interface model.
thick_disk_provisioning	Configures thick disk provisioning. Valid values are true and false. The default value is false.
placement	Specifies placement datastore. For NFS, valid value is nfs-storage. For Cisco ENCS external datastore, allowed values are datastore2, datastore3. The default value is datastore1.

Property	Description
profile	Specifies the profile for defining the resources required for VM deployment. This profile is referenced during VM deployment.
name	Specifies the profile name.
description	Specifies the description of the profile.
vcpus	Specifies the vCPU number in a profile.
memory_mb	Specifies the memory in MB in a profile.
root_disk_mb	Specifies the disk size in MB in a profile.

To verify that the VM image is registered, use the following commands in privileged EXEC mode:

```
show running-config vm_lifecycle images [image image-name]
```

```
show vm_lifecycle opdata images [image image-name]
```

Example

The following example shows how to register a VM image:

```
nfvis(config)# vm_lifecycle images image isrv src
file://data/intdatastore/uploads/isrv-universalk9.16.03.01.tar.gz
nfvis(config-image-isrv)# properties property vnf_type value router
nfvis(config-property-vm_type)# exit
nfvis(config-image-isrv)# properties property console_type_serial value true
nfvis(config-image-isrv)# properties property bootup_time value -1
nfvis(config-property-bootup_time)# exit
nfvis(config-image-isrv)# commit
nfvis(config-image-isrv)# end
```

vm_lifecycle tenants tenant admin deployments

To deploy a VM with its attributes, use the **vm_lifecycle tenants tenant admin deployments** command in global configuration mode along with the other commands given in the Usage Guidelines section. To undeploy a VM, use the **no** form of the command.

```
vm_lifecycle tenants tenant admin deployments deployment deployment-name vm_group
vm-group-name bootup_time valueimage image-name flavor flavor-name
```

```
no vm_lifecycle tenants tenant admin deployments deployment deployment-name
```

Usage Guidelines

1. Create a deployment and a vm_group.

```
vm_lifecycle tenants tenant admin deployments deployment deployment-name vm_group
vm-group-name bootup_time value image image-name flavor flavor-name
```

2. In the vm_group configuration mode, configure VM interfaces and optional model name, IP address, and port forwarding.

```
interfaces interface nicid network network-name [model model-name] [ip_address ip-address]
[port_forwarding port port-type protocol protocol-name vnf_port port-num external_port_range
port-num-start port-num-end]
```

```
exit
```

3. In vm_group configuration mode, configure scaling rule.

```
scaling min_active min_active max_active max_active
```

4. (Optional) In vm_group configuration mode, configure placement.

```
placement type zone_host host placement-host-name
```

5. In vm_group configuration mode, configure monitoring policy rule for a monitored VM for which the bootup_time is specified.

```
rules admin_rules rule rule-name action actions
```

```
exit
```

```
kpi_data kpi rule-name metric_value value metric_cond value metric_type metric_type metric_collector
type type nicid vnid-id poll_frequency value polling_unit unit continuous_alarm continuous_alarm_value
```

6. Commit the configuration.

```
commit
```

To verify, use following two commands in privileged EXEC mode

```
show running-config vm_lifecycle tenants tenant admin deployments [deployment-name]
```

```
show vm_lifecycle opdata tenants tenant admin deployments [deployment-name]
```

Syntax Description

deployment *deployment-name* Specifies the VM deployment name.

vm_group *vm-group-name* Specifies the VM group name.

bootup_time <i>value</i>	Specifies the VM bootup time. Bootup time can vary depending on the VM image that you have selected. For example, bootup time is 600 seconds for a Cisco ISRV image. If no monitoring is required for the VM, set the bootup time as -1. Note A monitored VM must have a valid bootup time. The corresponding KPI fields are mandatory for the monitored VM. For an unmonitored VM, the KPI fields are optional.
image <i>image-name</i>	Specifies the image name that was used for registering. The image must be in ACTIVE state.
flavor <i>flavor-name</i>	Specifies the flavor name. The flavor must be in ACTIVE state.
interfaces interface <i>nicid</i>	Specifies the virtual interface ID. Note At least one NIC ID is required for monitored VMs. For unmonitored VMs, NIC ID is optional.
network <i>network-name</i>	Specifies the name of the network attached to the NIC ID. All networks (such as LAN and WAN), except the internal management network, require an IP address. The vNIC attachment to the internal management network is required only for VMs that require monitoring. If this interface is used for monitoring, network must be set to int-mgmt-net .
model <i>model-name</i>	Specifies the model name. Possible values are: e1000, i82551, i82557b, i82559er, ne2k_pci, pnet, rtl8139, and virtio. The default value is virtio. This is an optional parameter.
ip_address <i>ip_address</i>	Specifies the IPv4 address. This is an optional parameter.
port_forwarding	Configures port forwarding. When port forwarding is enabled, you must specify the values in the following fields: port , protocol , vnf_port , and external_port_range .
port <i>port-type</i>	Specifies the port type. Possible values are SSH, HTTPS, TCP, and Telnet.
protocol <i>protocol-name</i>	Specifies the protocol. Valid value is TCP.
vnf_port <i>port-num</i>	Specifies the port number corresponding to the specified protocol.
external_port_range <i>port-num-start port-num-end</i>	Specifies the unique port number to specify the start and end range for ports.
scaling	Specifies how many instances of a particular type of VM need to be instantiated, and whether elastic scale-in and scale-out are required.
min_active <i>min_active</i>	Defines the minimum number of VMs to be activated.
max_active <i>max_active</i>	Defines the maximum number of VMs to be activated.
placement	Configures placement datastore. This is an optional parameter.

type <i>zone_host</i>	Specifies the placement type. Value must be <i>zone_host</i> .
host <i>placement-host-name</i>	Specifies the name of the placement datastore. For NFS, valid value is <i>nfs-storage</i> . For Cisco ENCS external datastore, allowed values are <i>datastore2</i> , <i>datastore3</i> . The default value is <i>datastore1</i> .
rules <i>admin_rules</i>	Configures monitoring policy rule. These are the rules that an administrator specifies when the service is registered. This parameter is mandatory if the VM is a monitored VM, that is, its bootup time is non-zero.
rule <i>rule-name</i>	Specifies the name of the monitoring event rule.
action <i>actions</i>	Specifies the list of actions which this policy triggers. <ul style="list-style-type: none"> • ALWAYS log—Whether the event is pingable or not, the details are always logged. • FALSE recover autohealing—The action identified by this keyword is triggered, and the VM is recovered without the administrator's intervention. • TRUE servicebooted.sh—The action identified by this keyword in the dynamic mapping file is triggered when the VM moves from a non-pingable to a pingable state. <p>You can specify actions in the following format: action ["ALWAYS log" "FALSE recover autohealing" "TRUE servicebooted.sh"].</p>
kpi_data	Specifies the Key Performance Indicators (KPI) data.
kpi <i>rule-name</i>	Specifies the KPI rule name.
metric_value <i>value</i>	Specifies the metric threshold value of the KPI.
metric_cond <i>value</i>	Specifies the direction of the metric value change for the KPI. Valid values are the following: <ul style="list-style-type: none"> • GE and GT: An alarm is sent when the metric value increases from a lower position to equal or exceed the specified value. • LE and LT: An alarm is sent when the metric value decreases from a higher position to equal or go down the specified value.
metric_type <i>type</i>	Specifies the metric type. Valid metric types are INT8, UINT8, INT16, UINT16, INT32, UINT32, FLOAT, DOUBLE, and STRING.
metric_collector	Configures the metrics that needs to be monitored and at what frequency should the monitoring happen.
type <i>type</i>	Specifies the type to be monitored; for example, ICMPPing. If the image boot-up time is provided, monitoring must be set to ICMPPing.
nicid <i>vnic-id</i>	Specifies the card ID of the interface through which this VM is monitored. It should be the ID specified for one of interfaces in the payload.

poll_frequency <i>value</i>	Specifies the ICMP ping frequency value.
polling_unit <i>unit</i>	Specifies the ICMP ping frequency unit. Possible values are minutes and seconds.
continuous_alarm <i>value</i>	Specifies that the continuous events need to be generated. Valid values are true and false.

Command Default

None

Command Modes

Global configuration (config)

Command History**Release Modification**

3.5.1 This command was introduced.

Example

The following example shows how to deploy a VM:

```

nfvis(config)# vm_lifecycle tenants tenant admin deployments deployment depl vm_group router1
  bootup_time 600 image
  isrv flavor ISRV-small
nfvis(config-vm_group-router1)# interfaces interface 0 network int-mgmt-net port_forwarding
  port ssh protocol tcp
  vnf_port 22 external_port_range 20024 20024
nfvis(config-port-ssh)# exit
nfvis(config-interface-0)# exit
nfvis(config-vm_group-router1)# interfaces interface 1 model virtio network lan-net
nfvis(config-interface-1)# exit
nfvis(config-vm_group-router1)# rules admin_rules rule VM_ALIVE action [ "ALWAYS log" "FALSE
  recover autohealing"
  "TRUE servicebooted.sh" ]
nfvis(config-rule-VM_ALIVE)# exit
nfvis(config-vm_group-router1)# kpi_data kpi VM_ALIVE metric_value 1 metric_cond GT
  metric_type UINT32 metric_collector
  type ICMPping nicid 0 poll_frequency 3 polling_unit seconds continuous_alarm false
nfvis(config-kpi-VM_ALIVE)# exit
nfvis(config-vm_group-router1)# scaling min_active 1 max_active 1
nfvis(config-vm_group-router1)# placement zone_host host datastore1
nfvis(config-placement-zone_host)# exit
nfvis(config-vm_group-router1)# commit

```

vmAction

To specify a VM action, use the **vmAction** command in privileged EXEC mode.

vmAction *action* **vmName** *name*

Syntax Description	<p><i>action</i> Specify the action. Valid values are DISABLE_MONITOR, ENABLE_MONITOR, REBOOT, RECOVER, START, and STOP.</p> <p><i>name</i> Specify the VM name. This VM name is the internally-generated name. Use the show vm_lifecycle opdata tenants tenant admin deployments command to get the VM NAME per deployment.</p>				
Command Default	None				
Command Modes	Privileged EXEC (#)				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>3.6.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	3.6.1	This command was introduced.
Release	Modification				
3.6.1	This command was introduced.				

Example

```
nfvis# vmAction actionType STOP vmName
1513193832_ROUTER_0_15c32f49-0d95-4b7a-8a84-ba7de3c1d6f9
```

vmBackupAction

To back up a VM, use the **vmBackupAction** command in privileged EXEC mode.

vmBackupAction **vmName** *name* **actionType** *action* [**backupName** *backupname*]

Syntax Description	Parameter	Description
	vmName <i>name</i>	Specifies the VM name.
	actionType <i>action</i>	Specifies the action type. Valid value is EXPORT .
	backupName <i>backupname</i>	Specifies the backup name for the VM.

Command Default None

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	3.7.1	This command was introduced.

Example

```
nfv1s# vmBackupAction vmName isrvtest1 actionType EXPORT
```

vmConsole

To enable VM serial console, use the **vmConsole** command in privileged EXEC mode.

vmConsole *vm-domain-name*

Syntax Description	<i>vm-domain-name</i> Specifies the VM domain name.
---------------------------	---

Command Default	None
------------------------	------

Command Modes	Privileged EXEC (#)
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Command History	Release	Modification
	3.5.1	This command was introduced.

Usage Guidelines	If the VM does not support a serial console, the vmConsole command returns this message, "Serial console not available".
-------------------------	---

To exit the VM console you must enter ctrl+] and then enter **send escape**.

Example

The following example shows how a VM is connected to its domain using the serial console:

```
nfvis# vmConsole fortinet.fortinet  
Connected to domain fortinet.fortinet
```

vncconsole start

To get information about the VNC console, use the **vncconsole start** command in privileged EXEC mode.

vncconsole start deployment-name name vm-name name

Syntax Description	deployment-name name	Specifies the deployment name.
	vm-name name	Specifies the VM name.

Command Default None

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	3.5.1	This command was introduced.

Example

```
nfvis# vncconsole start deployment-name 1461784490 vm-name isrvtest1
vncconsole-url :6001/vnc_auto.html
```

show vm_lifecycle opdata

To display the overall operational status of VM life cycle, use the **show vm_lifecycle opdata** command in privileged EXEC mode.

```
show vm_lifecycle opdata [{flavors flavor flavor-name | images image image-name | networks
network network-name | stats | status | system-config | tenants tenant tenant-name
[deployments [vm_group vm-group-name] ]}]
```

Syntax Description		
flavors flavor <i>flavor-name</i>		Specifies the flavor name.
images image <i>image-name</i>		Specifies the image name.
networks network <i>network-name</i>		Specifies the network name.
stats		Displays the VM life cycle statistics.
status		Displays the VM life cycle status.
system-config		Displays the VM life cycle configuration.
tenants tenant <i>tenant-name</i>		Specifies the tenant name.
deployments		Displays the deployment status.
vm_group <i>vm-group-name</i>		Displays the deployment status for the specified VM group.

Command Default Displays the overall operational status of the VM life cycle.

Command Modes Privileged EXEC (#)

Command History

Release	Modification
3.5.1	This command was introduced.

```
nfvis# show vm_lifecycle opdata
vm_lifecycle opdata status OPER_UP
vm_lifecycle opdata stats hostname nfvis
vm_lifecycle opdata stats os_name Linux
vm_lifecycle opdata stats os_release 3.10.0-327.36.3.el7.x86_64
vm_lifecycle opdata stats arch amd64
vm_lifecycle opdata stats uptime 1395859
vm_lifecycle opdata stats cpu cpu_num 16
vm_lifecycle opdata networks network int-mgmt-net
netid          a5bc70f6-5841-4af5-bcec-6710d28e7f55
shared         true
admin_state    true
provider_network_type local
status         active
```

NO

```
NAME          SUBNETID          CIDR          GATEWAY          GATEWAY
DHCP          IPVERSION
```

show vm_lifecycle opdata

```

-----
int-mgmt-net-subnet  004db62f-ae89-43f7-bc24-dfa2d9caa3eb  192.0.2.0/24  192.0.2.1  false
                    false  4

vm_lifecycle opdata tenants tenant admin
tenant_id AdminTenantId
networks network int-mgmt-net
netid          a5bc70f6-5841-4af5-bcec-6710d28e7f55
shared         true
admin_state    true
provider_network_type local
status         active

NO

NAME                SUBNETID                CIDR                GATEWAY                GATEWAY
DHCP    IPVERSION
-----
int-mgmt-net-subnet  004db62f-ae89-43f7-bc24-dfa2d9caa3eb  192.0.2.0/24  192.0.2.1  false
                    false  4

```

```

nfvis# show vm_lifecycle opdata tenants tenant admin deployments
deployment_id SystemAdminTenantIdisrv1
vm_group isrv1
name SystemAdminTena_isrv1_0_72619ffd-df8e-4c32-b24a-3d7b03a31303
SystemAdminTena_isrv1_0_72619ffd-df8e-4c32-b24a-3d7b03a31303 VM_ALIVE_STATE

nfvis# show vm_lifecycle opdata tenants tenant admin deployments vm_group isrv1
deployments isrv1 - -

vm_group isrv1

vm_instance 57b9a63a-9c9d-4765-baa6-2d7086ad3262

name SystemAdminTena_isrv1_0_72619ffd-df8e-4c32-b24a-3d7b03a31303

host_id NFVIS

hostname nfvis

interfaces interface 0

model virtio

port_id vnic1

network int-mgmt-net

subnet N/A

ip_address 192.0.2.10

mac_address 52:54:00:f1:5f:d9

netmask 255.255.255.0

gateway 192.0.2.1

interfaces interface 1

model virtio

```



```
port_id      vnic7
network      wan-net
subnet       N/A
mac_address  52:54:00:2b:41:e9
interfaces interface 2
model        virtio
port_id      vnic8
network      lan-net
subnet       N/A
mac_address  52:54:00:7a:27:25
netmask      255.255.255.0
gateway      198.51.100.1
```

show running-config vm_lifecycle

To display the currently running VM life cycle configuration, use the **show running-config vm_lifecycle** command in privileged EXEC mode.

show running-config vm_lifecycle

Syntax Description	This command has no arguments or keywords.
---------------------------	--

Command Default	None
------------------------	------

Command Modes	Privileged EXEC (#)
----------------------	---------------------

Command History	Release Modification
	3.6.1 This command was introduced.

Example

```

nfvis# show running-config vm_lifecycle
vm_lifecycle tenants tenant admin
  description      "Built-in Admin Tenant"
  managed_resource false
  vim_mapping      true
!
vm_lifecycle networks network int-mgmt-net
  subnet int-mgmt-net-subnet
  ipversion ipv4
  dhcp          false
  address      192.0.2.0
  netmask     255.255.255.0
  gateway     192.0.2.1
!
!

```

show running-config vm_packages

To display the running VM package configuration, use the **show running-config vm_packages** command in privileged EXEC mode.

```
show running-config vm_packages
```

Syntax Description	This command has no arguments or keywords.
---------------------------	--

Command Default	None
------------------------	------

Command Modes	Privileged EXEC (#)
----------------------	---------------------

Command History	Release	Modification
	3.6.1	This command was introduced.

Example

```
nfvis# show running-config vm_packages
```

show running-config vm_packages