

# AIX VM with QEMU

## Introduction

What can it be used for?

- AIX Training and Practice
- Testing/Developing Environment for AIX
- Cybersecurity Lab for AIX
- Running AIX on your laptop for whatever you want to accomplish
- System/Database Recovery Exercise in compliance with ISO27001 (No Power Servers Required)

## Video Tutorials

- Odysee: [https://odysee.com/@Linuxfans:d/IBM\\_AIX\\_running\\_on\\_x86\\_64:5](https://odysee.com/@Linuxfans:d/IBM_AIX_running_on_x86_64:5)
- YT: [https://www.youtube.com/watch?v=tU94v-vr\\_J0](https://www.youtube.com/watch?v=tU94v-vr_J0)

## Prerequisites:

1. [QEMU Install](#)
2. aix\_7200-04-00-1937\_1of2\_112019.iso
3. Fedora 40 Linux Install (Recommended)

Updated by 2025/2/17: AIX 7200-04-00 ?????? 7200-05-06-2320???????????????????? 5 ??  
10 ??

## QEMU commands

### PowerPC System Board-specific

```
qemu-system-ppc64 --machine help
```

```
cobra@fedora-vm:~$ qemu-system-ppc64 --version
```

```
QEMU emulator version 8.2.6 (qemu-8.2.6-3.fc40)
```

```
Copyright (c) 2003-2023 Fabrice Bellard and the QEMU Project developers
```

??? QEMU ?????? ps, crontab, cron, java ??????

## Install AIX from CD-ROM

Create a VM disk

```
mkdir aix72VM
cd aix72VM
qemu-img create -f qcow2 hdisk0.qcow2 20G
```

?: AIX ????? 7200-03-00 ??????????

aix\_7200-04-00-1937\_1of2\_112019.iso

```
cd aix72VM
mv aix_7200-04-00-1937_1of2_112019.iso AIX72.iso
```

Boot from cd-rom

```
cd aix72VM

qemu-system-ppc64 -cpu POWER8 \
-machine pseries -m 4096 -serial stdio \
-drive file=hdisk0.qcow2,if=none,id=drive-virtio-disk0 \
-device virtio-scsi-pci,id=scsi \
-device scsi-hd,drive=drive-virtio-disk0 \
-cdrom $PWD/AIX72.iso \
-prom-env "boot-command=boot cdrom:" \
-prom-env "input-device=/vdevice/vty@71000000" \
-prom-env "output-device=/vdevice/vty@71000000"
```

Type 1 and press Enter

```
***** Please define the System Console. *****  
  
Type a 1 and press Enter to use this terminal as the  
system console.  
Pour definir ce terminal comme console systeme, appuyez  
sur 1 puis sur Entree.  
Taste 1 und anschliessend die Eingabetaste druecken, um  
diese Datenstation als Systemkonsole zu verwenden.  
Premere il tasto 1 ed Invio per usare questo terminal  
come console.  
Escriba 1 y pulse Intro para utilizar esta terminal como  
consola del sistema.  
Escriuiu 1 i premeu Intro per utilitzar aquest  
terminal com a consola del sistema.  
Digite um 1 e pressione Enter para utilizar este terminal  
como console do sistema.
```

```
0c31
```

Press Enter

```
>>> 1 Type 1 and press Enter to have English during install.  
2 Entreu 2 i premeu Intro per veure la instal·lació en català.  
3 Entrez 3 pour effectuer l'installation en français.  
4 F4 Installation in deutscher Sprache 4 eingeben  
und die Eingabetaste drücken.  
5 Immettere 5 e premere Invio per l'installazione in Italiano.  
6 Digite 6 e pressione Enter para usar Português na instalação.  
7 Escriba 7 y pulse Intro para la instalación en español.
```

```
88 Help ?
```

```
>>> Choice [1]:
```

Type 2

## Installation and Maintenance

Type the number of your choice and press Enter. Choice is indicated by >>>.

- >>> 1 Start Install Now with Default Settings
- 2 Change/Show Installation Settings and Install
- 3 Start Maintenance Mode for System Recovery
- 4 Make Additional Disks Available
- 5 Select Storage Adapters

- 88 Help ?
- 99 Previous Menu

>>> Choice [1]: 2

### Type 4

Either type 0 and press Enter to install with current settings, or type the number of the setting you want to change and press Enter.

- 1 System Settings:
    - Method of Installation.....New and Complete Overwrite
    - Disk Where You Want to Install.....hdisk0
  - 2 Primary Language Environment Settings (AFTER Install):
    - Cultural Convention.....English (United States)
    - Language .....English (United States)
    - Keyboard .....English (United States)
    - Keyboard Type.....Default
  - 3 Security Model.....Default
  - 4 More Options (Software install options)
  - 5 Select Edition.....standard
- >>> 0 Install with the current settings listed above.

- |                  |  |  |
|------------------|--|--|
| 88 Help ?        |  | +-----   |
| 99 Previous Menu |  | WARNING: Base Operating System Installation will |
|                  |  | destroy or impair recovery of ALL data on the    |
|                  |  | destination disk hdisk0.                         |

>>> Choice [0]: 4

### Type 5

```
1. Graphics Software..... Yes
2. System Management Client Software..... Yes
3. OpenSSH Client Software..... No
4. OpenSSH Server Software..... No
5. Enable System Backups to install any system..... Yes
   (Installs all devices)

>>> 6. Install More Software

    0 Install with the current settings listed above.

    88 Help ?
    99 Previous Menu

>>> Choice [6]: 5
```

Type 0

```
1. Graphics Software..... Yes
2. System Management Client Software..... Yes
3. OpenSSH Client Software..... No
4. OpenSSH Server Software..... No
5. Enable System Backups to install any system..... No
   (Installs all devices)

>>> 6. Install More Software

    0 Install with the current settings listed above.

    88 Help ?
    99 Previous Menu

>>> Choice [6]: 0
```

Press Enter to install AIX

```
Disks: hdisk0
Cultural Convention: en_US
Language: en_US
Keyboard: en_US
Graphics Software: Yes
System Management Client Software: Yes
OpenSSH Client Software: No
OpenSSH Server Software: No
Enable System Backups to install any system: No
Selected Edition: standard
```

Optional Software being installed:

```
>>> 1 Continue with Install
```

```
+-----+
88 Help ? | WARNING: Base Operating System Installation will
99 Previous Menu | destroy or impair recovery of ALL data on the
| destination disk hdisk0.
>>> Choice [1]: █
```

?????????? AIX ??????????????

?? Ctrl + C ??

Please wait...

Approximate	Elapsed time
% tasks complete	(in minutes)

```
Set_Bootlist: Could not set the bootlist to:
hdisk0 .
The boot device must be set in the host KVM.
Press 1 to continue: █
```

## Fix boot issue

Boot from cd-rom

```
cd aix72VM

qemu-system-ppc64 -cpu POWER8 \
-machine pseries -m 4096 -serial stdio \
-drive file=hdisk0.qcow2,if=none,id=drive-virtio-disk0 \
-device virtio-scsi-pci,id=scsi \
-device scsi-hd,drive=drive-virtio-disk0 \
-cdrom $PWD/AIX72.iso \
-prom-env "boot-command=boot cdrom:" \
-prom-env "input-device=/vdevice/vty@71000000" \
-prom-env "output-device=/vdevice/vty@71000000"
```

Type 1 and press Enter

```
***** Please define the System Console. *****

Type a 1 and press Enter to use this terminal as the
system console.
Pour definir ce terminal comme console systeme, appuyez
sur 1 puis sur Entree.
Taste 1 und anschliessend die Eingabetaste druecken, um
diese Datenstation als Systemkonsole zu verwenden.
Premere il tasto 1 ed Invio per usare questo terminal
come console.
Escriba 1 y pulse Intro para utilizar esta terminal como
consola del sistema.
Escribiu 1 i premeu Intro per utilitzar aquest
terminal com a consola del sistema.
Digite um 1 e pressione Enter para utilizar este terminal
como console do sistema.

0c31
```

Press Enter

```
>>> 1 Type 1 and press Enter to have English during install.
     2 Entreu 2 i premeu Intro per veure la instal·laci3 en catal4.
     3 Entrez 3 pour effectuer l'installation en fran5ais.
     4 F6 Installation in deutscher Sprache 4 eingeben
       und die Eingabetaste dr6cken.
     5 Immettere 5 e premere Invio per l'installazione in Italiano.
     6 Digite 6 e pressione Enter para usar Portugu7 na instala8.
     7 Escriba 7 y pulse Intro para la instalaci9 en espa1.
```

88 Help ?

```
>>> Choice [1]: █
```

### Type 3

#### Installation and Maintenance

Type the number of your choice and press Enter. Choice is indicated by >>>.

```
>>> 1 Start Install Now with Default Settings
     2 Change/Show Installation Settings and Install
     3 Start Maintenance Mode for System Recovery
     4 Make Additional Disks Available
     5 Select Storage Adapters
```

88 Help ?

99 Previous Menu

```
>>> Choice [1]: 3 █
```

### Type 0





```
ln -s fsck fsck64

mv logredo64 logredo64.old
ln -s logredo logredo64

sync;sync;
halt
```

## First boot from hdisk

```
cd aix72VM

qemu-system-ppc64 -cpu POWER8 \
-machine pseries -m 4096 -serial stdio \
-drive file=hdisk0.qcow2,if=none,id=drive-virtio-disk0 \
-device virtio-scsi-pci,id=scsi \
-device scsi-hd,drive=drive-virtio-disk0 \
-cdrom $PWD/AIX72.iso \
-prom-env "boot-command=boot hdisk:" \
-prom-env "input-device=/vdevice/vty@71000000" \
-prom-env "output-device=/vdevice/vty@71000000"
```

Type vt100

```

                                     Set Terminal Type
The terminal is not properly initialized. Please enter a terminal type
and press Enter. Some terminal types are not supported in
non-English languages.

    ibm3101          tvi912          vt330            aixterm
    ibm3151          tvi920          vt340            dtterm
    ibm3161          tvi925          wyse30           xterm
    ibm3162          tvi950          wyse50           lft
    ibm3163          vs100           wyse60           sun
    ibm3164          vt100           wyse100
    ibmpc            vt320           wyse350

+-----Messages-----
| If the next screen is unreadable, press Break (Ctrl-c)
| to return to this screen.
88 Help ?
|
>>> Choice []: vt100
```



## Software Maintenance Agreement

Move cursor to desired item and press Enter.

View Software Maintenance Terms and Conditions

Accept Software Maintenance Terms and Conditions

F1=Helpsing

F2=Refresh

F3=Cancel

Esc+8=Image

Esc+9=Shell

Esc+0=Exit

Enter=Do

Select: Set root Password

“ Tip: ????????????? Task Completed - Exit to Login  
??

## Installation Assistant

Move cursor to desired item and press Enter.

Set Date and Time

Set root Password

Configure Network Communications

Install Software Applications

System Workload Partition Software Maintenance

Using SMIT (information only)

Tasks Completed - Exit to Login

F1=Helpsing

F2=Refresh

F3=Cancel

Esc+8=Image

Esc+9=Shell

Esc+0=Exit

Enter=Do

?????? root ????

AIX Version 7

Copyright IBM Corporation, 1982, 2019.

Console login: █

## Post-tasks

## - Disable some problematic services

```
rmitab diagd
rmitab rcnfs
rmitab aso
rmitab clcomd
rmitab pfcdaemon
stopsrc -s clcomd
stopsrc -s pfcdaemon

lsitab -a
lssrc -a
```

## - Network setup

On Linux)

net\_tap.sh:

```
BRIDGE=virbr0
NETWORK=192.168.99.0
NETMASK=255.255.255.0
GATEWAY=192.168.99.1
DHCPRANGE=192.168.99.2,192.168.99.50
TAP=tap0

sudo ip link add $BRIDGE type bridge
sudo ip link set dev $BRIDGE up
sudo ip addr add dev $BRIDGE $GATEWAY/$NETMASK

sudo ip tuntap add $TAP mode tap
sudo ip link set $TAP master $BRIDGE
sudo ip link set up dev $TAP

# Uncomment the following lines to enable the DHCP server
#dns_cmd=(
#    dnsmasq
#    --strict-order
#    --except-interface=lo
#    --interface=$BRIDGE
```

```
# --listen-address=$GATEWAY
# --bind-interfaces
# --dhcp-range=$DHCP RANGE
# --conf-file=""
# --pid-file=/var/run/qemu-dnsmasq-$BRIDGE.pid
# --dhcp-leasefile=/var/run/qemu-dnsmasq-$BRIDGE.leases
# --dhcp-no-override
#)
#echo ${dns_cmd[@]} | sudo bash
```

## Run net\_tap.sh

```
bash net_tap.sh
```

## Allow access to internet

```
sudo firewall-cmd --permanent --zone=public --add-interface=tap0
sudo firewall-cmd --permanent --add-masquerade
sudo firewall-cmd --reload
```

## Boot with network interface tap0

```
qemu-system-ppc64 -cpu POWER8 \
  -machine pseries -m 4096 -serial mon:stdio \
  -drive file=hdisk0.qcow2,if=none,id=drive-virtio-disk0 \
  -device virtio-scsi-pci,id=scsi \
  -device scsi-hd,drive=drive-virtio-disk0 \
  -cdrom $PWD/AIX72.iso \
  -net nic -net tap,script=no,ifname=tap0 \
  -prom-env "boot-command=boot disk:" \
  -nographic
```

## On AIX)

```
# Check the network interface
lsdev -Cc if
lsdev -Cc adapter

# Set the ip
chdev -l en0 -a netaddr=192.168.99.100 -a netmask=255.255.255.0 -a state=up
```

```
route add 0 192.168.99.1
# Alternatively, using the following command instead
/usr/sbin/mktcpip -h'aixvm' -a'192.168.99.100' -m'255.255.255.0' -i'en0' -g'192.168.99.1' -
A'no' -t'N/A'

echo "nameserver 1.1.1.1" > /etc/resolv.conf
```

## - Increase the filesystem size

```
lsdev -Cc disk
lscfg -vl hdisk0
chfs -a size=+1024M /home
chfs -a size=+2048M /opt
chfs -a size=+512M /tmp
chfs -a size=+2048M /usr
chfs -a size=+1024M /var
```

## - Install OpenSSH

```
mount -v cdrfs -o ro /dev/cd0 /mnt
mkdir /tmp/ssh_install
cd /mnt/installp/ppc
cp openssh* /tmp/ssh_install
cd /tmp/ssh_install
installp -acgXYd . openssh.base openssh.license openssh.man.en_US openssh.msg.en_US
lssrc -s sshd
```

## - Fix the RPM issue

```
error: cannot open Packages index using db4 - Invalid argument (22)
error: cannot open Packages database in /opt/freeware/packages
error: db4 error(22) from dbenv->open: Invalid argument
```

Solution: `fixrpm.sh`

```
#!/usr/bin/ksh

cd /opt/freeware
rm -f *.rpm.packages.tar
tar -chvf `date +"%d%m%Y"` .rpm.packages.tar packages
```

```
rm -f /opt/freeware/packages/___*
/usr/bin/rpm --rebuilddb

exit 0
```

Edit /etc/initab, insert the line after the rctcpip

```
rctcpip:23456789:wait:/etc/rc.tcpip > /dev/console 2>&1 # Start TCP/IP daemons
fixrpm:23456789:once:/fixrpm.sh > /dev/null 2>&1 # Added by Alang
```

## - Install AIX Toolbox

Download the files

- dnf\_aixtoolbox.sh :  
[https://public.dhe.ibm.com/aix/freeSoftware/aixtoolbox/ezinstall/ppc/dnf\\_aixtoolbox.sh](https://public.dhe.ibm.com/aix/freeSoftware/aixtoolbox/ezinstall/ppc/dnf_aixtoolbox.sh)
- openssl-1.1.2.2000.tar.Z :  
[https://www.ibm.com/resources/mrs/assets?source=aixbp&S\\_PKG=openssl](https://www.ibm.com/resources/mrs/assets?source=aixbp&S_PKG=openssl)

```
cd /home/worktmp
uncompress openssl-1.1.2.2000.tar.Z
tar -xvf openssl-1.1.2.2000.tar
cd openssl-1.1.2.2000
installp -qaXFY -d . openssl.base openssl.license openssl.man.en_US
openssl version
```

```
cd /home/worktmp
rpm --rebuilddb
ksh dnf_aixtoolbox.sh -y
/opt/freeware/bin/dnf update
/opt/freeware/bin/dnf install bash
```

## - Optional tasks

> Custom the prompt, create the profile `/.profile`

```
PS1="`whoami`@`hostname` -s`:"'${PWD##*/}> ' `
```

> Timezone

smitty > System Environments > Change/Show Date and Time > Change Time Zone Using System

```
echo $TZ
```

> The ordering of certain name resolution services

```
?? ping ????????????????
```

Edit: `/etc/netsvc.conf`

```
hosts = local, bind4
```

> Set the environment variables

Edit: `/etc/environment`

```
# Fix for not properly displaying with smitty on the tmux  
TERM=xterm
```

??????

- ?? CD ISO ?

??qemu ???? `-cdrom /path/to/your-cd.iso`

```
qemu-system-ppc64 -cpu POWER8 \  
-machine pseries -m 4096 -serial mon:stdio \  
-drive file=hdisk0.qcow2,if=none,id=drive-virtio-disk0 \  
-device virtio-scsi-pci,id=scsi \  
-device scsi-hd,drive=drive-virtio-disk0 \  
-cdrom $PWD/AIX72.iso \  
-net nic -net tap,script=no,ifname=tap0 \  
-prom-env "boot-command=boot disk:" \  
-nographic
```

AIX ????

```
mount -v cdrfs -o ro /dev/cd0 /mnt
```

## - ???2?????

? Linux ????? 5G ??? `hdisk1.qcow2`

```
cd aix72VM
qemu-img create -f qcow2 hdisk1.qcow2 5G
```

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

“ ?????????????? disk id ?????? AIX ?? hdisk ????????

```
-drive file=hdisk1.qcow2,if=none,id=drive-virtio-disk1 \
-device scsi-hd,drive=drive-virtio-disk1 \
```

? AIX ??????? hdisk1

```
root@aixvm:> lspv
hdisk0          00000000375ffb46          rootvg          active
hdisk1          00000000fdb40f0f          rootvg          active

root@aixvm:> lsdev -Cc disk
hdisk0 Available 00-10 MPI0 Other Virtio SCSI Disk Drive
hdisk1 Available 00-10 MPI0 Other Virtio SCSI Disk Drive

root@aixvm:> lsmpio -q
Device          Vendor Id  Product Id          Size          Volume Name
-----
hdisk0          QEMU      QEMU HARDDISK       20.00GiB     -
hdisk1          QEMU      QEMU HARDDISK       20.00GiB     -

root@aixvm:> lspv -u
hdisk0          00000000375ffb46          rootvg          active
33130drive-virtio-disk00DQEMU HARDDISK04QEMUvrtscsi          8eca6bf6-b924-0872-c039-
8cb2a62de21a
hdisk1          00000000fdb40f0f          rootvg          active
33130drive-virtio-disk10DQEMU HARDDISK04QEMUvrtscsi          c618c61a-8c74-19e4-6cfa-
beae464aaf14
```

## - ??? vCPU

?? QEMU ?? 1 vCPU???? AIX ?????????????? vCPU?

```
qemu-system-ppc64 ??????
```

```
-nographic -smp 2,sockets=2,cores=1,threads=1
```

- ????????

```
qemu-system-ppc64 ??????????????
```

```
-net nic \  
-net nic \  
-net tap,script=no,ifname=tap0 \
```

????? mac addr.

```
-net nic,macaddr=56:44:45:30:31:31 \  
-net nic,macaddr=56:44:45:30:31:32 \  
-net tap,script=no,ifname=tap0 \
```

- ?? CPU ??

POWER 8

```
-cpu POWER8 -machine pseries
```

POWER 9

```
-cpu POWER9 -machine pseries,ic-mode=xics
```

- ???????

```
qemu-system-ppc64 -cpu POWER8 \  
-machine pseries -m 4096 -serial mon:stdio \  
-cdrom $PWD/AIX72.iso \  
-device virtio-scsi-pci,id=scsi \  
-drive file=hdisk0.qcow2,if=none,id=drive-virtio-disk0 \  
-device scsi-hd,drive=drive-virtio-disk0 \  
-drive file=hdisk1.qcow2,if=none,id=drive-virtio-disk1 \  
-device scsi-hd,drive=drive-virtio-disk1 \  
-net nic -net tap,script=no,ifname=tap0 \
```

```
-prom-env "boot-command=boot disk:" \  
-nographic -smp 2,sockets=2,cores=1,threads=1
```

## - NFS Share

- NFS Server: Fedora VM (192.168.99.1)
- NFS Client: AIX VM (192.168.99.100)

### NFS Server on Fedora VM)

```
# Install the dependencies packages  
[cobra@fedora-vm ~]$ rpm -qa | grep nfs  
libnfsidmap-2.7.1-0.fc40.x86_64  
sssd-nfs-idmap-2.9.5-1.fc40.x86_64  
nfs-utils-2.7.1-0.fc40.x86_64  
  
# Configure the firewall  
sudo firewall-cmd --permanent --add-service=nfs  
sudo firewall-cmd --permanent --add-service=mountd  
sudo firewall-cmd --permanent --add-service=rpc-bind  
sudo firewall-cmd --reload
```

Edit `/etc/exports.d/aix_nfs.exports`

```
/dataVol/aix_nfs 192.168.99.100(rw,sync,no_root_squash)
```

### Startup the service

```
[cobra@fedora-vm ~]$ sudo systemctl enable nfs-server --now
```

### NFS Client on AIX VM)

- IP: 192.168.99.1 ?? AIX ? Gateway??????? Fedora ? IP?

```
showmount -e 192.168.99.1  
mkdir /mnt/nfs  
mount 192.168.99.1:/dataVol/aix_nfs /mnt/nfs
```

????

????

1. AIX ?? : ? 7200-05-06-2320 ? 7200-05-08-2420?????? 8 GB?????? 2.5 ???
2. AIX ?? : ? 7200-04-00-0000 ? 7200-05-06-2320?????? 7.9GB?????? 5 ?? 10 ??
3. DB2 Server: ?? v11.1 ?? 51 ?????? FP 7 ?? 1.5 ???

I/O ??

1. AIX ?? 4GB RAM ????? Fedora Linux ?? 12 GB?? RAM????? Fedora Linux ?? SWAP memory????? AIX ? I/O ???
2. ?? Fedora Linux ????? AIX VMs?Fedora Linux ??????????????
3. ?????? AIX ?????????????? scp ?????????????? Fedora Linux ?????? Fedora Linux ??????????????????????????????????????

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

- / : 1GB
- /usr : 5GB
- /var : 1.5GB
- /tmp : 1GB
- /opt : 7GB (For DB2 Server)

????? AIX ??

- [???? AIX 7.2 ??? QEMU VM](#)
- [AIX\\_QEMU\\_blog.pdf](#)

????

1. ?? `ls1pp -L` ?????????????? `-l` ?????? AIX VM ???
2. ?? DB2 Server 11.1 ?????? FixPack ??? Instance ?????????????? db2chgpath ??????
3. ?? AIX ?????????????? VM disk `hdisk0.qcow2` ?????????????? AIX ??????????hdisk0.qcow2 ??????????????
  - ????????? AIX VM?? Host OS ?????? `virt-sparsify hdisk0.qcow2 hdisk0-shrink.qcow2` ?????? `hdisk0-shrink.qcow2` ?? AIX VM disk?

## References

- [AIX on qemu-system-ppc64](#)
- [Run AIX 7.2 on x86 with QEMU – Kwakou SysAdmin](#)
- [Qemu?????AIX 7.2 ?? - ?????? - ??? \(cnblogs.com\)](#)

- [Run your AIX VM on x86 using KVM and QEMU \(ibm.com\)](#)
- [qemu7????aix72,?????????\\_aix 7.2??qcow2???????-CSDN??](#)
- [AIX 7.2 ????? - ???{????????????}??? \(jia.je\)](#)
- [AIX for System Administrators: DEVOPS - QEMU \(aix4admins.blogspot.com\)](#)
- YT: [AIX 7.2 installation in QEMU - YouTube](#)
- YT: [Install AIX on QEMU using virsh and virt-manager tools - YouTube](#)
- YT: [Updates on Install AIX and run PowerHA using virsh and virt-manager - YouTube](#)
- [libvirt: QEMU command-line passthrough](#)
- [Install AIX on x86 using QEMU](#)

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Updated 2025-06-12 19:02:16 CST by A-Lang (Admin)