

# IBM AIX

AIX??IBM??UNIX??Advanced Interactive  
executive????????????????????Advanced IBM Unix??"Advanced  
Interactive eXecutive"?

- [Migrate System Accounts to another Server](#)
- [AIX ????](#)
- [AIX VM with qemu](#)
- [Learning](#)
- [AIX VM with virt-manager](#)

# Migrate System Accounts to another Server

## Cloning AIX users and groups between servers

```
# one-liner to generate the commands to clone groups
lsgroup -c -a id ALL | grep -v ^# | awk -F: '{print "mkgroup id=" $2, $1}'

# one-liner to generate the commands to clone users
lsuser -c -a id pgrp groups home shell gecos ALL | grep -v ^# | awk -F: '{print "useradd -m -u", $2, "-g", $3, "-G", $4, "-c \"" $7 "\" -d ", $5, $1}'
```

## Copying AIX password hashes between servers

```
# grep -p root /etc/security/passwd
root:
password = 2zfymAdUyNdA.
lastupdate = 1360555127

echo 'root:2zfymAdUyNdA.' | chpasswd -ec
```

### gen\_reset\_password.sh:

```
#!/usr/bin/ksh

for user in `lsuser -a ALL`; do
    [ -n "$1" -a "$user" != "$1" ] && continue
    if grep -p ^${user}: /etc/security/passwd | grep -q "password = "; then
        hash=`grep -p ^${user}: /etc/security/passwd | grep "password = " | awk -F " " '{print $2}`
        echo "echo '${user}:${hash}' | chpasswd -ec"
    fi
done
```

```
# ./gen_reset_password.sh
echo 'root:2zfymAdUyNdA.' | chpasswd -ec
```

```
echo 'daemon:*' | chpasswd -ec
echo 'bin:*' | chpasswd -ec
echo 'sys:*' | chpasswd -ec
echo 'adm:*' | chpasswd -ec
echo 'uucp:*' | chpasswd -ec
echo 'guest:*' | chpasswd -ec
echo 'nobody:*' | chpasswd -ec
echo 'lpd:*' | chpasswd -ec
echo 'testusr1:MRGY5M7I56OTA' | chpasswd -ec
echo 'testusr2:skG.DjnbSmVaA' | chpasswd -ec
echo 'testusr3:EdRZo9SPb1Jig' | chpasswd -ec
echo 'testusr4:hk3qpcroid1qg' | chpasswd -ec
echo 'testusr5:1XaeSLhwCv19s' | chpasswd -ec
```

# AIX ?????

## Install package Isof

Where to download the Isof, bind, rsyslog, openssh, openssl, etc packages?

- URL:

[https://www.ibm.com/resources/mrs/assets/packageList?source=aixbp&lang=en\\_US](https://www.ibm.com/resources/mrs/assets/packageList?source=aixbp&lang=en_US)

Isof\_4.892.tar

```
tar xf Isof_4.892.tar
cd Isof_4.892
installp -acgXYd . Isof.base Isof.license Isof.man.en_US
Isof -v
```

```
tar xf Isof_4.892.tar
cd Isof_4.892
smitty installp

# Install Software
# INPUT device / directory for software  [.] << Input a dot
# SOFTWARE to install                    [_all_latest] << Esc + 4, Esc + 7
# ACCEPT new license agreements?         yes
```

## User & Group

```
# Create a new user
mkuser admin="false" pgrp="staff" gecos="Test User" test3
mkuser admin="false" pgrp="staff" groups="ssshusers" gecos="Test User" test3

# Remove a user
rmuser -p <user-name>
```

# Network

## Check the interface

```
lsdev -Cc if
lsdev -Cc adapter
lscfg -vpl ent0
lsattr -El ent0
lsattr -El en0
```

## Set the network

```
# Set the ip/netmask/gateway
/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'

# Set the DNS server addr
echo "nameserver 1.1.1.1" > /etc/resolv.conf
```

# LVM

## PV

```
# Add a disk hdisk3 to a PV
## NOTE:  disk PV lsvg lsvg pv-id
cfgmgr
chdev -l hdisk3 -a pv=yes
lsvg

# Remove a PV from a disk hdisk3
## If done, the pv-id appears 'none'
chdev -l hdisk3 -a pv=clear
lsvg
```

## VG

```
# Create VG with 128M(PP size)
mkvg -y <vg-name> -s 128 hdisk1 hdisk2
```

```
# Add PVs hdisk3, hdisk4 to specific VG
extendvg <vg-name> hdisk3 hdisk4

# Remove a VG with PVs hdisk3, hdisk4
reducevg <vg-name> hdisk3 hdisk4
```

## LV

```
# Create LV with 5G
## mklv -y <lv-name> -t jfs2 <vg-name> [LP-number|GB-size]
/usr/sbin/mklv -y'siview_lv' -tjfs2 smapvg 80
/usr/sbin/mklv -y'siview_lv' -tjfs2 smapvg 10G

# Remove a LV
rmlv <lv-name>
```

## Filesystem

```
# Create a filesystem with /data
## -A: Whether the filesystem is mounted at each system restart.
## crfs -v jfs2 -A yes -d <lv-name> -m <mount-point> -a logname=INLINE
/usr/sbin/crfs -v 'jfs2' -A'yes' -d'siview_lv' -m'/home/siview' -a logname=INLINE
mount /home/siview

# Extend the size of 1024MB for specified filesystem
chfs -a size=+1024M /home
## Alternatively, resizing to specified number
chfs -a size=2048M /home

# Remove a filesystem
## Check if the mount-point has been closed/syncd
lslv -l <vg-name>
rmfs <mount-point>
```

## ??????

```
# Login Failed
who /etc/security/failedlogin | tail -50
```

```
# Check the number of previous unsuccessful logins for the account to confirm it is blocked
```

```
lsuser -a account_locked unsuccessful_login_count {ALL|user_name}
```

```
# Reset unsuccessful login counter
```

```
chsec -f /etc/security/lastlog -a unsuccessful_login_count=0 -s {user_name}
```

```
# Unlock the locked account
```

```
chuser account_locked=false {user_name}
```

```
# Lock account
```

```
chuser account_locked=true {user_name}
```

```
# List the locked accounts
```

```
lsuser ALL | sed -n '/account_locked=true/p' | sed '/sshd/d' | awk '{print $1}'
```

??????????

- ???????????
- ???retry ????????????????????????
- ?????????????????

```
chuser loginretries=5 <username>
```

```
lsuser -a loginretries <username>
```

## ?? errpt

### Sample #1

```
#!/usr/bin/env bash
```

```
#
```

```
# $0 = errptcheck_v3.sh
```

```
#
```

```
# Created: 05/16/2005 A-lang Hsu.
```

```
# Updated:
```

```
# - v4, 11/19/2015 A-Lang
```

```
# - v5, 11/17/2020 A-Lang
```

```
#
```

```
#
```

```

# This script will check the error log
# for new entries. Upon finding them, it will send an email to
# administrators containing a message indicating the change
# in errlog status, as well as the offending lines.
#
PATH=/bin:/sbin:/usr/bin:/usr/sbin:/usr/local/bin:/usr/es/sbin/cluster/utilities

tmpfile="errptcheck.$$"
trap "rm -f $tmpfile" EXIT

today="$(date +%Y-%m-%d)"
nowtime="$(date +%T)"

# Excluded identifier id
# 573790AA - The default log file has been changed.
# A3B02BE6 - sddsrvc CAN'T WRITE ITS LOG FILE
#
#EXCLUDE_ID=" \
#573790AA \
#A3B02BE6 \
#"
EXCLUDE_ID=""

#
if $(which get_local_nodename >/dev/null 2>&1); then
    my_hostname=`hostname`#`get_local_nodename`
else
    my_hostname=`hostname`
fi

mail_subject="Warning:Hardware/Software error notification for host $my_hostname"
mail_to="alang@mycom.com"

#ec=`errpt -dH,S,U,O | grep -v "IDENTIFIER TIMESTAMP" | wc -l`
ERRGREP=""
n=0
for i in $EXCLUDE_ID;do
    n=$((n+1))
    if [ "$n" -eq 1 ];then
        ERRGREP="$i"
    fi
done

```



```

else
    ERRGREP="$ERRGREP|$i"
fi
done
if [ -z "$ERRGREP" ]; then
    ec=`errpt -dH,S,U,O | grep -v "IDENTIFIER TIMESTAMP" | wc -l`
else
    ec=`errpt -dH,S,U,O | grep -v "IDENTIFIER TIMESTAMP" | grep -vE "$ERRGREP" | wc -l`
fi

if [ "$ec" -ne "0" ]; then
    ec=`echo $ec | bc`
    cat <<EOF > $tmpfile
#####
    This message was generated automatically by host ${my_hostname}.
    Please don't reply to this message.
#####

    The checked time is ${today} ${nowtime}
    ${ec} new errors have been found on $my_hostname.
    EOF

    errlogl=`errpt -dH,S,U,O -a`
    cat <<EOF >> $tmpfile
Errlog details below:
${errlogl}
EOF
    mail -s "$mail_subject" "$mail_to" < $tmpfile;

    cat $tmpfile
fi

```

## Sample #2

```

#!/bin/ksh
#
# $0 = errmon.sh
#
# Written 11/3/1998 Bill Verzal.
#

```

```

# This script will run every [interval] and check the error log
# for new entries. Upon finding them, it will send an email to
# administrators containing a message indicating the change
# in errlog status, as well as the offending lines.
#
if [ "$1" = "-v" ] ; then
    set -x
fi
lc="NULL"
tc="$lc"
# lc="last count"
# tc="this count"
#interval=900
interval=300
# Divide interval by 60 to get number of minutes.
me="$0 - Hardware error monitoring"
myname=`hostname`
args="$*"
#mailto="root"
mailto="alert"
true=0
false=1
boj=`date`

echo "$me started.\nThis message goes to $mailto." | mail -s "Errlog monitoring for $myname" $mailto
logger "$0 started"

while [ "$true" != "$false" ] ; do
    tc=`errpt -dH,S,U,O | wc -l`
    if [ "$lc" = "NULL" ] ; then
        lc="$tc"
    fi
    if [ "$lc" -ne "$tc" ] ; then
        foo=`echo "$tc-$lc"|bc`
        msg="$foo new errors have been found on $myname"
        page_msg="$foo new errors have been found on $myname"
        errlogl=`errpt -dH,S,U,O -a`
        if [ "$tc" -eq "0" ] ; then
            msg="$msg\nErrlog was cleared"
        else

```

```

    logger $msg
    msg=" $msg \n Errlog details below:\n $errlogl \n"
    echo "$msg" | mail -s "Errlog status change on host $myname" $mailto
fi
fi
lc="$tc"
sleep $interval
done

```

## ?? HMC root

- [?? HMC8 ? HMC9 ? root ??](#)

## Restrictd users to switch to root

```

# Create a group sysadm
mkgroup sysadm

# Add the user1 that is allowed to su to root into the group sysadm
chgrpmem -m + user1 sysadm
lsgroup sysadm

chsec -f /etc/security/user -s root -a sugroups=sysadm
# Reset to the default, sugroups=ALL
# Alternatively
smitty user
# Change / Show Characteristics of a User
# User Name                [root]
# SU GROUPS                 [sysadm]

```

## Restricted Shell

???????????????? Shell ???????

???

- [How to Use a Restricted Shell](#)

Defaul Shell?

```
# Change the default shell for the user to the restricted shell such as rksh or Rsh.
chuser shell=/usr/bin/rksh <user-name>

# OR
chsh <user-name> /usr/bin/rksh
```

.profile?

```
# Add the commands that are allowed to run by the user into the directory.
mkdir /usr/bin/restricted
cd /usr/bin/restricted
ln -s /usr/bin/date date

# Create a .profile in the user's home directory and set the PATH environment variable to
# a directory containing all of the commands you want the user to be able to run
export PATH=/usr/bin/restricted
```

## Core dump

```
# ☐ core file
dbx -C ./core

(dbx) corefile

(dbx) dump

(dbx) quit
```

## System dump

errpt:

```
67145A39 0413095315  U  S  SYSDUMP  SYSTEM DUMP
```

Copy the dump from the dump device to a file using the `savecore` command:

```
savecore .
```



Yes, the period is necessary. It indicates you want the dump copied to your current directory

savecore will copy the dump to your current directory, and name it:

```
vmcore.0.BZ
```

Uncompress the dump using the dmpuncompress command:

```
dmpuncompress vmcore.0.BZ
```

Lastly, format the dump:

```
/usr/lib/ras/dmptns/dmpfmt -c vmcore.0
```

Reading a Dump

```
kdb vmcore.0 vmunix.0
```

????

Memory - svmon

```
# For a summary of the top 15 processes using memory on the system
svmon -Pt15 | perl -e 'while(<>){print if($.==2||$&&& !$s++);$s.=0 if(/^-$$/)}'
```

| -----    |         |         |       |        |         |        |       |      |   |
|----------|---------|---------|-------|--------|---------|--------|-------|------|---|
| Pid      | Command | Inuse   | Pin   | Pgsp   | Virtual | 64-bit | Mthrd | 16MB |   |
| 18547096 | db2sysc | 3956861 | 12944 | 282407 | 4007901 | Y      | Y     | Y    | N |
| 19333470 | db2sysc | 690873  | 12944 | 26772  | 688572  | Y      | Y     | Y    | N |
| 19726694 | db2sysc | 271696  | 12944 | 6198   | 287133  | Y      | Y     | Y    | N |
| 13500914 | db2sysc | 263458  | 12943 | 18957  | 285159  | Y      | Y     | Y    | N |
| 1966448  | shlap64 | 109377  | 12900 | 3432   | 122071  | Y      | N     | N    |   |
| 13631924 | db2vend | 105589  | 12900 | 597    | 115784  | Y      | N     | N    |   |
| 19005734 | db2sysc | 105082  | 12902 | 409    | 114965  | Y      | Y     | N    |   |
| 20709798 | db2sysc | 105071  | 12900 | 409    | 114953  | Y      | N     | N    |   |
| 20119938 | db2sysc | 105071  | 12900 | 409    | 114953  | Y      | N     | N    |   |
| 20185458 | db2sysc | 105071  | 12900 | 408    | 114953  | Y      | N     | N    |   |
| 15597848 | db2vend | 104222  | 12900 | 1771   | 115608  | Y      | N     | N    |   |

|          |         |        |       |      |        |   |   |   |
|----------|---------|--------|-------|------|--------|---|---|---|
| 21430722 | db2sysc | 103728 | 12900 | 1576 | 114777 | Y | N | N |
| 21037528 | db2sysc | 103724 | 12902 | 1576 | 114773 | Y | Y | N |
| 14025064 | db2sysc | 103696 | 12900 | 1608 | 114777 | Y | N | N |
| 18350424 | db2sysc | 103696 | 12900 | 1608 | 114777 | Y | N | N |

## Sar

- [sar ?? - IBM ????](#)

```
''' ??? sar: 0551-201 Cannot open /var/adm/sa/sa09????? sar -o
/var/adm/sa/sa09 10
```

```
# CPU
sar -u 2 10

# Mmemory
sar -r 2 10

# I/O
sar -b 2 10
```

## iostat

```
iostat 2 10
```

## Perl ??

??????????

```
perl -e "use LWP::UserAgent;"
perl -e "use DBI;"
```

## HTTP GET request

```
use LWP::UserAgent;

my $ua = LWP::UserAgent->new;
```

```

my $server_endpoint = "http://192.168.1.1:8000/service";

# set custom HTTP request header fields
my $req = HTTP::Request->new(GET => $server_endpoint);
$req->header('content-type' => 'application/json');
$req->header('x-auth-token' => 'kfksj48sdfj4jd9d');

my $resp = $ua->request($req);
if ($resp->is_success) {
    my $message = $resp->decoded_content;
    print "Received reply: $messagen";
}
else {
    print "HTTP GET error code: ", $resp->code, "n";
    print "HTTP GET error message: ", $resp->message, "n";
}

```

## HTTP POST request

```

use LWP::UserAgent;

my $ua = LWP::UserAgent->new;

my $server_endpoint = "http://192.168.1.1:8000/service";

# set custom HTTP request header fields
my $req = HTTP::Request->new(POST => $server_endpoint);
$req->header('content-type' => 'application/json');
$req->header('x-auth-token' => 'kfksj48sdfj4jd9d');

# add POST data to HTTP request body
my $post_data = '{ "name": "Dan", "address": "NY" }';
$req->content($post_data);

my $resp = $ua->request($req);
if ($resp->is_success) {
    my $message = $resp->decoded_content;
    print "Received reply: $messagen";
}
else {

```

```
print "HTTP POST error code: ", $resp->code, "n";  
print "HTTP POST error message: ", $resp->message, "n";  
}
```

## NFS

“ Can't mount remotely Linux host on AIX

Try to run the following commands on your AIX.

```
nfso -o nfs_use_reserved_ports=1  
nfso -o portcheck=1
```

## AIX Toolbox

- [AIX Toolbox for Open Source Software : Downloads alpha \(ibm.com\)](#)
- [Configuring YUM and creating local repositories on IBM AIX - IBM Developer](#)
- [Tips for Installing Python or other AIX Toolbox for Open Source Software](#)



# 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

Prerequisites:

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

## 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.
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·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 ?      | WARNING: Base Operating System Installation will
99 Previous Menu | 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 ?      | +-----+
      99 Previous Menu | WARNING: Base Operating System Installation will
                      | 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.

Escriviu 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 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

If you choose to access a root volume group, you will not be able to return to the Base Operating System Installation menus without rebooting.

Type the number of your choice and press Enter.

0 Continue

88 Help ?

>>> 99 Previous Menu

>>> Choice [99]: 0

Type 1





```
Changed: ipl_blv
Changed: ipldevice
mergedev replaced 55 files in the hardfile /dev directory
Checking and mounting the /tmp filesystem.
```

```
The current volume is: /dev/hd3
Primary superblock is valid.
Checking and mounting the /var filesystem.
```

```
The current volume is: /dev/hd9var
Primary superblock is valid.
Checking and mounting the /opt filesystem.
```

```
The current volume is: /dev/hd10opt
Primary superblock is valid.
Filesystems mounted for maintenance work.
#
```

## Fix boot issue

```
cd /sbin/helpers/jfs2
mv fsck64 fsck64.old
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

```

## Select: Accept License Agreements

“ Tips: ?????????????????????? Ctrl + C  
????????????????????

## Software License Agreements

Move cursor to desired item and press Enter.

Show Installed License Agreements

Accept License Agreements

F1=Helpssing

Esc+9=Shell

F2=Refresh

Esc+0=Exit

F3=Cancel

Enter=Do

Esc+8=Image

Select: Accept Software Maintenance Terms and Conditions

## 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  
Esc+9=Shell

F2=Refresh  
Esc+0=Exit

F3=Cancel  
Enter=Do

Esc+8=Image

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=Helpssing

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
```

## - Network setup

On Linux)

net\_tap.sh:

```
BRIDGE=virbr0
NETWORK=192.168.99.0
NETMASK=255.255.255.0
GATEWAY=192.168.99.1
DHCP RANGE=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 \
-m 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/mktpcip -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
```

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

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

??????

```
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
```

? AIX ??????? hdisk1

```
root@aixvm:> lspv
hdisk0      00000000375ffb46      rootvg      active
hdisk1      none                  None

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

root@aixvm:> lscfg -vpl hdisk1
hdisk1      qemu_virtio-scsi-pci:0000:00:02.0-LW_0  MPIO Other Virtio SCSI Disk Drive

Manufacturer.....QEMU
Machine Type and Model.....QEMU HARDDISK
Part Number.....
ROS Level and ID.....322E352B
Serial Number.....
EC Level.....
FRU Number.....
Device Specific.(Z0).....00000512FA000012
```

Device Specific.(Z1).....  
Device Specific.(Z2).....  
Device Specific.(Z3).....  
Device Specific.(Z4).....  
Device Specific.(Z5).....  
Device Specific.(Z6).....

#### PLATFORM SPECIFIC

Name: disk  
Node: disk  
Device Type: block

## - ?? 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 \

## 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 ??? QEMU VM](#)
- [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](#)

# Learning

## Tutorials

- YT: [Aix administration - YouTube](#)
- YT: [online AIX training for beginners - YouTube](#)
- YT: [AIX in Focus - YouTube](#)
- YT: [IBM AIX - YouTube](#)

# AIX VM with virt-manager

??

1. AIX???????? hdisk0 ?????????? SCSI ?????????????? `qemu-img create -f qcow2 hdisk0.qcow2 20G` ??????????????
2. ?? xml ??????? virt-manager ?????????????????????? `virsh edit <vm-name>` ?

## XML

- ?? iso ???
- XML ?????? `<domain type=....>` ? `<qemu:comandline> .... </qemu:comandline>`

```
<domain type='qemu' xmlns:qemu='http://libvirt.org/schemas/domain/qemu/1.0'>
...
<devices>
...
</devices>
<qemu:commandline>
  <qemu:arg value='-prom-env'/>
  <qemu:arg value='boot-command=boot cdrom:'/>
  <qemu:arg value='-cdrom'/>
  <qemu:arg value='/home/cobra/aix72VM2/AIX72.iso'/>
</qemu:commandline>
</domain>
```

## VM Configuration



- 概覽
- 系統訊息
- 性能
- CPU 數
- 記憶體
- 開機選項
- SCSI CDROM 1
- SCSI 磁碟 1
- NIC :9b:e4:d1
- 繪圖板
- 鍵盤
- 顯示協議 Spice
- 音效卡 ich6
- 串列埠 1
- Channel (qemu-ga)
- Channel (spice)
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- 控制器 VirtIO SCSI 0
- Panic 通知器

詳情(D)XML(X)

基本詳情

名稱(N) :AIX-VM

UUID :53259c57-4ddd-4a57-8c9d-856a5c35e811

狀態 : 已關閉

標題(I) :

描述(E) :

虛擬機管理程式詳情

虛擬機管理程式 :QEMU TCG

架構 :ppc64

模擬器 :/usr/bin/qemu-system-ppc64

機器類型(T) :pseries-8.2

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詳情(D) XML(X)

作業系統(T)

一般通用或未知的作業系統。不建議使用。

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- 性能
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詳情(D) XML(X)

CPU 數

邏輯主機 CPU 數： 4

vCPU 分配(A)： 2 - +

配置(R)

☐ 複製主機 CPU 配置(U)

型號(O)： POWER8 ▼

☐ 啟用可用的 CPU 安全漏洞紓解措施

▶ 拓撲(P)

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- Panic 通知器

詳情(D) XML(X)

記憶體

總主機記憶體： 5917 MiB

目前分配(L)： 4096 — + MiB

最大分配(X)： 4096 — + MiB

☐ 啟用共用記憶體(M)

- 概覽
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- 控制器 PCI 0
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- 控制器 VirtIO SCSI 0
- Panic 通知器

詳情(D) XML(X)

### 自動啟動

☐ 主機開機時啟動虛擬機(U)

### 開機裝置順序

☐ 啟用開機選單(N)

☒ SCSI CDROM 1

☐ SCSI 磁碟 1

☐ NIC :9b:e4:d1



▶ 直接核心開機(E)

- 概覽
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- Panic 通知器

詳情(D) XML(X)

```
<domain xmlns:qemu="http://libvirt.org/schemas/domain/qemu/1.0" type="qemu">
  <name>AIX-VM</name>
  <uuid>53259c57-4ddd-4a57-8c9d-856a5c35e811</uuid>
  <memory unit="KiB">4194304</memory>
  <currentMemory unit="KiB">4194304</currentMemory>
  <vcpu placement="static">2</vcpu>
  <os>
    <type arch="ppc64" machine="pseries-8.2">hvm</type>
  </os>
  <cpu mode="custom" match="exact" check="none">
    <model fallback="forbid">POWER8</model>
  </cpu>
  <clock offset="utc"/>
  <on_poweroff>destroy</on_poweroff>
  <on_reboot>restart</on_reboot>
  <on_crash>destroy</on_crash>
  <devices>
    <emulator>/usr/bin/qemu-system-ppc64</emulator>
    <disk type="file" device="cdrom">
      <driver name="qemu" type="raw"/>
      <source file="/home/cobra/aix72VM2/AIX72.iso"/>
      <target dev="sda" bus="scsi"/>
      <readonly/>
      <boot order="1"/>
      <address type="drive" controller="0" bus="0" target="0" unit="0"/>
    </disk>
    <disk type="file" device="disk">
      <driver name="qemu" type="qcow2"/>
      <source file="/home/cobra/aix72VM2/hdisk0.qcow2"/>
      <target dev="sdb" bus="scsi"/>
      <address type="drive" controller="0" bus="0" target="0" unit="1"/>
    </disk>
    <controller type="usb" index="0" model="qemu-xhci" ports="15">

```

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詳情(D) XML(X)

### 虛擬磁碟

源路徑(P): /home/cobra/aix72VM2/AIX72.iso

裝置類型: SCSI CDROM 1

磁碟匯流排: SCSI

儲存大小: 3.50 GiB

▶ 進階選項(O)

- 概覽
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- 開機選項
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- SCSI 磁碟 1
- NIC :9b:e4:d1
- 繪圖板
- 鍵盤
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- 控制器 PCI 0
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- Panic 通知器

詳情(D) XML(X)

虛擬磁碟

源路徑(P) : /home/cobra/aix72VM2/hdisk0.qcow2

裝置類型 : SCSI 磁碟 1

磁碟匯流排 : SCSI

儲存大小 : 20.00 GiB

▶ 進階選項(O)