

Virtualization

Hypervisor

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Oracle Virtualization

Oracle VM ??????Oracle???????????????????????????????????????? Xen ?????????????????Oracle
????????????????

FAQ

Log ??

Log Files

?????: `/u01/app/oracle/ovm-manager-3/domains/ovm_domain/servers/AdminServer/logs/`

- **access.log:** Used to track HTTP access to the Web interface of the Oracle VM Manager and to the underlying Oracle WebLogic Server HTTP interface. This log can be used to track access and HTTP operations within Oracle VM Manager to help debug access issues and to audit access to the Oracle VM Manager.
- **AdminServer.log:** Used to track events within the underlying Oracle WebLogic Server framework, including events triggered by Oracle VM Manager. This log can be used to track a variety of issues within Oracle VM Manager including TLS/SSL certificate issues, server availability issues, and any actions performed within Oracle VM Manager which are usually identifiable by searching for items containing the string `com.oracle.ovm.mgr`. Log in failures resulting from locked accounts (as opposed to incorrect credentials) are also in this file.
- **AdminServer-diagnostic.log:** Used to track exceptions within the underlying Oracle WebLogic Server framework, including particular events triggered by Oracle VM Manager such as log in failures due to incorrect credentials. This log can be used to track Oracle VM Manager behavior that results in an exception or for log in failure, which can be tracked by searching for the string `An incorrect username or password was specified`.

Log Parsing Tool: `0vmLogTool.py`

?????: `/u01/app/oracle/ovm-manager-3/ovm_tools/`

?? AdminServer.log ?????????????????? log ???

```
cd /u01/app/oracle/ovm-manager-3/ovm_tools/  
python 0vmLogTool.py -s -o ~/ovm_logs/summary.`date +%y%m%d_%H%M`
```

- ???????????? `~/ovm_logs/summary.<today_now>`
- `-s ,` ??? Error ??? Log; ?????????? Log?

??? AdminServer.out ????????????

```
????: /u01/app/oracle/ovm-manager-3/domains/ovm_domain/servers/AdminServer/logs/AdminServer.out
```

????

```
service ovmm stop
cat /dev/null > /u01/app/oracle/ovm-manager-3/domains/ovm_domain/servers/AdminServer/logs/AdminServer.out
service ovmm start
```

?????? OVMM ??????

```
“ ?? /u01/app/oracle/ovm-manager-3/ovm_tools/bin/BackupDatabase -w
mysqlbackup: WARNING: The value of 'innodb_checksum_algorithm'
option provided to mysqlbackup might be incompatible with server config.

mysqlbackup: ERROR: Page at offset 5242880 in
/u01/app/oracle/mysql/data/appfw/APPFW_EVENTS.ibd seems corrupt!
```

Solution:

1. ?????? APPFW_EVENTS ??????
2. ??????????????????
3. ??????????????????
4. ?????????

????????

```
mysqlcheck -uroot -p -S /u01/app/oracle/mysql/data/mysql.sock --databases appfw

mysql -u appfw -p -S /u01/app/oracle/mysql/data/mysql.sock appfw
mysql> select count(*) from APPFW_EVENTS;
+-----+
| count(*) |
+-----+
|    18650 |
+-----+
1 row in set (0.01 sec)
```

?? table APPFW_EVENTS

```

service ovmm stop
mysqldump -uappfw -p -S /u01/app/oracle/mysql/data/mysql.sock --databases appfw --tables
APPFW_EVENTS > table_dump.appfw_events.sql

mysql -u appfw -p -S /u01/app/oracle/mysql/data/mysql.sock appfw
mysql> create table APPFW_EVENTS_NEW like APPFW_EVENTS;
mysql> rename table APPFW_EVENTS to APPFW_EVENTS_OLD;
mysql> rename table APPFW_EVENTS_NEW to APPFW_EVENTS;

// Import the table
mysql -uappfw -p -S /u01/app/oracle/mysql/data/mysql.sock appfw < table_dump.appfw_events.sql

// Drop the old table
mysql -u appfw -p -S /u01/app/oracle/mysql/data/mysql.sock appfw
mysql> drop table APPFW_EVENTS_OLD;

```

OVM ?? MySQL DB ????????

```

“ ?? MySQL ???????
# du -chs /u01/app/oracle/mysql/data/ovs/OVM_STATISTIC*
 16K  /u01/app/oracle/mysql/data/ovs/OVM_STATISTIC.frm
121G  /u01/app/oracle/mysql/data/ovs/OVM_STATISTIC.ibd <===

```

Solution:

1. ?????????????? MySQL ??????
2. ?? ovmm ??????????????
3. ????? OVM_STATISTIC ????

?? ovmm

```

service ovmm stop

```

????? OVM_STATISTIC ???

```

mysql -u ovs -p -S /u01/app/oracle/mysql/data/mysql.sock ovs
Enter password: <□□□□□□>
mysql> select count(*) from OVM_STATISTIC;
+-----+

```

```
| count(*) |
+-----+
| 184795278 |
+-----+
1 row in set (6 min 35.98 sec)
```

????? OVM_STATISTIC

```
mysql> truncate table OVM_STATISTIC;
```

TIP: truncate ??????? drop ? create????? 1 ????????????????????

???????? truncate

```
mysql> create table NEW_OVM_STATISTIC like OVM_STATISTIC;
mysql> rename table OVM_STATISTIC to OLD_OVM_STATISTIC, NEW_OVM_STATISTIC to OVM_STATISTIC;
mysql> drop table OLD_OVM_STATISTIC;
```

VM ???????? Kill ???

“ VM ?????? Stopping??? Kill ????????

tpeoddovm-db01 <1108> is locked. job info: job id(time):1525839275699
name:Stop VM: tpeoddovm-db01 description:Stop VM: tpeoddovm-db01

Solution: ????? VM ??? OVS ????? ovs-agent ??

```
service ovs-agent stop
service ovs-agent start
```

???? Server Pool

“ ??? OVS ? OVM Manager ????????????? LUNs ?? Server Pool ? Repository
?

Solution: SSH ?? OVS ????? LUNs ???

```
# LUN
multipath -ll
```

```
dd if=/dev/zero of=/dev/mapper/360a980004434375a385d4747374b5155 bs=1M count=256
```

[OVM 3.3.x] ??????????????

“ Unexpected error during login (java.lang.NullPointerException)

Solution: ???

- ?? ovmm ??
- ?? OVMM ??

???? VM

“ Server Pool ? Master Server ?????????????? VM ??(Migrate) OVS
???? VM ??????

Caught during invoke method:
com.oracle.ovm.mgr.api.exception.IllegalOperationException....

Solution: ??? VM ?????????? Event Severity ??? Critical ??? Informational???????

1. ??????????
2. ?????????????????? Repositories Storage ??
3. ? VM ?????????(Migrate) ??????
4. OVMM > Servers and VMs > ?????OVS?? > ?????? VM > ??? Display Events
??? Critical Event ?? Acknowledge?????? VM ? Event Severity ??????????
Informational?
5. ?? VM ??

Repositories ????? Error ??

“ ?????????????????? Storage ??????????????????Error ?? ???????

Solution:

1. ?? OVMM ? VM ? System ????

OVMM > Servers and VMs > ?? VM > ?? VM > Disks > ?? Slot 0 ???

- Virtual Disk Name?system (x) <?????>
- Size (GB)?12 -> 50GB
- Shareable???

2. ?? VM ?????????

?? SWAP ???

```
> free -m
      2048M
```

?? SWAP

```
> swapoff /dev/xvda3
```

????

```
> fdisk /dev/xvda
```

1. ?? xvda3 & xvda2 ??
2. ?? xvda2 (+48G) & xvda3 (????)
3. ?????

```
# ?? VM
reboot

# ??? SWAP
mkswap /dev/xvda3
swapon /dev/xvda3

# Resize ???
resize2fs /dev/xvda2
```

???? Oracle VM ????

- ? OVMM ?? Discover Servers ??? OVM ??? Unowned ???OVMM ??????????
- ??????? OVM ?? Owned by Another.... ?????????????? OVM ? OVMM??????OVM ?????????????? OVMM ???

- ?? OVMM ?????? OVM ?????????????? server pool???????????????????? take ownership ???

????????

“ ?????? OVMM ??? NTP Server????? OVS ??? VM ??? OVMM ?????

OVMM ?? NTP)

1. ??????: ?? /etc/sysconfig/clock ??? setup?
2. ?? ntp.conf:

```
## ????? OVS ?????????????????????????????????
# Hosts on local network are less restricted.
restrict 192.168.7.0 mask 255.255.255.0 nomodify notrap

# ?????
#server 127.127.1.0      # local clock
#fudge 127.127.1.0 stratum 10

# ????? NTP ?????
server 0.rhel.pool.ntp.org
server 1.rhel.pool.ntp.org
server 2.rhel.pool.ntp.org
```

3. ?? ntpd ??

OVS ?? NTP)

OVMM 3.3.x ????? OVS ?????????? VM Manager ?????? OVS ?????????? OVS ? ntp.conf?

VM ?? NTP)

VM(guest OS) ????? OEL template??? Linux kernel ? UEK based?? VM ?????????? OVS
 ????????????????????????????????? OVS ?????????? VM ?????????????????? NTPD ? ntpdate
 ??????

?? /etc/ntp.conf

```
# [][][]  
#server 127.127.1.0    # local clock  
#fudge 127.127.1.0 stratum 10
```

```
# [][][][]  
# OVM Manager  
server 10.23.0.203
```

?? ntpd ??

Oracle Virtualization

Oracle VM Server for x86

Document

- [Oracle VM Overview](#)
- [Oracle VM: Support Matrix of Oracle VM Manager and Server](#)

Oracle Linux KVM

Tutorials

- [Virtualization | Oracle](#)
- [Document: Oracle Linux Virtualization Manager](#)
- [Document: KVM User's Guide](#)
- [Hardware Certification List](#)
- [Oracle Linux Virtualization Manager · Oracle Linux Training Station \(oracle-samples.github.io\)](#)
- Forum: <https://forums.oracle.com/ords/apexds/domain/dev-community/category/infrastructure-software>

XCP-ng

Based on XenServer, [XCP-ng](#) is the result of massive cooperation between individuals and companies, to deliver a product without limits. No restrictions on features and every bit available on GitHub!

Tutorials

- [How To Install Xen Orchestra Appliance \(XOA\) In XCP-ng Server](#)

VMware

????????????????????????????????????????????????????????????x86????????1998
????????????????????????????

Import Virtualbox ova Image

Export from Virtualbox

?? VM ??? *.ova image

- ??? OVF1.0?(???)
- ?????????(??:??? vmware ??????????????????)

Import to vSphere 6 Server

1. ?? VMware-ovftool: <https://www.dropbox.com/s/k925gfb2zn4ffgw/ovftool.zip?dl=0>
2. ? *.ova ??? OVF ??(????????? *.ovf, *.mf, *.vmdk)
3. ? vSphere Web ?? Deploy OVF Template????????????????? *.ovf ? *.vmdk
4. ?? vCenter ?????????????????? ESXi ???

OVFTool ??

```
"C:\Program Files\VMware\VMware OVF Tool\ovftool.exe" --lax source.ova target.ovf
```

Deploy OVF template

vSphere ESXi Web)

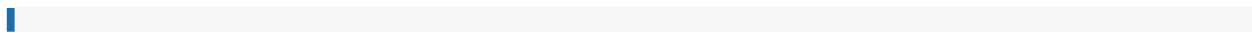
[deploy_ovf-esxi.png](#)

vCenter Web)

[deploy_ovf-vcenter.png](#)

F.A.Q

Error: No supported hardware versions



Issues detected with selected template. Details: - -1 : -1:VALUE_ILLEGAL: No supported hardware versions among [virtualbox-2.2]; supported: [vmx-04, vmx-07, vmx-08, vmx-09, vmx-10, vmx-11, vmx-12, vmx-13].

??:
?? *.ovf ???????

```
<System>  
  <vssd:ElementName>Virtual Hardware Family</vssd:ElementName>  
  <vssd:InstanceID>0</vssd:InstanceID>  
  <vssd:VirtualSystemIdentifier>graylog#95</vssd:VirtualSystemIdentifier>  
  <vssd:VirtualSystemType>virtualbox-2.2</vssd:VirtualSystemType>  
</System>
```

?? VirtualSystemType ? virtualbox-2.2 ?? vmx-07 ??????????????

Error: No space left for device '7' on parent controller '5'.

“ Line 85: No space left for device '7' on parent controller '5'.
Line 66: Unsupported virtual hardware device 'AHCI'.

Solution: ??????? vmx-?? ???

Error: The checksum(s) from the provided manifest file do not match

“ The checksum(s) from the provided manifest file do not match the content of file(s): zabbix5.ovf.

Solution: ?????? *.ovf ?????????? *.mf?

Error: Value "PIIX4" of ResourceSubType element not found in [#]

“ 48:7:VALUE_ILLEGAL: Value "PIIX4" of ResourceSubType element not found in [].
57:7:VALUE_ILLEGAL: Value "PIIX4" of ResourceSubType element not

found in [].

85:7:VALUE_ILLEGAL: Value "5" of Parent element does not refer to a ref of type DiskControllerReference.

75:7:VALUE_ILLEGAL: Value "4" of Parent element does not refer to a ref of type DiskControllerReference.

Solution: vCenter ESX Host Web

vmx

	ESX version
vmx-07	ESX 4.0
vmx-10	ESX 5.5
vmx-13	ESX 6.5

Reference

- [Deploy a Virtual Machine from an OVF or OVA File in the VMware Host Client](#)
- [Migrate virtual machine from Oracle VirtualBox to Esxi 5.5](#)
- [VM VirtualBox VMware ESXi](#)


```
[root@tpeitpesx-a02:~] esxcli software profile get
(Updated) HPE-ESXi-6.5.0-Update1-iso-650.U1.10.1.3.3
  Name: (Updated) HPE-ESXi-6.5.0-Update1-iso-650.U1.10.1.3.3
  Vendor: Hewlett Packard Enterprise
  Creation Time: 2019-06-14T03:16:25
  Modification Time: 2019-06-14T03:16:35
  Stateless Ready: True
  Description:

    2019-06-14T03:16:25.647136+00:00: The following VIBs are
    installed:

      ilo      650.10.3.0.2-10EM.650.0.0.4240417
      nmlx4-rdma  3.16.11.6-10EM.650.0.0.4598673
      scsi-iscsi-linux-92  1.0.0.2-3vmw.650.0.0.4564106
      sata-sata-sil 2.3-4vmw.650.0.0.4564106
      shim-libata-9-2-2-0  6.5.0-0.0.4564106
    ...
    ...
    -----
    HPE Custom Image Profile for ESXi 6.5.0 ISO

  VIBs: amsd 650.11.4.0-18.4240417, ata-libata-92 3.00.9.2-16vmw.650.0.0.4564106, ...
```

“ TIP:

- ?????? ISO ????????????????????
- ?????????? profile ????????????????

????/???????

????: /vmfs/volumes/{your-datastore-name}/{path-to-the-file}

```
[root@tpeitpesx-a02:~] esxcli software sources vib list -d
/vmfs/volumes/LocalDisk/Patches/esxi6.5uX-mgmt-bundle-3.4.
5-8.zip
Name           Version           Vendor  Creation Date  Acceptance Level
Status
-----
-----
```


- install : ?????/????
- update : ???????
- -d : *.zip* ?
- -v : *.vib* ?

```
esxcli software vib update --dry-run -d "/vmfs/volumes/LocalDisk/Patches/esxi6.5uX-mgmt-  
bundle-3.4.5-8.zip"  
esxcli software vib update -d "/vmfs/volumes/LocalDisk/Patches/esxi6.5uX-mgmt-bundle-3.4.5-  
8.zip"  
  
esxcli software vib install --dry-run -d "/vmfs/volumes/LocalDisk/Patches/ESXi670U3-18828794-  
HPE-Gen9plus-depot.zip"  
esxcli software vib install -d "/vmfs/volumes/LocalDisk/Patches/ESXi670U3-18828794-HPE-  
Gen9plus-depot.zip"
```

??????

?? ???????

```
esxcli software vib list | grep amsd
```

ESXi Commands

Check whether the /tmp directory is full

```
df | grep tmp
```

System Module

```
esxcli system module list
esxcli system module set --enabled=false --module=<module-name>
esxcli system module set --enabled=true --module=<module-name>
```

???? vmx

```
“ ?? OVF ?? VM ?????????????????????? vmx ??????????

sound.autoDetect = "TRUE"
sound.virtualDev = "hdaudio"
sound.fileName = "-1"
sound.present = "TRUE"
sound.pciSlotNumber = "35"
```

???? vmx ?????????????????? VM

```
# Find the Vmid for the affected VM
vim-cmd vmsvc/getallvms

# Reload configuration for the VM
vim-cmd vmsvc/reload <Vmid-of-VM>
```

Network

```
[root@tpeitpexb95:~] esxcli network ip interface list
vmk0
Name: vmk0
```

MAC Address: 80:30:e0:3b:a0:c4
Enabled: true
Portset: vSwitch0
Portgroup: Management Network
Netstack Instance: defaultTcpipStack
VDS Name: N/A
VDS UUID: N/A
VDS Port: N/A
VDS Connection: -1
Opaque Network ID: N/A
Opaque Network Type: N/A
External ID: N/A
MTU: 1500
TSO MSS: 65535
RXDispQueue Size: 1
Port ID: 33554442

vmk1

Name: vmk1
MAC Address: 00:50:56:6b:5c:ed
Enabled: true
Portset: vSwitch1
Portgroup: FT1
Netstack Instance: defaultTcpipStack
VDS Name: N/A
VDS UUID: N/A
VDS Port: N/A
VDS Connection: -1
Opaque Network ID: N/A
Opaque Network Type: N/A
External ID: N/A
MTU: 1500
TSO MSS: 65535
RXDispQueue Size: 1
Port ID: 50331654

vmk2

Name: vmk2
MAC Address: 00:50:56:62:26:d7
Enabled: true

Portset: vSwitch1
Portgroup: FT2
Netstack Instance: defaultTcpipStack
VDS Name: N/A
VDS UUID: N/A
VDS Port: N/A
VDS Connection: -1
Opaque Network ID: N/A
Opaque Network Type: N/A
External ID: N/A
MTU: 1500
TSO MSS: 65535
RXDispQueue Size: 1
Port ID: 50331655

```
[root@tpeitpexb95:~] esxcli network ip interface ipv4 get
```

Name	IPv4 Address	IPv4 Netmask	IPv4 Broadcast	Address Type	Gateway	DHCP	DNS
vmk0	10.14.1.95	255.255.248.0	10.14.7.255	STATIC	10.14.0.254	false	
vmk1	192.168.101.7	255.255.255.0	192.168.101.255	STATIC	0.0.0.0	false	
vmk2	192.168.103.7	255.255.255.0	192.168.103.255	STATIC	0.0.0.0	false	

```
[root@tpeitpexb95:~] esxcli network ip route ipv4 list
```

Network	Netmask	Gateway	Interface	Source
default	0.0.0.0	10.14.0.254	vmk0	MANUAL
10.14.0.0	255.255.248.0	0.0.0.0	vmk0	MANUAL
192.168.101.0	255.255.255.0	0.0.0.0	vmk1	MANUAL
192.168.103.0	255.255.255.0	0.0.0.0	vmk2	MANUAL

VMware

vCenter Patch

????

- [????VMware vCenter Server 6.7 Update 3n Release Notes](#)
- [???? Product Patches - VMware Customer Connect](#)

????

1. ?? Patch file: `VMware-vCenter-Server-Appliance-6.7.0.48000-18010531-patch-FP.iso`
2. ?? *.iso ? vCenter VM ?????????? datastore ? (*Recommend: ????? Patches ??*)
3. ?? vCenter VM ????? ESXi Host
4. ?? ESXi Web Admin (*NOTE: ????? vCenter Web*)
5. ? vCenter VM ??
6. ? vCenter VM ??????????
7. ????? vCenter VM
8. ?? vCenter VM ?????? patch ? iso ?
9. ????????? SSH ?? vCenter VM
10. ????????? Patch ??
11. ?? vCenter VM ???

Patch Commands

```
# To stage the ISO:
software-packages stage --iso

# To see the staged content:
software-packages list --staged

#To install the staged rpms:
software-packages install --staged
```

VMware

vCenter ??

?? root ??

?????? ESXi ??? VMware Host Client????????????? VMware Remote Console ????? vCenter Server Appliance ? Console ??????PHOTON????????????e?????????????

??GNU GRUB????????????? `rw init=/bin/bash` ??????????????F10?????????????

??????? root ?????????????????? `mount -o remount,rw /` ??????????????????????????

????? `passwd` ?????????? root ????????

????????????????? `umount /` ?????????????????????? `reboot -f` ?????????????? vCenter Server Appliance?

root ???????

[????????????????????](#)

vCenter Backup & Restore

?????????? VM snapshot?????????????????????

????????? VMware Appliance Management Interface (`https://<FQDN-of-VCSA>:5480/`)?

?????????????????

- FTP(s)
- NFS
- SFTP
- SMB
- HTTPS

?????????????

1. ?????????? VCSA ISO ?????
2. ?????????????????????????? Windows ??? (VM ?????)????????????? vCenter ?? (VCSA) ??????????

3. Windows ?????? VCSA ISO ??? `vcsa-ui-install/win32/installer.exe` ???/
?????

?????

- [vCenter Server Appliance 6.7 File-Based Backup and Restore Walkthroughs - VMware vSphere Blog](#)
- [New vCenter Server Appliance File-Based Backup / Restore Walkthroughs - VMware vSphere Blog](#)

Syslog Server

? vCenter ??????????????????????

?????

- [Configure desired level of vCenter logs sent to Remote Syslog Server](#)
- [Streaming Events to a Remote Syslog Server](#)

VMware

vCenter Converter

??

VMware vCenter Converter Standalone

Home: <https://www.vmware.com/products/converter.html>

??

?: Error 1053

“ Error 1053: The service did not respond to the start or control request in a timely fashion .

????? KB: <https://kb.vmware.com/s/article/64993>

1. Click the **Start** button, then click **Run**, type **regedit**, and click **OK**.
2. In the **Registry Editor**, click the registry subkey `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control`.
3. In the details pane, locate the **ServicesPipeTimeout** entry, right-click that entry and then select **Modify**.
Note: If the **ServicesPipeTimeout** entry does not exist, you must create it by selecting **New** on the **Edit** menu, followed by the **DWORD Value**, then typing **ServicesPipeTimeout**, and clicking **Enter**.
4. Click **Decimal**, enter the new timeout value in milliseconds, and then click **OK**. (Modify the value to a larger one. Here is no recommended value, adjust this value accordingly.)
5. Restart the computer.
6. Manual start vCenter Converter Agent/Server/Worker service in Windows Service Manager. If the service is still failed to start with Windows event 7009, increase the "ServicesPipeTimeout" value.

XenServer (Citrix Hypervisor)

URLs

- [Product Documentation](#)
- [Produce Lifecycle](#)
- [Hardware Compatibility List](#)
- [XenCenter](#)

VirtualBox

Oracle VirtualBox????InnoTek????????????????????????????????????????????????????????????xVM
????????????????????????????????32???64???Windows?Solaris?Linux ??????????x86???????

?????https://www.virtualbox.org/

VirtualBox

Tips

????

- [How to Increase Disk Size of Your Existing Virtual Machines in VirtualBox](#)

Command Line

Tutorials

- [Controlling VirtualBox from the Command Line](#)

Basic Commands

```
vboxmanage list vms  
vboxmanage list -l vms
```

Create VM

```
VBoxManage list ostypes  
VBoxManage createvm --name OracleLinux6Test --ostype Oracle_64 --register
```

Setting UP a VM's Properties

```
VBoxManage showvminfo <vm-name>  
VBoxManage modifyvm <vm-name> --cpus 2 --memory 2048 --vram 12  
VBoxManage modifyvm <vm-name> --nic1 bridged --bridgeadapter1 eth0
```

Export Appliance

```
vboxmanage list vms  
vboxmanage export UBUNTUSERVER164 -o ubuntu_server_new.ova
```

KVM/QEMU

??

QEMU?Fabrice Bellard????????????????????x86?ARM?SPARC?RISC-V?MIPS??????????

Home: [QEMU](#)

Installation

- [Ubuntu??QEMU/KVM?Virt Manager??????? - Ivon????? \(ivonblog.com\)](#)
- [How to Install and Use Qemu on Ubuntu \(itsfoss.com\)](#)
- [EmuGUI ? QEMU?Windows??????????? - Ivon????? \(ivonblog.com\)](#)
- [Setting Up Virtual Machines with QEMU, KVM, and Virt-Manager on Debian/Ubuntu - LinuxConfig](#)
- [How to run virtual machines with virt-manager - Fedora Magazine](#)
- [How to Install KVM on Fedora 37/36 Step-by-Step](#)
- [Virtualization Deployment and Administration Guide | Red Hat Product Documentation](#)

Fedora

QEMU

```
sudo dnf update
sudo dnf install qemu
```

From QEMU's source files

```
# Install prerequisite rpms to build the source code
sudo dnf install pixman-devel gcc make git python38

# Download source code
wget https://download.qemu.org/qemu-9.1.0.tar.xz
tar xvJf qemu-9.1.0.tar.xz
cd qemu-9.1.0
```

```
mkdir build
cd build
../configure --target-list='ppc64-softmmu ppc-softmmu' --prefix=/opt/qemu
make
sudo make install
/opt/qemu/bin/qemu-system-ppc64 --version
```

☞ If you don't mention the `--target-list='ppc64-softmmu ppc-softmmu'`, it will build more than 50 machines emulator, and will take a longer time to compile. For more info, type `#!/configure -h`

KVM/QEMU/Virt-Manager

```
sudo dnf install -y qemu-kvm libvirt virt-install bridge-utils qemu virt-manager \
  libvirt-devel virt-top libguestfs-tools guestfs-tools libvirt-client libvirt-python

sudo systemctl start libvirtd
sudo systemctl enable libvirtd

sudo usermod -a -G libvirt $(whoami)
sudo usermod -a -G kvm $(whoami)
sudo usermod -a -G input $(whoami)
```

RedHat

```
# RHEL 7
yum install qemu-kvm libvirt
yum install virt-install libvirt-python virt-manager virt-install libvirt-client

# RHEL 8
yum module install virt
yum install virt-install virt-viewer
systemctl start libvirtd

## Verification
virt-host-validate
```

Ubuntu 22.04

```
sudo apt-get install git libglib2.0-dev libfdt-dev libpixman-1-dev zlib1g-dev ninja-build
sudo apt-get install libnfs-dev libiscsi-dev python3-tomli

# Download source code
wget https://download.qemu.org/qemu-9.1.0.tar.xz
tar xvJf qemu-9.1.0.tar.xz
cd qemu-9.1.0
mkdir build
cd build
../configure --target-list='ppc64-softmmu ppc-softmmu' --prefix=/opt/qemu
make
sudo make install
/opt/qemu/bin/qemu-system-ppc64 --version
```

Command Line

- [How To Use QEMU From the Linux Command-Line | Baeldung on Linux](#)
- [A Comprehensive Guide to Using QEMU from the Linux Command-Line — nixFAQ](#)
- [Chapter 20. Managing Guest Virtual Machines with virsh | Red Hat Product Documentation](#)

virsh

Guest CPU Models

```
# For x86
virsh cpu-models x86_64

# For PowerPC
virsh cpu-models ppc64
```

List the VMs

```
sudo virsh list --all
```

FAQ

Operation not permitted

```
qemu-system-ppc64: -net nic -net tap,script=no,ifname=tap0: could not
configure /dev/net/tun (tap): Operation not permitted
```

Solution:

```
sudo setcap CAP_NET_ADMIN=ep /usr/bin/qemu-system-ppc64
```

Install Error

```
Running postconf script '/home/alang/??/worktmp/qemu-
9.1.0/build/pyvenv/bin/python3 /home/alang/??/worktmp/qemu-
9.1.0/scripts/symlink-install-tree.py'
Traceback (most recent call last):
  File "/home/alang/??/worktmp/qemu-9.1.0/scripts/symlink-install-tree.py",
line 17, in <module>
    out = subprocess.run(['introspect.split(' '), '--installed'],
  File "/usr/lib/python3.10/subprocess.py", line 503, in run
    with Popen(*popenargs, **kwargs) as process:
  File "/usr/lib/python3.10/subprocess.py", line 971, in __init__
    self._execute_child(args, executable, preexec_fn, close_fds,
  File "/usr/lib/python3.10/subprocess.py", line 1863, in _execute_child
    raise child_exception_type(errno_num, err_msg, err_filename)
FileNotFoundError: [Errno 2] No such file or directory: "/home/alang/??
/worktmp/qemu-9.1.0/build/pyvenv/bin/meson"
```

Fix bug: edit `symlink-install-tree.py`

```
import shlex
```

```
out = subprocess.run(['shlex.split(introspect), '--installed'],
```

Proxmox VE

Proxmox VE????Proxmox Virtual Environment?????PVE?Proxmox?????????????????
Linux?????

Learning Proxmox

[Proxmox](#) VE????Proxmox Virtual Environment?????PVE?Proxmox?????????????????
Linux?????

Getting started

- [Getting Started With Proxmox Backup Server - OSTechNix](#)
- [Proxmox Docker Containers Monster - 13000 containers on a single host - Virtualization Howto](#)
- [Getting Started With Proxmox \(linuxhandbook.com\)](#)
- [Proxmox Install Beginners Guide - Virtualization Howto](#)

Monitoring

- [Pulse](#) - A lightweight monitoring application for Proxmox VE that displays real-time status for VMs and containers via a simple web interface.
 - [This Free Tool Gives Proxmox the Monitoring Dashboard It Always Needed - Virtualization Howto](#)

Proxmox Datacenter Manager

???? PVE nodes (???????)

- [Proxmox Datacenter Manager Beta Documentation - Proxmox VE](#)
- [Proxmox Datacenter Manager is an underrated tool for your PVE servers](#)

ProxCenter

?? vCenter ??????

- [Is This the vCenter Experience Proxmox Has Been Missing? Meet ProxCenter](#)

HA Cluster

- [High-Availability \(HA\) Proxmox Clusters: Do's & Don'ts - Virtualization Howto](#)

- [I clustered budget-friendly devices into a Proxmox HA lab, and it's more useful than I thought](#)

Advanced Tips

- LACP Network
 - [I Tried LACP in My Proxmox Home Lab and Here's What Actually Happened - Virtualization Howto](#)
- [ClusterShell](#) - ? PVE nodes ??????
- [sysctl optimization](#)
- [5 Proxmox Management Tools I Use in My Home Lab in 2026 - Virtualization Howto](#)
- [Proxmox firewall setup and configuration - Virtualization Howto](#)
- GPU PassThrough
 - [Proxmox GPU PassThrough: Step-by-step Guide - Virtualization Howto](#)
 - [How to Enable GPU Passthrough to LXC Containers in Proxmox - Virtualization Howto](#)

5 common mistakes

1. Staying on Enterprise repositories
You should switch to No-Subscription repos after installing PVE
2. Not keeping backups
Use vzdump when you're new; switch to PBS once you become a veteran
3. Forgetting about documentation tools and monitoring services
They are a godsend for troubleshooting
4. Running mission-critical virtual guests on your experimentation server
High-availability or standalone nodes: Pick your poison
5. Clustering when you're a beginner
Unless you have the hardware and skillset, it's best to avoid clusters

Ceph Storage

[Ceph](#) ??????????????????????????????????????????????????????????????????

- [Try Microceph for an Easy Ceph Install - Virtualization Howto](#)
- [I Built a Ceph Erasure-Coded NVMe Cluster in My Home Lab. Here's What Actually Happened - Virtualization Howto](#)

- [I Bought a 10 Gig Switch to Fix My Proxmox Ceph Cluster and It Changed Everything - Virtualization Howto](#)
- Jumbo frames: [Cannot connect to host VMware storage Migration - Virtualization Howto](#)

PECU

PECU - Proxmox Enhanced Configuration Utility

Professional Proxmox VE automation:

- GPU passthrough
- VM templates
- kernel optimization
- enterprise-grade configuration management in one powerful tool.

Tutorials:

- [PECU - Proxmox Enhanced Configuration Utility | GPU Passthrough & VM Templates](#)
- [Proxmox Enhanced Configuration Utility is just what I needed for my home lab](#)

Proxmox Backup Server

- [A beginner's guide to Proxmox Backup Server](#)

Nested Virtualization

????? - ? Promox ? VM ?????????????? Proxmox?VMware ESXi?

???????

- ????????
- ?????
- ?????

???

- [How to Enable Proxmox Nested Virtualization - Virtualization Howto](#)
- [Home Lab Nested Virtualization E-book Download - Virtualization Howto](#)

LXC Container

- [Complete Guide to Proxmox Containers in 2025: Docker VMs, LXC, and New OCI Support - Virtualization Howto](#)

PegaProx

The Ultimate Datacenter Management Solution for Proxmox VE

- [PegaProx - The Ultimate Datacenter Management Solution for Proxmox VE](#)
- [This Open Source Project Just Killed the Proxmox GUI! - YouTube](#)

Post-Install

Tutorials

- YT: [the ULTIMATE Proxmox Guide - Post-Install, ZFS, GPU Passthrough, and more! - YouTube](#)
- [Proxmox VE for Beginners Guide with NetBird LXC](#)
- [Proxmox Defaults I Leave Alone \(And the Ones I Always Change\) - Virtualization Howto](#)

Repositories

Disable Enterprise Repositories

1. Navigate to *Node > Repositories*. Disable the enterprise repositories.
2. Now click *Add* and enable the no-subscription repository. Finally, go to *Updates > Refresh*.
3. Upgrade your system by clicking *Upgrade* above the repository settings page.

local-lvm

Delete local-lvm and Resize local (read warning)

Warning: This assumes a fresh installation without advanced storage settings during the installation, such as ZFS. These steps are only recommended if you have a small boot drive and you need to reclaim space.

1. Delete local-lvm manually from web interface under *Datacenter > Storage*.
2. Run the following commands within *Node > Shell*.

```
lvremove /dev/pve/data
lvresize -l +100%FREE /dev/pve/root
resize2fs /dev/mapper/pve-root
```

BIOS

- [AMD Ryzen 9 7945HX BIOS Settings: Power Consumption and Bifurcation - Virtualization Howto](#)

Other Defaults

1. VM CPU Type: Host
2. Memory ballooning configuration: Disable

FAQ

??????????

```
❗ VFS: Unable to mount root fs on unknown-block(0,0)
```

Solution: ???? [Ventoy](#) ??????? ISO ?????? USB ???

????????????

????????????

```
❗ Loading Linux 6.17.13 ...  
Loading initial ramdisk ...
```

???????????? kernel ??????????????????

???

1. ?? PVE ISO USB ??
2. ?? Advanced Options ? Rescue Boot
3. ?? GRUB ?????? `/etc/default/grub`

```
GRUB_TIMEOUT=5 # 0 5, ?????  
GRUB_CMDLINE_LINUX_DEFAULT="quiet amd_iommu=on iommu=pt" # ?????
```

????

```
update-grub  
reboot
```

GPU PassThrough

Tutorials

- [Proxmox GPU PassThrough: Step-by-step Guide - Virtualization Howto](#)
- [How to Enable GPU Passthrough to LXC Containers in Proxmox - Virtualization Howto](#)
- [PCI Passthrough - Proxmox VE](#)
- YT: [Proxmox GPU Passthrough for Bazzite Gaming - YouTube](#)

Enable IOMMU

BIOS

proxmox

Node > Shell > Edit: /etc/default/grub

```
# Should look like this  
GRUB_CMDLINE_LINUX_DEFAULT="quiet amd_iommu=on"
```

Run the command

```
update-grub
```