Using DVDs with $\mathcal{AIPS}$
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Abstract

DVDs can be read and written by $\mathcal{AIPS}$ using a udf file system on a DVD+RW device. Once written, they can be used inside 31DEC04 $\mathcal{AIPS}$ when mounted on read-only DVD devices. This capablity also allows users to limit access for other users to their data areas.

How to use DVDs with $\mathcal{AIPS}$

$\mathcal{AIPS}$ can take advantage of the inexpensive and convenient DVD+RW format by creating an $\mathcal{AIPS}$ disk on a DVD+RW mounted with the udf filesystem. Such a disk has 4.7 GB of removable storage space and is fully re-writable. Multiple disks (*e.g.*, one for each project of interest) can be alternately mounted as desired, and/or transported to other machines. The access time is roughly 5 times slower than a standard internal IDE disk when writing, but otherwise the functionality is the same as any other $\mathcal{AIPS}$ disk. For performance reasons, the parameter `BADDISK` should be set to avoid creating scratch disks on the DVD+RW disk. Disks created on a DVD+RW drive can also be read on most read-only DVD drives. Again the disk functions like a normal $\mathcal{AIPS}$ disk. Tasks such as `UVCOP`, `MOVE` and `SUBIM` can be used to transfer data to another disk, but tasks that require writing to the DVD will fail. Tasks and verbs to inspect data such as `PRTUV`, `LISTR`, `TVALL`, and `IMEAN` should work. (Note that `IMEAN`'s option to add a keyword to the header will not work on a read-only file system, but the task functions normally even if this error is encountered.)

To enable this capability the following steps are required:

1. If not already installed, download the UDF packet writing tools. These can be obtained from `http://sourceforge.net/projects/linux-udf`

2. The kernel options `CONFIG_UDF_FS`, and `CONFIG_UDF_RW` must both be switched on. If they are not already built in to the kernel, then the existing kernel will need to be reconfigured and rebuilt.

3. A UDF filesystem needs to be created on a DVD. This can be accomplished with the `mkudffs` command in the UDF tools, or under Windows by formatting a DLA disk.

4. The DVD+RW drive needs to be mounted by the system specifying the UDF filesystem, *e.g.*,
   ```
   mount -t udf /dev/scd1 /mnt/fwcd
   ```
   or
   ```
   mount -t udf /dev/cdrom /mnt/fwcd
   ```

5. Symbolic links need to be created pointing to the DVD+RW filesystem mounted at `/mnt/fwcd`, and $\mathcal{AIPS}$ needs to be told to look for the disk in the same way as when any new drive is added to the system and then restarted once it has been set up. (Set up suitable link files and edit `$AIPS_ROOT/DA00/` files `DADEVS.LIST` and `NETSP`.)

AIPS modifications for read-only file systems

So far the capability described above has only been tested under Linux with the `31DEC04` version of *AIPS*. Earlier versions of *AIPS* may be able to use a DVD+RW drive, but will not be able to use a disk that has been mounted read-only (such as a DVD-ROM drive).

`31DEC04` *AIPS* was modified on 19 January, 2004 (midnight job of 20-Jan-2004 and later) to understand that read-only file systems may exist as *AIPS* data disks. The routine pair ZDRCHK and ZDRCH2 are called by `AIPS` and all tasks after they have established the users number. They check for the existence of *AIPS* catalog (`CA`) files for the given user number on each disk and determine if the files are read only. The file creation routines will not attempt to create files on a read-only disk and the automatic updating in the `CA` file of the last-access time and file status are skipped.

This capability has in fact two uses. The first is the use of a pre-written DVD as an *AIPS* disk on a DVD-ROM drive. The other, however, uses normal disk drives with file read-write privileges set for one user but not another. For example, login `professor` could make his files available to login `student` as read-only by simply setting `chmod og-w CA*` in the *AIPS* data areas.