



OcNOS®

**Open Compute
Network Operating System for Data Centers
Version 6.4.2**

Guest Virtual Machine Guide

December 2023

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Preface

This guide describes how to configure OcNOS.

Audience

This guide is intended for network administrators and other engineering professionals who configure OcNOS.

Conventions

[Table P-1](#) shows the conventions used in this guide.

Table P-1: Conventions

Convention	Description
<i>Italics</i>	Emphasized terms; titles of books
Note:	Special instructions, suggestions, or warnings
<code>monospaced type</code>	Code elements such as commands, parameters, files, and directories

Chapter Organization

The chapters in command references are organized as described in [Command Description Format](#).

The chapters in configuration guides are organized into these major sections:

- An overview that explains a configuration in words
- Topology with a diagram that shows the devices and connections used in the configuration
- Configuration steps in a table for each device where the left-hand side shows the commands you enter and the right-hand side explains the actions that the commands perform
- Validation which shows commands and their output that verify the configuration

Related Documentation

For information about installing of OcNOS, see the *Installation Guide* for your platform.

Migration Guide

Check the *Migration Guide* for configuration changes to make when migrating from one version of OcNOS to another.

Feature Availability

The features described in this document that are available depend upon the OcNOS SKU that you purchased. See the *Feature Matrix* for a description of the OcNOS SKUs.

Support

For support-related questions, contact support@ipinfusion.com.

Comments

If you have comments, or need to report a problem with the content, contact techpubs@ipinfusion.com.

Command Line Interface

This chapter introduces the OcNOS Command Line Interface (CLI) and how to use its features.

Overview

You use the CLI to configure, monitor, and maintain OcNOS devices. The CLI is text-based and each command is usually associated with a specific task.

You can give the commands described in this manual locally from the console of a device running OcNOS or remotely from a terminal emulator such as `putty` or `xterm`. You can also use the commands in scripts to automate configuration tasks.

Command Line Interface Help

You access the CLI help by entering a full or partial command string and a question mark “?”. The CLI displays the command keywords or parameters along with a short description. For example, at the CLI command prompt, type:

```
> show ?
```

The CLI displays this keyword list with short descriptions for each keyword:

```
show ?
  application-priority      Application Priority
  arp                      Internet Protocol (IP)
  bfd                      Bidirectional Forwarding Detection (BFD)
  bgp                      Border Gateway Protocol (BGP)
  bi-lsp                   Bi-directional lsp status and configuration
  bridge                   Bridge group commands
  ce-vlan                  COS Preservation for Customer Edge VLAN
  class-map                Class map entry
  cli                     Show CLI tree of current mode
  clns                    Connectionless-Mode Network Service (CLNS)
  control-adjacency       Control Adjacency status and configuration
  control-channel         Control Channel status and configuration
  cspf                    CSPF Information
  customer                Display Customer spanning-tree
  cvlan                   Display CVLAN information
  debugging               Debugging functions (see also 'undebug')
  etherchannel            LACP etherchannel
  ethernet                Layer-2
  ...
```

If you type the ? in the middle of a keyword, the CLI displays help for that keyword only.

```
> show de?
debugging Debugging functions (see also 'undebug')
```

If you type the ? in the middle of a keyword, but the incomplete keyword matches several other keywords, OcNOS displays help for all matching keywords.

```
> show i? (CLI does not display the question mark).
interface Interface status and configuration
ip IP information
isis ISIS information
```

Command Completion

The CLI can complete the spelling of a command or a parameter. Begin typing the command or parameter and then press the tab key. For example, at the CLI command prompt type `sh`:

```
> sh
```

Press the tab key. The CLI displays:

```
> show
```

If the spelling of a command or parameter is ambiguous, the CLI displays the choices that match the abbreviation. Type `show i` and press the tab key. The CLI displays:

```
> show i
  interface ip          ipv6      isis
> show i
```

The CLI displays the `interface` and `ip` keywords. Type `n` to select `interface` and press the tab key. The CLI displays:

```
> show in
> show interface
```

Type `?` and the CLI displays the list of parameters for the `show interface` command.

```
> show interface
  IFNAME  Interface name
  |       Output modifiers
  >      Output redirection
  <cr>
```

The CLI displays the only parameter associated with this command, the `IFNAME` parameter.

Command Abbreviations

The CLI accepts abbreviations that uniquely identify a keyword in commands. For example:

```
> sh int xe0
```

is an abbreviation for:

```
> show interface xe0
```

Command Line Errors

Any unknown spelling causes the CLI to display the error `Unrecognized command` in response to the `?`. The CLI displays the command again as last entered.

```
> show dd?
% Unrecognized command
> show dd
```

When you press the Enter key after typing an invalid command, the CLI displays:

```
(config)#router ospf here
                        ^
% Invalid input detected at '^' marker.
```

where the `^` points to the first character in error in the command.

If a command is incomplete, the CLI displays the following message:

```
> show
% Incomplete command.
```

Some commands are too long for the display line and can wrap mid-parameter or mid-keyword, as shown below. This does *not* cause an error and the command performs as expected:

```
area 10.10.0.18 virtual-link 10.10.0.19 authent
ication-key 57393
```

Command Negation

Many commands have a `no` form that resets a feature to its default value or disables the feature. For example:

- The `ip address` command assigns an IPv4 address to an interface
- The `no ip address` command removes an IPv4 address from an interface

Syntax Conventions

[Table P-2](#) describes the conventions used to represent command syntax in this reference.

Table P-2: Syntax conventions

Convention	Description	Example
monospaced font	Command strings entered on a command line	<code>show ip ospf</code>
lowercase	Keywords that you enter exactly as shown in the command syntax.	<code>show ip ospf</code>
UPPERCASE	See Variable Placeholders	IFNAME
()	Optional parameters, from which you must select one. Vertical bars delimit the selections. Do not enter the parentheses or vertical bars as part of the command.	(A.B.C.D <0-4294967295>)
()	Optional parameters, from which you select one or none. Vertical bars delimit the selections. Do not enter the parentheses or vertical bars as part of the command.	(A.B.C.D <0-4294967295>)
()	Optional parameter which you can specify or omit. Do not enter the parentheses or vertical bar as part of the command.	(IFNAME)
{ }	Optional parameters, from which you must select one or more. Vertical bars delimit the selections. Do not enter the braces or vertical bars as part of the command.	{intra-area <1-255> inter-area <1-255> external <1-255>}

Table P-2: Syntax conventions (Continued)

Convention	Description	Example
[]	Optional parameters, from which you select zero or more. Vertical bars delimit the selections. Do not enter the brackets or vertical bars as part of the command.	[<1-65535> AA:NN internet local-AS no-advertise no-export]
?	Nonrepeatable parameter. The parameter that follows a question mark can only appear once in a command string. Do not enter the question mark as part of the command.	?route-map WORD
.	Repeatable parameter. The parameter that follows a period can be repeated more than once. Do not enter the period as part of the command.	set as-path prepend .<1-65535>

Variable Placeholders

Table P-3 shows the tokens used in command syntax use to represent variables for which you supply a value.

Table P-3: Variable placeholders

Token	Description
WORD	A contiguous text string (excluding spaces)
LINE	A text string, including spaces; no other parameters can follow this parameter
IFNAME	Interface name whose format varies depending on the platform; examples are: eth0, Ethernet0, ethernet0, xe0
A.B.C.D	IPv4 address
A.B.C.D/M	IPv4 address and mask/prefix
X:X::X:X	IPv6 address
X:X::X:X/M	IPv6 address and mask/prefix
HH:MM:SS	Time format
AA:NN	BGP community value
XX:XX:XX:XX:XX:XX	MAC address
<1-5> <1-65535> <0-2147483647> <0-4294967295>	Numeric range

Command Description Format

Table P-4 explains the sections used to describe each command in this reference.

Table P-4: Command descriptions

Section	Description
Command Name	The name of the command, followed by what the command does and when should it be used
Command Syntax	The syntax of the command
Parameters	Parameters and options for the command
Default	The state before the command is executed
Command Mode	The mode in which the command runs; see Command Modes
Example	An example of the command being executed

Keyboard Operations

Table P-5 lists the operations you can perform from the keyboard.

Table P-5: Keyboard operations

Key combination	Operation
Left arrow or Ctrl+b	Moves one character to the left. When a command extends beyond a single line, you can press left arrow or Ctrl+b repeatedly to scroll toward the beginning of the line, or you can press Ctrl+a to go directly to the beginning of the line.
Right arrow or Ctrl-f	Moves one character to the right. When a command extends beyond a single line, you can press right arrow or Ctrl+f repeatedly to scroll toward the end of the line, or you can press Ctrl+e to go directly to the end of the line.
Esc, b	Moves back one word
Esc, f	Moves forward one word
Ctrl+e	Moves to end of the line
Ctrl+a	Moves to the beginning of the line
Ctrl+u	Deletes the line
Ctrl+w	Deletes from the cursor to the previous whitespace
Alt+d	Deletes the current word
Ctrl+k	Deletes from the cursor to the end of line
Ctrl+y	Pastes text previously deleted with Ctrl+k, Alt+d, Ctrl+w, or Ctrl+u at the cursor

Table P-5: Keyboard operations (Continued)

Key combination	Operation
Ctrl+t	Transposes the current character with the previous character
Ctrl+c	Ignores the current line and redisplay the command prompt
Ctrl+z	Ends configuration mode and returns to exec mode
Ctrl+l	Clears the screen
Up Arrow or Ctrl+p	Scroll backward through command history
Down Arrow or Ctrl+n	Scroll forward through command history

Show Command Modifiers

You can use two tokens to modify the output of a `show` command. Enter a question mark to display these tokens:

```
# show users ?
  | Output modifiers
  > Output redirection
```

You can type the | (vertical bar character) to use output modifiers. For example:

```
> show rsvp | ?
begin      Begin with the line that matches
exclude    Exclude lines that match
include    Include lines that match
last       Last few lines
redirect   Redirect output
```

Begin Modifier

The `begin` modifier displays the output beginning with the first line that contains the input string (everything typed after the `begin` keyword). For example:

```
# show running-config | begin xe1
...skipping
interface xe1
  ipv6 address fe80::204:75ff:fee6:5393/64
!
interface xe2
  ipv6 address fe80::20d:56ff:fe96:725a/64
!
line con 0
  login
!
end
```

You can specify a regular expression after the `begin` keyword. This example begins the output at a line with either “xe2” or “xe4”:

```
# show running-config | begin xe[3-4]
...skipping
```

```

interface xe3
 shutdown
 !
interface xe4
 shutdown
 !
interface svlan0.1
 no shutdown
 !
route-map myroute permit 3
 !
route-map mymap1 permit 10
 !
route-map rmap1 permit 3
 !
line con 0
 login
line vty 0 4
 login
 !
end

```

Include Modifier

The `include` modifier includes only those lines of output that contain the input string. In the output below, all lines containing the word “input” are included:

```

# show interface xe1 | include input
input packets 80434552, bytes 2147483647, dropped 0, multicast packets 0
input errors 0, length 0, overrun 0, CRC 0, frame 0, fifo 1, missed 0

```

You can specify a regular expression after the `include` keyword. This examples includes all lines with “input” or “output”:

```

#show interface xe0 | include (in|out)put
input packets 597058, bytes 338081476, dropped 0, multicast packets 0
input errors 0, length 0, overrun 0, CRC 0, frame 0, fifo 0, missed 0
output packets 613147, bytes 126055987, dropped 0
output errors 0, aborted 0, carrier 0, fifo 0, heartbeat 0, window 0

```

Exclude Modifier

The `exclude` modifier excludes all lines of output that contain the input string. In the following output example, all lines containing the word “input” are excluded:

```

# show interface xe1 | exclude input
Interface xe1
Scope: both
Hardware is Ethernet, address is 0004.75e6.5393
index 3 metric 1 mtu 1500 <UP,BROADCAST,RUNNING,MULTICAST>
VRF Binding: Not bound
Administrative Group(s): None
DSTE Bandwidth Constraint Mode is MAM
inet6 fe80::204:75ff:fee6:5393/64
output packets 4438, bytes 394940, dropped 0
output errors 0, aborted 0, carrier 0, fifo 0, heartbeat 0, window 0
collisions 0

```

You can specify a regular expression after the `exclude` keyword. This example excludes lines with “output” or “input”:

```
# show interface xe0 | exclude (in|out)put
Interface xe0
  Scope: both
  Hardware is Ethernet Current HW addr: 001b.2139.6c4a
  Physical:001b.2139.6c4a Logical:(not set)
  index 2 metric 1 mtu 1500 duplex-full arp ageing timeout 3000
  <UP,BROADCAST,RUNNING,MULTICAST>
  VRF Binding: Not bound
  Bandwidth 100m
  DHCP client is disabled.
  inet 10.1.2.173/24 broadcast 10.1.2.255
  VRRP Master of : VRRP is not configured on this interface.
  inet6 fe80::21b:21ff:fe39:6c4a/64
  collisions 0
```

Redirect Modifier

The `redirect` modifier writes the output into a file. The output is not displayed.

```
# show cli history | redirect /var/frame.txt
```

The output redirection token (`>`) does the same thing:

```
# show cli history >/var/frame.txt
```

Last Modifier

The `last` modifier displays the output of last few number of lines (As per the user input). The last number ranges from 1 to 9999.

For example:

```
#show running-config | last 10
```

String Parameters

The restrictions in [Table P-6](#) apply for all string parameters used in OcnOS commands, unless some other restrictions are noted for a particular command.

Table P-6: String parameter restrictions

Restriction	Description
Input length	1965 characters or less
Restricted special characters	“?”, “,”, “>”, “ ”, and “=” The “ ” is allowed only for <code>description</code> CLI in interface mode.

Command Modes

Commands are grouped into modes arranged in a hierarchy. Each mode has its own set of commands. [Table P-7](#) lists the command modes common to all protocols.

Table P-7: Common command modes

Name	Description
Executive mode	Also called <i>view</i> mode, this is the first mode to appear after you start the CLI. It is a base mode from where you can perform basic commands such as <code>show</code> , <code>exit</code> , <code>quit</code> , <code>help</code> , and <code>enable</code> .
Privileged executive mode	Also called <i>enable</i> mode, in this mode you can run additional basic commands such as <code>debug</code> , <code>write</code> , and <code>show</code> .
Configure mode	Also called <i>configure terminal</i> mode, in this mode you can run configuration commands and go into other modes such as interface, router, route map, key chain, and address family. Configure mode is single user. Only one user at a time can be in configure mode.
Interface mode	In this mode you can configure protocol-specific settings for a particular interface. Any setting you configure in this mode overrides a setting configured in router mode.
Router mode	This mode is used to configure router-specific settings for a protocol such as BGP or OSPF.

Command Mode Tree

The diagram below shows the common command mode hierarchy.

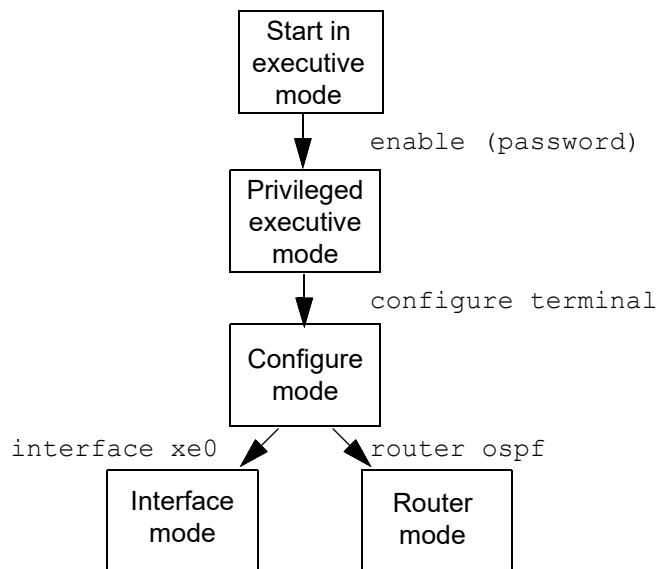


Figure P-1: Common command modes

To change modes:

1. Enter privileged executive mode by entering `enable` in Executive mode.
2. Enter configure mode by entering `configure terminal` in Privileged Executive mode.

The example below shows moving from executive mode to privileged executive mode to configure mode and finally to router mode:

```

> enable mypassword
# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
(config)# router ospf
(config-router)#
  
```

Note: Each protocol can have modes in addition to the common command modes. See the command reference for the respective protocol for details.

Transaction-based Command-line Interface

The OcNOS command line interface is transaction based:

- Any changes done in configure mode are stored in a separate *candidate* configuration that you can view with the `show transaction current` command.
- When a configuration is complete, apply the candidate configuration to the running configuration with the `commit` command.
- If a `commit` fails, no configuration is applied as the entire transaction is considered failed. You can continue to change the candidate configuration and then retry the `commit`.
- Discard the candidate configuration with the `abort transaction` command.
- Check the last aborted transaction with the `show transaction last-aborted` command.
- Multiple configurations cannot be removed with a single commit. You must remove each configuration followed by a commit.

Note: All commands MUST be executed only in the default CML shell (`cmlsh`). If you log in as `root` and start `imish` then the system configurations will go out of sync. The `imish` shell is not supported and should not be started manually.

CHAPTER 1 Guest Virtual Machine Command Reference

This chapter contains the guest virtual machine commands.

- [debug vm-events](#)
- [dhcp-lease-max](#)
- [dhcp-lease-time](#)
- [dhcp-range](#)
- [disk-image](#)
- [feature guest-vm](#)
- [gateway-ip](#)
- [host-core-affinity](#)
- [iptables](#)
- [iptables restore](#)
- [iptables-template](#)
- [memory](#)
- [nat dnat](#)
- [nat snat](#)
- [os-type](#)
- [os-variant](#)
- [reload vm-name](#)
- [secondary-disk-image](#)
- [service dns-masq](#)
- [show vm](#)
- [show vm-bridge](#)
- [show vm-iptables](#)
- [show vm-iptables kernel](#)
- [show vm-nat details](#)
- [show vm-template](#)
- [start vm-name](#)
- [static-bind](#)
- [stop vm-name](#)
- [vcpu count](#)
- [virt-type](#)
- [virtual-nic](#)
- [vm-bridge-create](#)
- [vm-image delete](#)
- [vm-template](#)

debug vm-events

Use this command to log virtual machine operations.

Use the `no` form of this command to stop logging virtual machine operations.

Command Syntax

```
debug vm-events
no debug vm-events
```

Parameters

None

Default

NA.

Command Mode

Exec and Privileged Exec Mode

Applicability

This command was introduced before OcNOS version 1.3.

Example

```
#debug vm-events
```

dhcp-lease-max

Use this command to set the maximum number of DHCP leases for the VM bridge.

Command Syntax

```
dhcp-lease-max <10-1000>
```

Parameters

<10-1000>	Maximum number of DHCP leases
-----------	-------------------------------

Default

The default maximum number of DHCP leases is 1000.

Command Mode

Virtual machine bridge mode

Applicability

This command was introduced before OcNOS version 1.3.

Example

```
#configure terminal
(config)#ip vrf VRF1
(config-vrf)#vm-bridge-create Bridgel
(config-vrf-vm-bridge)#dhcp-lease-max 100
```

dhcp-lease-time

Use this command to set the maximum time for leasing an IP address for the VM bridge.

Command Syntax

```
dhcp-lease-time <2-3600>
```

Parameters

<2-3600> Maximum time for leasing an IP address in minutes

Default

The default maximum time for leasing an IP address is 360 minutes.

Command Mode

Virtual machine bridge mode

Applicability

This command was introduced before OcNOS version 1.3.

Example

```
#configure terminal
(config)#ip vrf VRF1
(config-vrf)#vm-bridge-create Bridgel
(config-vrf-vm-bridge)#dhcp-lease-time 1400
```

dhcp-range

Use this command to set a DHCP range for the virtual machine bridge.

Use the `no` form of this command to remove the DHCP range.

Command Syntax

```
dhcp-range A.B.C.D A.B.C.D
no dhcp-range
```

Parameters

A.B.C.D Starting and ending IP address of the DHCP range

Default

NA.

Command Mode

Virtual machine bridge mode

Applicability

This command was introduced before OcnOS version 1.3.

Example

```
#configure terminal
(config)#ip vrf VRF1
(config-vrf)#vm-bridge-create Bridge1
(config-vrf-vm-bridge)#dhcp-range 10.12.65.2 10.12.65.12
```

disk-image

Use this command to configure the disk image location for the VM template.

Command Syntax

```
disk-image DISK-IMAGE-LOCATION
```

Parameters

```
DISK-IMAGE-LOCATION
```

Location of the disk image to boot up the VM.

Default

NA.

Command Mode

Virtual machine template mode

Applicability

This command was introduced before OcnOS version 1.3.

Example

```
#configure terminal
(config)#vm-template sample
(config-vm-temp)#disk-image \sample_location
```


feature guest-vm

Use this command to enable the guest VM feature.

Use the `no` form of this command to disable the guest VM feature.

Command Syntax

```
feature guest-vm enable
no feature guest-vm enable
```

Parameters

None

Default

NA

Command Mode

Configuration Mode

Applicability

This command was introduced before OcNOS version 1.3.

Example

```
#configure terminal
(config)#feature guest-vm enable
```

gateway-ip

Use this command to set the gateway IP address for a virtual machine bridge.

Use the `no` form of this command to remove a gateway IP address.

Command Syntax

```
gateway-ip (A.B.C.D A.B.C.D | A.B.C.D/M)
no gateway-ip
```

Parameters

A.B.C.D A.B.C.D	Gateway IP address and subnet mask
A.B.C.D/M	Gateway IP address and subnet mask

Default

NA.

Command Mode

Virtual machine bridge mode

Applicability

This command was introduced before OcnOS version 1.3.

Example

```
#configure terminal
(config)#ip vrf VRF1
(config-vrf)#vm-bridge-create Bridge1
(config-vrf-vm-bridge)#gateway-ip 10.12.65.1/24
```

host-core-affinity

Use this command to set the core affinity value for a virtual machine template.

Use the `no` form of this command to set the core affinity value to its default.

Command Syntax

```
host-core-affinity AFFINITY-VALUE
no host-core-affinity
```

Parameters

`AFFINITY-VALUE` The core affinity values between 0 and 7.

Default

Default value is 0.

Command Mode

Virtual machine template mode

Applicability

This command was introduced before OcnOS version 1.3.

Example

```
#configure terminal
(config)#vm-template sample
(config-vm-temp)#host-core-affinity 6
```

iptables

Use this command to create a rule for the IP tables.

Use the `no` form of this command to remove an IP tables rule.

Command Syntax

```
iptables STRING (position POS_NUM |)
no iptables STRING
```

Parameters

STRING	Rule string in double quotes.
POS_NUM	Position to insert the rule string <1-65535>.

Default

NA.

Command Mode

IP tables mode

Applicability

This command was introduced before OcNOS version 1.3.

Example

```
#configure terminal
(config)#iptables-template sample_template
(config-iptables)#iptables "INPUT DROP" position 65535
```

iptables restore

Use this command to restore the entries in the IP tables template to the IP tables.

Use the `no` form of this command to remove the entries in the IP tables.

Command Syntax

```
iptables restore iptables-template TEMPLATE_NAME (vrf VRF-NAME |)
no iptables restore (iptables-template TEMPLATE_NAME |) (vrf VRF-NAME |)
```

Parameters

TEMPLATE-NAME	Name of the IP tables template
VRF-NAME	Name of the VRF

Default

NA.

Command Mode

Configuration Mode

Applicability

This command was introduced before OcnOS version 1.3.

Example

```
#configure terminal
(config)#iptables restore iptables-template sample_template vrf VRF1
```

iptables-template

Use this command to create an IP tables template and enter IP tables mode.

Use the `no` form of this command to remove an IP tables template.

Command Syntax

```
iptables-template TEMPLATE_NAME
no iptables-template TEMPLATE_NAME
```

Parameters

`TEMPLATE_NAME` Name of the IP tables template.

Default

NA.

Command Mode

Configure mode

Applicability

This command was introduced before OcNOS version 1.3.

Example

```
#configure terminal
(config)#iptables-template sample_template
(config-iptables)
```

memory

Use this command to configure the RAM size for the VM template.

Command Syntax

```
memory <128-8192>
```

Parameters

<128-8192> Memory for Virtual Machine in MB

Default

Default value is 0.

Command Mode

Virtual machine template mode

Applicability

This command was introduced before OcNOS version 1.3.

Example

```
#configure terminal
(config)#vm-template sample
(config-vm-temp)#memory 1024
```

nat dnat

Use this command to set destination NAT addresses in the IP tables.

Use the `no` form of this command to remove the destination NAT addresses.

Command Syntax

```
nat dnat match-ip A.B.C.D to A.B.C.D (protocol (tcp | udp)|) (sport-num <0-65535>
|) (dport-num <0-65535> |) (vrf VRF-NAME|)
no nat dnat match-ip A.B.C.D to A.B.C.D (protocol (tcp | udp)|) (sport-num <0-
65535> |) (dport-num <0-65535> |) (vrf VRF-NAME|)
```

Parameters

A.B.C.D	From IP address
A.B.C.D	To IP address
tcp	Use TCP for NAT
udp	Use UDP for NAT
sport-num	Source port
<0-65535>	Source port number
dport-num	Destination port
<0-65535>	Destination port number
VRF-NAME	VRF Name

Default

NA.

Command Mode

Configuration Mode

Applicability

This command was introduced before OcnOS version 1.3.

Example

```
#configure terminal
(config)#nat dnat match-ip 1.1.1.1 to 1.1.1.2 protocol tcp
```


nat snat

Use this command to set the source NAT addresses in the IP tables.

Use the `no` form of this command to remove the source NAT addresses.

Command Syntax

```
nat snat from A.B.C.D/M to A.B.C.D (vrf VRF-NAME|)
no nat snat from A.B.C.D/M to A.B.C.D (vrf VRF-NAME|)
```

Parameters

A.B.C.D/M	From IP address and subnet mask
A.B.C.D	To IP address
VRF-NAME	VRF Name

Default

NA.

Command Mode

Configuration Mode

Applicability

This command was introduced before OcnOS version 1.3.

Example

```
#configure terminal
(config)#nat snat from 10.12.65.1 to 10.12.65.102 vrf VRF1
```

os-type

Use this command to configure the Operating System type of Virtual Machine.

Command Syntax

```
os-type (xen|linux|hvm|exe|uml)
```

Parameters

xen	Xen
linux	Linux
hvm	HVM
exe	Exe
uml	UML

Default

NA

Command Mode

Virtual machine template mode

Applicability

This command was introduced before OcNOS version 1.3.

Example

```
#configure terminal
(config)#vm-template sample
(config-vm-temp)#os-type linux
```

os-variant

Use this command to set the operating system variant for a virtual machine template.

Use the `no` form of this command to remove the operating system variant.

Command Syntax

```
os-variant (generic|fedora|rhel|ubuntu|debian)
no os-variant (generic|fedora|rhel|ubuntu|debian)
```

Parameters

<code>generic</code>	Generic
<code>fedora</code>	Fedora
<code>rhel</code>	Red Hat Linux
<code>ubuntu</code>	Ubuntu
<code>debian</code>	Debian

Default

NA.

Command Mode

Virtual machine template mode

Applicability

This command was introduced before OcNOS version 1.3.

Example

```
#configure terminal
(config)#vm-template sample
(config-vm-temp)#os-variant debian
```

reload vm-name

Use this command to reload a running VM with a new template configuration.

Command Syntax

```
reload vm-name VM_NAME vm-template TEMPLATE_NAME
```

Parameters

VM-NAME	Name of the VM.
TEMPLATE-NAME	Name of the VM template.

Default

NA.

Command Mode

Exec Mode

Applicability

This command was introduced before OcnOS version 1.3.

Example

```
#reload vm-name new vm-template sample
```

secondary-disk-image

Use this command to configure the secondary disk image location for the VM template.

Command Syntax

```
secondary-disk-image SECONDARY-DISK-IMAGE-LOCATION  
no secondary-disk-image
```

Parameters

SECONDARY-DISK-IMAGE-LOCATION

Location of the secondary disk image to boot up the VM.

Default

NA.

Command Mode

Virtual machine template mode

Applicability

This command was introduced before OcnOS version 1.3.

Example

```
#configure terminal  
(config)#vm-template sample  
(config-vm-temp)#secondary-disk-image \sample_location
```

service dns-masq

Use this command to start the DHCP service in the virtual machine.

Use the `no` form of this command to stop the DHCP service.

Command Syntax

```
service dns-masq
no service dns-masq
```

Parameters

None

Default

NA.

Command Mode

Virtual machine bridge mode

Applicability

This command was introduced before OcNOS version 1.3.

Example

```
#configure terminal
(config)#ip vrf VRF1
(config-vrf)#vm-bridge-create Bridgel
(config-vrf-vm-bridge)#service dns-masq
```

show vm

Use this command to display the status of the virtual machine.

Command Syntax

```
show vm (details |) (VM_NAME |)
```

Parameters

details	Details
VM_NAME	Name of the virtual machine

Default

NA.

Command Mode

Exec and Privileged Exec Mode

Applicability

This command was introduced before OcnOS version 1.3.

Example

```
#show vm
```

show vm-bridge

Use this command to display the bridge configuration.

Command Syntax

```
show vm-bridge (vrf VRF-NAME|)
```

Parameters

VRF-NAME	Name of the VRF
----------	-----------------

Default

NA.

Command Mode

Exec and Privileged Exec Mode

Applicability

This command was introduced before OcNOS version 1.3.

Example

```
#show vm-bridge
```


show vm-iptables

Use this command to display the IP tables.

Command Syntax

```
show vm-iptables (TEMPLATE_NAME | restored-iptables |)
```

Parameters

TEMPLATE_NAME Name of the IP tables template

restored-iptables

Restored IP tables

Default

NA.

Command Mode

Exec and Privileged Exec Mode

Applicability

This command was introduced before OcnOS version 1.3.

Example

```
#show vm-iptables
```

show vm-iptables kernel

Use this command to display the kernel IP tables.

Command Syntax

```
show vm-iptables kernel (vrf VRF-NAME|)
```

Parameters

VRF-NAME	Name of the VRF
----------	-----------------

Default

NA.

Command Mode

Exec and Privileged Exec Mode

Applicability

This command was introduced before OcNOS version 1.3.

Example

```
#show vm-iptables kernel
```

show vm-nat details

Use this command to display virtual machine NAT details.

Command Syntax

```
show vm-nat details (vrf VRF-NAME|)
```

Parameters

VRF-NAME	Name of the VRF
----------	-----------------

Default

NA.

Command Mode

Exec and Privileged Exec Mode

Applicability

This command was introduced before OcNOS version 1.3.

Example

```
#show vm-nat details
```

show vm-template

Use this command to display the status of the virtual machine template.

Command Syntax

```
show vm-template (VM-TEMP-NAME |)
```

Parameters

VM-TEMP-NAME Name of the virtual machine template

Default

NA.

Command Mode

Exec and Privileged Exec Mode

Applicability

This command was introduced before OcNOS version 1.3.

Example

```
#show vm-template
```

start vm-name

Use this command to create a virtual machine (VM) based on the template configuration.

Use the `no` form of this command to end a running VM.

Command Syntax

```
start vm-name VM_NAME vm-template TEMPLATE_NAME
no start vm-name VM_NAME
```

Parameters

VM-NAME	Name of the VM
TEMPLATE-NAME	Name of the VM template

Default

NA

Command Mode

Configuration Mode

Applicability

This command was introduced before OcnOS version 1.3.

Example

```
#configure terminal
(config)# start vm-name new vm-template sample
(config)# exit
```

```
#configure terminal
(config)# no start vm-name new
(config)# exit
```

static-bind

Use this command to bind an IP address to a MAC address for the virtual machine.

Use the `no` form of this command to unbind an IP address from a MAC address.

Command Syntax

```
static-bind vm-mac-address XXXX.XXXX.XXXX ip-address A.B.C.D
no static-bind vm-mac-address XXXX.XXXX.XXXX ip-address A.B.C.D
```

Parameters

XXXX.XXXX.XXXX MAC Address

A.B.C.D IP Address

Default

NA.

Command Mode

Virtual machine bridge mode

Applicability

This command was introduced before OcnOS version 1.3.

Example

```
#configure terminal
(config)#ip vrf VRF1
(config-vrf)#vm-bridge-create Bridge1
(config-vrf-vm-bridge)#static-bind vm-mac-address ABCD.HHHH.EFGH.HHHH ip-address
10.12.65.102
```

stop vm-name

Use this command to stop arunning VM.

Command Syntax

```
stop vm-name VM_NAME
```

Parameters

VM-NAME	Name of the VM.
---------	-----------------

Default

NA

Command Mode

Exec Mode

Applicability

This command was introduced before OcNOS version 1.3.

Example

```
#stop vm-name new
```

vcpu count

Use this command to configure the virtual CPU count for the VM template.

Command Syntax

```
vcpu count <1-16>
```

Parameters

<1-16>	Virtual CPU count
--------	-------------------

Default

Default value is 0.

Command Mode

Virtual machine template mode

Applicability

This command was introduced before OcNOS version 1.3.

Example

```
#configure terminal
(config)#vm-template sample
(config-vm-temp)#vcpu count 16
```


virt-type

Use this command to set the virt-type as KVM or QEMU.

Command Syntax

```
virt-type (KVM | QEMU)
```

Parameters

KVM	Give VM
VQEMU	Give QEMU

Default

NA.

Command Mode

Virtual machine template mode

Applicability

This command was introduced before OcNOS version 1.3.5.

Example

```
#configure terminal
(config)#vm-template sample
(config-vm-temp)#virt-type kvm
(config-vm-temp)#virt-type qemu
```

virtual-nic

Use this command to set the MAC address of a virtual machine template.

Use the `no` form of this command to remove the MAC address.

Command Syntax

```
virtual-nic (vm-mac-addr XXXX.XXXX.XXXX|) (vrf VRF-NAME|)
no virtual-nic (vrf VRF-NAME|)
```

Parameters

XXXX.XXXX.XXXX MAC address of the VM

VRF-NAME VRF Name

Default

NA.

Command Mode

Virtual machine template mode

Applicability

This command was introduced before OcnOS version 1.3.

Example

```
#configure terminal
(config)#vm-template sample
(config-vm-temp)#virtual-nic vm-mac-address ABCD.HHHH.EFGH.HHHH vrf VRF1
```

vm-bridge-create

Use this command to create a virtual machine bridge and enter virtual machine bridge mode.

Use the `no` form of this command to remove a virtual machine bridge.

Command Syntax

```
vm-bridge-create VM-BRIDGE-NAME
no vm-bridge-create VM-BRIDGE-NAME
```

Parameters

VM-BRIDGE-NAME Name of the VM bridge.

Default

NA.

Command Mode

VRF mode

Applicability

This command was introduced before OcNOS version 1.3.

Example

```
#configure terminal
(config)#ip vrf VRF1
(config-vrf)#vm-bridge-create Bridge1
(config-vrf-vm-bridge)
```

vm-image delete

Use this command to delete a virtual machine image.

Command Syntax

```
vm-image delete VM_IMAGE_LOCATION
```

Parameters

```
VM_IMAGE_LOCATION
```

Location of the virtual machine image.

Default

NA.

Command Mode

Configure mode

Applicability

This command was introduced before OcNOS version 1.3.

Example

```
#configure terminal  
(config)#vm-image delete \sample_location
```

vm-template

Use this command to create a virtual machine template and enter VM template mode.

Use the `no` form of this command to remove a virtual machine template.

Command Syntax

```
vm-template TEMPLATE_NAME
no vm-template TEMPLATE_NAME
```

Parameters

TEMPLATE_NAME Name of the VM template.

Default

NA.

Command Mode

Configuration Mode

Applicability

This command was introduced before OcnOS version 1.3.

Example

```
#configure terminal
(config)#vm-template sample
(config-vm-temp)#
```


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