

Installing vWLC and KVM with Fedora

This chapter contains the following topics:

- Installing Fedora OS, on page 1
- Updating Fedora OS, on page 2
- Installing KVM and openvswitch with supporting packages, on page 3
- Network Configuration, on page 3
- Installing vWLC Using Virtual Machine Manager (VMM), on page 5
- Accessing vWLC's Console, on page 12

Installing Fedora OS

To install Fedora OS, perform the following steps:

Step 1	Install Fedora 21 or later. Click the following link to download Fedora.
	https://getfedora.org/en/server/download/
Step 2	After installing Fedora, configure IP address to go to internet.
	In this scenario, two dedicated Linux interfaces/ports are used for vWLC.
Step 3	Find out your interface using ifconfig .
	Example
	• 1 st Interface —for uplink (service-port of WLC); no IP address is required to this interface but should be connected and up.
	• 2 nd Interface—for WLC Management interface; no IP address is required to this interface but should be connected and up.
	• 3 rd or 4 th Interface—for Linux accessibility; provide IP address to this interface, so that there is a network connectivity to the Linux box.
	Note By default, KVM uses first interface as service-port for vWLC.
_	-d th

Step 4 Configure IP address to the 3rd or 4th interface to access Linux and access internet to get update. vi /etc/sysconfig/network-scripts/ifcfg-enp2s0f3 **Note** You will need to change BOOTPROTO from DHCP to static and add IPADDR, NETMASK, BROADCAST, and NETWORK variables. It is recommended to choose the static IP address.

Example

```
NM_CONTROLLED="yes"
BOOTPROTO=static
DEVICE=eth1
ONBOOT=yes
IPADDR=192.168.8.248
NETMASK=255.255.255.0
BROADCAST=192.168.8.255
NETWORK=192.168.8.0
GATEWAY=192.168.8.1
TYPE=Ethernet
PEERDNS=no
```

Step 5 Save the file.

OR

```
ifconfig <interface_name> <IP_address>
ifconfig <interface_name> netmask <netmask_address>
ifconfig <interface_name> broadcast <broadcast_address>
```

OR

ifconfig <interface_name> <IP_address> netmask <netmask_address> broadcast <broadcast_address>

Note Configure proxy and DNS information if required. Make sure internet is accessible after configuration.

Updating Fedora OS

To update Fedora OS after installation, perform the following steps:

Step 1	Update Fedora OS:
	yum install update
Step 2	Install GUI:
	yum install @gnome-desktop -y
Step 3	Install VNC server http://www.namhuy.net/3134/install-vnc-server-on-fedora-20.html:
	yum install tigervnc-server -y
Step 4	Install x11:
	yum groupinstall "X Software Development"

Installing KVM and openvswitch with supporting packages

yum install -y @standard @virtualization openvswitch systemctl enable network.service systemctl start network.service systemctl enable openvswitch.service systemctl start openvswitch.service

Verifying the Installation of KVM

lsmod | grep kvm

Example output on Intel processor:

[root@localhost system]# lsmod | grep kvm kvm_intel 147785 0 kvm 464964 1 kvm intel

Network Configuration

Creating a Bridge and Mapping it to Port (Ethernet Interface)

```
ovs-vsctl add-br ov_10nw
ovs-vsctl add-port ov_10nw enp2s0f0
ovs-vsctl add-br ov_9nw
ovs-vsctl add-port ov 9nw en
```

The bridge name must be the same as created in the XML file.

Viewing the Bridge Mapping

ovs-vsctl show

Example

```
[root@localhost ~]# ovs-vsctl show
099e8b7e-bf00-4071-be62-ec55f9b543cc
Bridge "ov_9nw"
Port "ov_9nw"
Interface "ov_9nw"
type: internal
Port "enp2s0f1"
Bridge "ov_10nw"
Port "ov_10nw"
Interface "ov_10nw"
type: internal
Port "enp2s0f0"
Interface "enp2s0f0"
ovs_version: "2.3.1-git3282e51"
```

Creating XML Files

Create two XML files; one for service-nw (10nw) and the other for management (9nw).

Example

10nw_eth0_ov.xml 9nw_eth1_ov.xml

Both XML files contain VLAN information based on the network, or based on what you want to allow.

Example: To Allow All VLANs

```
<network>
<name>10-nw</name>
<forward mode='bridge'/>
<bridge name='ov_10nw'/>
<virtualport type='openvswitch'/>
<portgroup name='vlan-any' default='yes'>
</portgroup>
</network>
```

The bridge name must be the same as created during "ovs-vsctl" command.

If only specific VLANs need to be allowed, use the following format.

```
<network>
 <name>ov-nw</name>
 <forward mode='bridge'/>
 <br/>dge name='bridge 1'/>
 <virtualport type='openvswitch'/>
 <portgroup name='all vlans' default='yes'>
  </portgroup>
  <portgroup name='vlan-152-untagged'>
    <vlan>
        <vlan mode='native-untagged'/>
  <tag id='152'/>
    </vlan>
  </portgroup>
  <portgroup name='vlan-153'>
    <vlan>
     <tag id='153'/>
    </vlan>
  </portgroup>
  <portgroup name='two-vlan'>
    <vlan trunk='yes'>
     <tag id='152'/>
     <tag id='153'/>
    </vlan>
  </portgroup>
</network>
```

In the above configuration:

- portgroup name='all_vlans' \rightarrow allows all VLANs.
- portgroup name='vlan-152-untagged' \rightarrow allows only untagged VLAN that is 152.
- portgroup name='vlan-153' \rightarrow allows only 153 VLAN.
- portgroup name='two-vlan' \rightarrow allows only two VLANs, that is, 152 and 153.

Allowing CDP Packets to Forward from Open vSwitch

ovs-vsctl set bridge ov_9nw other-config:forward-bpdu=true

Viewing the Virtual Network

virsh net-list --all

Deleting the Default Network

virsh net-undefine default

Creating Virtual Network

virsh net-define <xml file name>

Viewing the Virtual Network

virsh net-list --all

Starting the Virtual Network

virsh net-start <network_name_that is in the list>

Example

[root@localhost ~]# virsh net-list --all State Autostart Persistent Name ----default inactive no yes [root@localhost ~]# virsh net-undefine default Network default has been undefined [root@localhost ~]# virsh net-define 10nw eth0 ov.xml Network 10-nw defined from 10nw eth0 ov.xml [root@localhost ~]# virsh net-define 9nw eth1 ov.xml Network 9-nw defined from 9nw eth1 ov.xml [root@localhost ~]# virsh net-list --all State Autostart Persistent Name _____ 10-nw inactive no yes 9-nw inactive no yes [root@localhost ~] # virsh net-start 10-nw Network 10-nw started [root@localhost ~]# [root@localhost ~]# virsh net-start 9-nw Network 9-nw started [root@localhost ~]# virsh net-list --all Name State Autostart Persistent _____ 10-nw active no ves 9-nw active no yes

Installing vWLC Using Virtual Machine Manager (VMM)

To install vWLC using VMM in Fedora, perform the following steps:

Note Console to Fedora. GUI is required for VMM.

Step 1 Open the terminal (command prompt).

Step 2Execute the command virt-manager.
The Virt Manager (VMM) pop-up window appears.



Step 3 Create a new virtual machine (VM).

	Virtual Ma	achine Manager	
File Edit View	Help		
Add Connectio	n	•	
New Virtual M	achine		CPU usage
Close	Ctrl+W		an e arage
Quit	Ctrl+Q		

Step 4 Select the path.



Step 5 Select the ISO file of vWLC.

	Virtual Machine Manager	×
File Edir	New VM	1
Name	Create a new virtual machine Step 2 of 5	
VI Ri Ri Ri Ri	Locate your install media Use CDROM or DVD No device present * Use ISO Image:	1 11 11 4
	/root/Downloads/CTVM_images8_1/l ■ Browse ✓ Automatically detect operating system based on install media OS type: Unknown ⊻ersion: Unknown	

Step 6 Select the memory and CPU.

	Vin	tual Mach	ine M	lanag	jer	×
File Edit		New	VM	_		
Name	Create a n Step 3 of 5	ew virtu	al m	hach	ine	ge
 localhost vr 	Choose Memory and	I CPU set	tings		-	<u> </u>
R R	Memory (RAM):	4096	-	+	MIB	
R R	ŭ	p to 12872	8 M 8	l avait	able on the host	
	CPUs:	1	-	+		
	U	p to 32 ava	lable			
	Ca	ncel	B	lack	Forward	

Step 7 Select the disk space.

	Virtual Machine Manager	
ile Edir	New VM	
lame	Create a new virtual machine Step 4 of 5	e
localhos Vr R	 Enable storage for this virtual machine Create a disk image on the computer's hard drive 	
P 8	8.0 - + GIB	
D "	38.7 GIB available in the default location Allocate entire disk now Select managed or other existing storage	_
	Browse	
	Cancel Back Forwigd	

Step 8 Name the VM.



Step 9 Check the **Customize configuration before install** check box and then click **Finish**. (This helps to configure other options)

	Virtual Machine Manager	
Edir	New VM	
ne	Create a new virtual machine Step S of S	
ocalhos vr	Ready to begin the installation	
R	Name: vm3	-
R	OS: Generic	
> "	Install: Local CDROM/ISO	
	Memory: 4096 MiB	-
- 1	CPUs: 1	
- 1	Storage: 8.0 GiB /varAb/ibvirt/images/vm3.qcow2	
	Customize configuration before install	
	A Specifying an operating system is required for best performance	
	Advanced options	
- 1	Cancel Back Finish	

Step 10 Click Add Hardware.

	vm3 Virtual M	achine		
🖉 Begin Installation 🛛	Cancel			
Coverview Cover	Basic Details Name: vm3 UUID: b5b40b0c-3626-46d Status: Shutoff (Shutoff Title: Description:	19-b3dc-8d661efd3094 wm)		
Controller USB	Hypervisor Details Hypervisor: kvm Architecture: x86_64 Emulator: /usr/bin/qemu-kvm Firmware: BIOS V & Chipses: i440FX V			
A <u>d</u> d Hardware			Cancel	Apply

The Add New Virtual Hardware window appears.

This window helps you to configure service port, management interface, and serial connection:

- a. Click Network and do the following:
 - From the **Network source** drop-down list, choose the virtual network. (It is recommended to select the virtual network of service port of vWLC)
 - From the **Portgroup** drop-down list, choose the portgroup configured in xml if there are many.
 - From the **Device model** drop-down list, choose virtio (only this is supported as of now) and then click Finish.
- **b.** Repeat again by selecting **Add Hardware > Network** for virtual network of management interface.
 - **Note** vWLC supports only two physical ports; one for service port and the other for management/dynamic interface. The management interface is mapped to management/dynamic interface.
- c. Click Add Hardware > Serial and then click Finish.
 - **Note** Fedora 21 has "Virt-Manager" version 1.1, which has the **portgroup** option. Older version does not have it.

		Add New Virtual Hardware
Begin Installati	Controller	Network
Coverview Processor Memory Boot Options Disk 1 NIC :74:de:8 Input Display Defau Console Video Default Controller US	Network ! Input ! Graphics ! Sound ! Serial ! Parallel ! Console ! Channel ! Video ! Video ! Filesystem ! Smartcard ! USB Redirection ! FM ! RNG ! Panic Notifier !	Network source: Virtual network 's-nw' : Bridge network Portgroup: Vlan-02 MAC address: S2:54:00:95:35:cc Device model: Virtio
Add Hardwa		Cancel Finish

Step 11 Click Begin Installation.

Overview Bar Processor N Memory U Boot Options S Disk 1 S NIC :74:de:87 T NIC :95:35:cc D NIC :7d:8e:0c Input Display Default Hy Video Default Hy	ale Details (ame: vm3 UID: b5b40b0 tatus: Shu itle: lescription: pervisor Details	k-3626-46e9-b. Itoff (Shutdown)	3dc-8d66lefd3	3094	
Disk 1 Disk 1 NIC :74:de:87 T NIC :95:35:cc NIC :7d:8e:0c Input Display Default Serial Video Default	tatus: Shu itle: escription: pervisor Details	itoff (Shutdown)			
Serial Hy Video Default	pervisor Details				
Controller USB	Hypervisor: kvm rchitecture: x86_64 Emulator: /usr/bin, Firmware: BIOS Chipset: i440F	lgemu-kvm ▼ ▲ X ▼			

Step 12 Wait for WLC prompt for initial configuration.

Accessing vWLC's Console

To access vWLC's console, perform the following steps:

Step 1	From the terminal, execute the following command:					
	virsh console <vm_name eg.="" vml=""></vm_name>					
Step 2	Step 2 Reboot vWLC through virt-manager.					
	Note	To find out the vnet mapped to vWLC, execute the following command on vWLC:				
		show interface detail management				
		Match the last six octet with "ifconfig" output.				
		This is how, you get your targeted "vnet", if there are multiple vWLCs configured.				