Limitations of mksysb

Special Notices

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Note: The information in this document has **not** been verified for AIX 4.1.

About this Document

This document describes the known limitations of mksysb restore for AIX versions 3.1 and 3.2. It also includes a few tips for the most reliable mksysb results.

warning: Due to tar limitations, AIX version 3.2 will not archive file names greater than 100 characters in length.

Terms Used in this Document

The following terms are used in this document:

cloning — The word "cloning", as used in this document, means creating a mksysb on one machine and then restoring it on another machine.

detectable devices — These are the devices which the system can detect by looking at the hardware information. Examples of such devices are SCSI cards, tape drives, and 128-port cards.

non-detectable devices — The system cannot detect the presence or absence of these devices automatically. Examples of such devices are ttys, printers, and modems.

source machine	The machine where the mksysb was created.
target machine	The machine where the mksysb is being restored. The target machine could be same as the source machine.

For Reliable mksysb Results

For the most reliable results when creating and installing a mksysb, the following steps should be taken:

- Power ON all devices and adapters on the source and target machines
- Cards and adapters must be named in sequential order on the source machine
- You must have exactly the same cards and adapters in exactly the same slots on the source and target machines.

Known Limitations

The following are the known limitations of mksysb restore at this time.

- Mksysb will not move non-detectable devices (such as ttys and printers) defined on one type of adapter to a different type of adapter. For example, ttys defined on a 16-port card on the source machine will not be defined on a 64-port card on the target machine.
- When restoring a mksysb created on one machine to another machine, the source machine must have software support for all the devices existing on the target machine. This would include all the LPPs required to support the target machine (such as FDDI) as well as all the PTFs required for the support of target devices (for example, the POWERPC chip support was not available until the 325 level).
- Mksysb removes the /dev directory completely and recreates it from the ODM databases. If the customer has created files in the /dev directory without configuration methods to recreate them and proper entries in the ODM database, these files will not be restored on the target machine.
- Console attributes are not stored as part of mksysb and are not restored. For example, if you have console login disabled, on the restoration of mksysb it will be enabled.
- Restoration of mksysb could result in two or more devices of the same type having their names swapped. All of the customized attributes go along with the names and get swapped. For example, this could be a problem if you have two token ring cards. The following is the reason this occurs:

  During a mksysb restore, the devices database is created fresh. All of the detectable devices are defined and configured from scratch and then

mksysb defines the non-detectable devices and also updates the user modified attributes of detectable devices.

When defining and configuring the detectable devices, the cards are configured in order starting with slot 1. Therefore, a card in slot 4 will be configured before a card in slot 5 and all the devices on card 4 will be configured before any devices on card 5. Thus, the cards will be named sequentially.

If in the original system they were not named sequentially, these devices will not be reconfigured properly if there are user modified attributes. To check your adapter card device order, you can enter:

```
lsdev -C -s mca -F "location name" | sort.
```

This problem could happen for adapter cards, tape drives, RANs, etc.

- Mksysb defines the non-detectable devices matching the parent names and types. If the parent is renamed as explained in the item above, these non-detectable devices could end up at wrong locations. For example,
  - Suppose a source machine has two 16-port cards: card 1 is in slot 05 and card 2 is added later and is in slot 04. So the cards are named as

    ```
    card1 sa2       00-05
    card2 sa3       00-04
    ```

    Now when mksysb restores, cards are named by going through each slot; so they will be named as

    ```
    card1 sa3       00-05
    card2 sa2       00-04
    ```

    Since mksysb goes by name, all the devices (ttys and printers) defined on card1 will appear on card2 and vice versa!
- When restoring a mksysb, all the devices should be powered on. This includes any external adapters such as RANs for 128 port. If they are not on, all the devices defined on these RANs will be incorrectly configured.
- If you are using a 128-port card and some of the RANs are connected through modems, mksysb cannot restore these properly.

  Workaround:

  The following workaround will work if:

  1. The 128-port card is in the same slot on both the source and target machine.
  2. The RANs are not renumbered and are available after the restoration of mksysb.

  Run the following command.

  ```
  /usr/lpp/bosinst/rda -d /etc/objrepos/CuDv.sav \
  -a /etc/objrepos/CuAt.sav -s /tmp/config
  ```

- In some cases mksysb cannot define non-detectable devices. It creates the non-detectable devices by going through the parent name and type first. If

no match is found, it goes by the location. If the cards in the target machine are not in the same slot as the machine where mksysb was created, some of the devices may not be defined at all.

For example, suppose a 16-port card is in slot 4 on the target machine. In this case tty1 will not be defined on the target machine.

```
SOURCE                                  TARGET

 00-04          Empty           -      |   16 port card   sa1
 00-05          16 port card    sa2    |   Empty          -
 00-06          64 port card    sa1    |   64 port card   sa2
 00-06-01-00    tty             tty1   |   -              -
```

mksysb tries to define tty1 whose parent is sa2. Now sa2 on the target machine is a different kind of adapter, so it goes by location. But there is nothing in that location, 00-05, so it is assumed that tty1's parent is not there and so the tty is not defined to the system.

- Although a mksysb done when the HACMP/6000-supplied CLVM (Concurrent Logical Volume Manager) is enabled appears to work, the following error message is displayed after booting from the mksysb tape and attempting to restore it:

  ```
  /usr/sbin/mklv; /usr/sbin/cluster/mode3: not found
  mklv vgrootvg is operating in concurrent mode operation
  not permitted. The install process has encountered the
  following error:
  mklv: failed return code 1.
  ```

  A similar error may appear for the /usr/sbin/extendvg command if the rootvg contains more than one physical volume.

  This halts the restore, making the tape seem unusable. APAR IX40522 has been created for this problem. One of the following workarounds can be used to resolve the immediate problem of not being able to use the mksysb tape created while CLVM was the active LVM:

  Workaround 1:

  To restore a mksysb backup image that was created while CLVM was the active LVM, boot the system from a set of "bosboot" diskettes (created while standard AIX LVM was the active LVM). At the Install/Maintenance menu select option 2 and continue with the install as you normally would, specifying the tape as the input device.

  Workaround 2:

  1. Boot off the mksysb tape as usual.
  2. Select "4 Start a limited function maintenance shell"
  3. Create a backup version of the standard LVM mklv and extendvg commands:

     a. Enter "backup -i".

You will be prompted to mount volume one on /dev/rfd0 and press Enter to continue.

b. Enter "/usr/sbin/mklv".

c. Enter "/usr/sbin/extendvg".

d. Type Ctrl-D. This will result in a backup by name on the default device (/dev/rfd0) of the mklv and extendvg commands.

4. Restore it to the system being booted from the mksysb tape. Use the "restore -xv" command to restore all files from the backup medium to the corresponding location in the RAM-based file system created when booting from the mksysb tape.

5. Continue with the restoration.

Note:

It is still recommended that system backups using the mksysb command NOT be performed while the Concurrent Logical Volume Manager is the active LVM. If you inadvertently do so, however, the workaround described above should allow you to restore the mksysb tape.

You can find out if clvm is installed by entering the command "lslpp -ah cluster.clvm". The command "/usr/sbin/cluster/cllvm status" can be used to determine which version of LVM (standard AIX or clvm) is currently configured on a node. Instructions for Enabling and Disabling CLVM can be found in the HACMP/6000 Administration Guide.

- If there is not enough space in /tmp when mksysb is restored, the mksysb can fail. This might happen at the very end of the restoration, when mksysb calls the bosboot command.

  If this happens, you will get "0301-152 bosboot: not enough file space to create:" and will be prompted to go to maintenance mode or continue. Go to the maintenance mode and make some room in /tmp by increasing the file system or removing some files and then run the "bosboot" command.

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