

QUICK START GUIDE

# OcNOS® VM VirtualBox Hypervisor Quick Start Guide 6.3.0

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# About the OcNOS VM

The OcNOS Virtual Machine (VM) from IP Infusion helps you get familiar with OcNOS. The OcNOS VM runs on a standard x86 environment. The OcNOS VM is used to validate configurations and test L2, L3, and MPLS features at your own pace, with no costs associated. Without bare metal switches, OcNOS VM can be on popular hypervisors including KVM, VirtualBox, and VMware. This document provides information on how to create an OcNOS VM in VirtualBox hypervisor.

All basic Layer 2, Layer 3, and multicast functionality are available. MPLS support is also available, including limited support of MPLS forwarding. The OcNOS VM comes with a 365 days valid license.

The data plane forwarding functions have limited support. OcNOS VM is designed for feature testing, and not for data plane performance testing or full bandwidth traffic testing.

# Benefits of the OcNOS VM

Following are benefits of OcNOS VM:

- Free
- No need to wait for the hardware
- Get familiar with OcNOS software
- Validate configurations
- Test L2, L3, and MPLS features without any risk
- Prototype network operations

# **Feature List**

CLIs for the following features are available. The complete feature set of OcNOS is supported on hardware platforms such as the whitebox switches from Dell, Delta Agema, Edgecore, and UFISpace. For the complete feature list, please contact IP Infusion Sales.

## SYSTEM FEATURES

- ARP support
- SSH/Telnet
- SNMP
- Debugging and logging
- AAA
- DHCP, DNS

## LAYER-2 FEATURES

- STP/RSTP/MSTP
- BPDU Guard and Root Guard
- VLAN, Private VLAN
- LACP
- LLDP

- VLAN Interface
- QinQ
- 802.1x

## LAYER-3 FEATURES

- IPv4 Routing
- VRF Support
- RIP v2, RIP NG
- BFD with BGP, OSPF, ISIS
- BGP
- OSPF v2, OSPF v3
- ISIS
- VRRP





### **MPLS FEATURES**

- MPLS Label Switching
- LDP and RSVP Support
- RSVP FRR
- VPLS with LDP Signaling
- VPWS with 1:1 backup support

- BGP MPLS L3VPN
- MPLS DCI using ICCP and VPLS redundancy

## **MULTICAST FEATURES**

- IGMP
- PIM-SM/SSM/DM
- MSDP Support

# Download the Virtual Machine Image

The OcNOS VM is available in these virtual environments:

Hypervisor	Format
Name	
VirtualBox,	vmdk.xz
VMware	
KVM	qcow2.xz

For the KVM hypervisor, download the OcNOS *qcow2.xz* image. OcNOS VM image file is archive compressed using XZ compression. Use Mac OS Archive Utility or 7-zip tools to uncompress the file. To uncompress the file in Linux, use the command *xz* -*d* <*file\_name>.xz*.

# Create a New OcNOS VM on VirtualBox Hypervisor

Following are steps to create a new OcNOS VM on VirtualBox Hypervisor:

1. Start Virtual Box. Launch the from All Programs submenu Oracle VM Virtual Box.

The Virtual Box window allows you to create a new virtual machine by clicking the New Icon.



- Name: OcNOS-VM
- Machine Folder: leave the default folder
- Type: Linux
- Version: Debian (64 bit)
- Click Continue



Nº 1	Please choose a new virtual mach intend to install o VirtualBox to ide	descriptive name and destination fol nine and select the type of operating on it. The name you choose will be us ntify this machine.	der for th system y ed throu	ne You ghout
	Name:	OcNOS-VM		
~	Machine Folder:	📒 /Users/mani/VirtualBox VMs		
	Туре:	Linux	0	64
	Version:	Debian (64-bit)	٢	

2. Configure the amount of memory to allocate to the virtual machine. The recommended memory size is 4096 MB. Click Continue.

R	Select the amount of to the virtual machine The recommended mo	memory (RAM) in megabytes emory size is <b>1024</b> MB.	to be allo	ocate	d
K			4096	\$	мв
	4 MB	16384 MB			
-	AP				

- 3. Add a virtual hard disk to the new virtual machine.
- Select Use an existing virtual hard disk drive
- Specify the-VM image path
- Click Create







4. Select the VM and click Settings.

🧿 Oracle VM VirtualBox Manager		- 🗆 ×
File Machine Help		
Tools	New Add Settings Discard Start	Q
CONOS-VM O Powered Off	General Name: OcNOS-VM Operating System: Debian 10 Buster (64-bit)	Preview
	System     Base Memory: 4096 MB     Boot Order: Floppy, Optical, Hard Disk     Acceleration: VT-x/AND-V, Nested Paging, KVM Paravirtualization	OcNOS-VM
	Display Video Memory: 16 MB Graphics Controller: VMSVGA Remote Desktop Server: Disabled Recording: Disabled	
	Storage Controller: IDE IDE Secondary Device 0: [Optical Drive] Empty Controller: SATA Port 0: Od/NOS-VM.vdi (Normal, 20.00 GB)	
	(D Audio Host Driver: Default Controller: ICH AC97	

5. Click Display, click graphics card, select VBoxVGA Graphics Controller, and click OK.

(OcNOS does not support the VMSVGA graphic controller in Oracle VirtualBox. Select either VBoxVGA in the display settings.)

Video Memory:	0 MB 128 MB	16 MB	~ ~
Monitor Count:	1	1	• •
Scale Factor:	All Monitors	100%	<>
Graphics Controller: Acceleration:	VBoxVGA CO		

Now you can see VBoxVGA shown as Graphics Controller.



- 6. Set up the network adapters:
  - a. Management port: Select Settings > Network > Adapter 1 and set values:
  - Choose the adapter setting as Bridge Adapter
  - Choose the port to appropriate Management NIC port for the hypervisor as shown below and click OK

• •				Oc	NOS-VM	- Netwo	rk		
General S	System Dis	play	Storage	Audio	Network	Ports	Shared Folders	User Interface	
		C		Ada	pter 2	Adapter	r 3 Adapter	4	
✓ En	able Netwo	rk Ad	apter						
	Attached	to:	Bridge	d Adapt	er		0		
	Na	me:	en6: TI	hunderb	olt Ethern	et Slot 1			0
	Advance	ed							
		Inv	valid setti	ngs dete	ected <u>ग</u>			Cancel	ОК

- 7. Add data ports: adapters 2, 3, and 4 are used for data ports. Set up a virtual network that the host-only adapter(s) will communicate through.
  - a. Click File > Host Network Manager > Create.
  - b. Check Enable under the DHCP Server column of the network you just created.

		Host Network	Manager	- i i	Mic	rosoft Aut
eate Remove Propert	les			C	opo	late is read
lame			IPv4 Address/Mask	IPv6 Address/Mask	DHC	P Server
vboxnet0			192.168.56.1/24			Enable
boxnet1			192.168.57.1/24		<	Enable
		DHO	CP Server			
Configure Adapter A	utomatically					
O Configure Adapter M	anually					
IPv4 Address:	192.168.57.1					
IPv4 Network Mask:	255.255.255.0					
IPv6 Address:						
IPv6 Prefix Length:	0					
Reset Apply						Close

c. Click Close.



- 8. Configure the network adapters for data ports:
  - a. With the OcNOS VM selected in the VirtualBox console, click Settings > Network. In the Adapter 2, 3, and 4 tabs, check Enable Network Adapter:
  - b. For Attached to for each adapter, select Host-Only Adapter or data port NIC.
  - c. In the Name field, select the virtual network you created in the previous step.

				00		- Netwo			
General Syste	System	Display	Storage	Audio	Network	Ports	Shared Folders	User Interface	
			Adapter 1			Adapte	r 3 Adapter 4	0	
	Enable Ne	twork A	dapter						
	Attac	ched to:	Host-or	nly Ada	pter		0		
		Name:	vboxnet	1					0
	Adv	vanced							
		Ir	nvalid settin	igs det	ected 🌆			Cancel	ОК

## d. Click OK

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- 9. Start the VM by double-clicking it in the list or by selecting it and clicking Start.
- 10. Click Start icon and the click Show as shown below. This will provide you console to the newly created OcNOS VM.







# Set up Basic Configuration in the OcNOS VM

Following are steps to setup basic configuration in OcNOS VM so that we can connect to the OcNOS VM via SSH. This enables us to further configure various features and test them.

- 1. Log in using the following credentials from the console:
  - Username: ocnos
  - Password: ocnos

This displays the OcNOS shell prompt.

- 2. Enter the following commands:
- Enter enable mode OcNOS>en
- Enter configuration mode: OcNOS#conf t
- Two options to configure the management port:

If you have a DHCP server in your network, use the following commands:

OcNOS (config)# int eth0 OcNOS (config-if)# ip address dhcp OcNOS (config-if)# exit OcNOS (config)# commit OcNOS (config) #exit

Otherwise manually configure the IP address using the following commands:

```
OcNOS (config) # int eth0
OcNOS (config-if) # ip address 10.12.44.120/24
OcNOS (config-if) # exit
OcNOS (config) # commit
OcNOS (config) # exit
```

OCNOS-VM [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Welcome to OcNOS CNOS login: ocnos assword: ast login: Mon Jun 12 16:04:43 UTC 2023 on tty1 inux OcNOS 4.19.91-g37f56f98f #1 Fri Oct 16 09:13:49 UTC 2020 x86\_64 The programs included with the Debian GNU/Linux system are free software; the exact distribution terms for each program are described in the individual files in /usr/share/doc/\*/copyright. Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent permitted by applicable law. OcNOS version DEMO\_VM-OcNOS-6.3.0.126-SP\_MPLS-x86\_-GA 06/02/2023 17:30:26 OcNOS>en OcNOS#con t Enter configuration commands, one per line. End with CNTL/2. OcNOS(config)#int\_ethO OcNOS(config–if)#ip address dhcp OcNOS(config—if)#comm OcNOS(config–if)#end



3. Check the IP address assigned to the OcNOS VM using the following command:

```
OcNOS#show int eth0 | incl inet
inet 10.10.27.162/24 broadcast 10.10.27.255
inet6 fe80::a00:27ff:fe8e:7f07/64
OcNOS#
```

In this example, 10.10.27.162 is the IP address of the newly created VM in VirtualBox.

4. Using the IP address, you can connect to the VM via **ssh** as follows below using *ocnos* userid and *ocnos* password.

```
% ssh ocnos@10.10.27.162
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added `10.10.27.162' (ED25519) to the list of known
hosts. ocnos@10.10.27.162's password:
Linux OcNOS 4.19.91-g37f56f98f #1 Fri Oct 16 09:13:49 UTC 2020 x86_64
Last login: Mon Jun 12 16:37:15 2023
OcNOS version DEMO_VM-OcNOS-6.3.0.126-SP_MPLS-x86_-GA 06/02/2023 17:30:26
OcNOS>
```

Now you can configure and test the newly created VM.

# References

The following are reference materials related to OcNOS:

OcNOS Configuration Guides

#### **ABOUT IP INFUSION**

IP Infusion is a leading provider of open network software and solutions for carriers, service providers and data center operators. Our solutions enable network operators to disaggregate their networks to accelerate innovation, streamline operations, and reduce Total Cost of Ownership (TCO). Network OEMs may also disaggregate network devices to expedite time to market, offer comprehensive services, and achieve carrier grade robustness. IP Infusion network software platforms have a proven track record in carrier-grade open networking with over 500 customers and over 10,000 deployments. IP Infusion is headquartered in Santa Clara, Calif., and is a wholly owned and independently operated subsidiary of ACCESS CO., LTD. Additional information can be found at http://www.ipinfusion.com

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