Relative and Absolute Backups

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About This Document

This document explains how the tar command and the backup/restore commands can be used for relative and absolute backups and is applicable to AIX versions 3.2 and 4.1. In the examples in this document, the only flags used are the minimum necessary to accomplish the specified task.

Notes:

1. Unless used in an example, the words "backup" and "restore" do not refer to specific commands, but instead refer to the processes of putting user data into an archive image and retrieving the data back from that image.
2. The examples in this document use tape to contain the archive image, but a file could be used as well.
3. The examples use the following directory structure:

```
parent   subdir   subdir
/home
         /tom
         /sue
         /rich
                  /mystuff
```

About Relative and Absolute Backups

Absolute This is a backup that can only be restored to a directory structure identical to the one it was made from. If you list the table of contents or the headers on the archive media, the path name will start with a "/".

The main advantage of this type of a backup is that you can restore the entire image without knowing where individual files are to be placed. An example would be a distribution image of a program or data.

The main disadvantage of this type of a backup is that you can only restore the files to the same location from which you backed them up.

Relative This is a backup that will be restored starting from the current directory and will create directories as required depending on the flags specified.

The advantages of this type of a backup is that you can restore one or more directories to /tmp (for example) and then selectively copy the files you need to recover to the destination directory. You must ensure that you are in the proper directory before starting the restore.

The main disadvantage of this type of restore is that it will restore the data to the directory that is current when you issue the command.

Relative and Absolute Backups with the tar Command

Creating an Absolute Backup

To make an ABSOLUTE backup of the file structure, you could use the following command:

```
tar -cvf /dev/rmt0 /home/tom /home/sue /home/rich
```

Figure 1. tar.abs.1

It would back up the user directories tom, sue, rich, and all of their subdirectories. It would not back up any files in the /home directory but upon restore would ensure that the /home directory was created if it did not exist.

The following command would back up the user directories in the same manner as the previous example but would also get any files in the /home directory.

```
tar -cvf /dev/rmt0 /home
```

Figure 2. tar.abs.2

Creating a Relative Backup

To make a RELATIVE backup of the file structure, you could use the following commands:

```
cd /home
tar -cvf /dev/rmt0 tom sue rich
```

Figure 3. tar.rel.1

This would back up the user directories tom, sue, rich, and all of their subdirectories. It would not back up any files in the /home directory. The files would be restored relative to the current directory.

The following would back up the user directories in the same manner as the previous example but would also get the files in the /home directory.

```
cd /
tar -cvf /dev/rmt0 ./home
```

Figure 4. tar.rel.2

Verifying/Listing the Table of Contents

The command to verify a tape created with tar or to list the table of contents (TOC) of a tar tape is:

```
tar -tvf /dev/rmt0
```

The TOC for the archive created in Figure 1 (tar.abs.1) would have the following entries (only the file name is shown here):

```
/home/tom
/home/sue
/home/rich
/home/rich/mystuff
```

The TOC for the archive created in Figure 2 (tar.abs.2) would have the following entries (only the file name is shown here):

```
/home
/home/tom
/home/sue
/home/rich
/home/rich/mystuff
```

The TOC for archive created in Figure 3 (tar.rel.1) would have the following entries (only the file name is shown here):

```
tom
sue
rich
rich/mystuff
```

The TOC for the archive created in Figure 4 (tar.rel.2) would have the following entries (only the file name is shown here):

```
./home
./home/tom
./home/sue
./home/rich
./home/rich/mystuff
```

Determining Whether Relative or Absolute

To determine if a tar tape was created as a relative or absolute backup, use the previous command for verifying a tape and examine the list of files. If the file names start with a "/", the backup is ABSOLUTE. Anything else is a RELATIVE backup.

Indicating Data to be Restored

To restore a file(s) or directory(s) from a tar tape, you must specify the name exactly as shown in the table of contents. Multiple files and/or directories may be specified on the command line.

(Note: Specify the directory/file names as they appear on the backup media. Use "tar -tvf /dev/rmt0" to see how the files appear on the media.)

Restoring from a Relative Backup

The following command would restore the directories tom, sue, their files, and their subdirectories. In this example, it is assumed that the archive was made with the script in Figure 3 (tar.rel.1).

```
cd /home
tar -xvf /dev/rmt0 tom sue
```

The following would restore the entire tape into the /home directory. In this example, it is assumed that the archive was made with the script in Figure 3 (tar.rel.1).

```
cd /home
tar -xvf /dev/rmt0
```

Use the following commands to restore a file(s) or directory(s) to a directory other than the one from which it was backed up. A reason to do this is to avoid overwriting particular existing files. This example assumes the archive was made with the script in Figure 4 (tar.rel.2).

```
cd /tmp
tar -xvf /dev/rmt0 ./home/rich/mystuff
```

The result is:

```
/tmp
   /home             <-- no files or other directory entries
      /rich          <-- no files or other directory entries
         /mystuff
            (files)
```

Restoring from an Absolute Backup

The following command would restore the directories tom, sue, their files, and their subdirectories to the /home directory. This would work with the archive created in Figure 1 (tar.abs.1) or Figure 2 (tar.abs.2).

```
tar -xvf /dev/rmt0 /home/tom /home/sue
```

The following would restore the /home directory, its files, and its subdirectories from the archive created in Figure 2 (tar.abs.2).

```
tar -xvf /dev/rmt0 /home
```

Relative and Absolute Backups with backup/restore

Creating an Absolute Backup

To make an ABSOLUTE backup of the file structure, you could use the following command:

```
find /home/tom /home/sue /home/rich -print | backup -ivf /dev/rmt0
```

Figure 5. backup.abs.1

It would back up the user directories tom, sue, rich, and all of their subdirectories. It would not back up any files in the /home directory but upon restore would ensure that the /home directory was created if it did not exist.

The following would back up the user directories in the same manner as the previous example but would also get any files in the /home directory.

```
find /home -print | backup -ivf /dev/rmt0
```

Figure 6. backup.abs.2

Creating a Relative Backup

To make a RELATIVE backup of the file structure, you could use the following commands:

```
cd /home
find tom sue rich -print | backup -ivf /dev/rmt0
```

Figure 7. backup.rel.1

This would back up the user directories tom, sue, rich, and all of their subdirectories. It would not back up any files in the /home directory. The files would be restored relative to the current directory.

The following would back up the user directories in the same manner as the previous example but would also get the files in the /home directory with the exception of any .* files in the /home directory.

```
cd /home
find . -print | backup -ivf /dev/rmt0
```

Figure 8. backup.rel.2

Verifying/Listing the Table of Contents

The command to verify a tape created with the backup command or to list the table of contents (TOC) of the tape is:

```
restore -Tvf /dev/rmt0
```

The TOC for Figure 5 (backup.abs.1) would have the following entries (only the file name is shown here):

```
/home/tom
/home/sue
/home/rich
/home/rich/mystuff
```

The TOC for Figure 6 (backup.abs.2) would have the following entries (only the file name is shown here):

```
/home
/home/tom
/home/sue
/home/rich
/home/rich/mystuff
```

The TOC for Figure 7 (backup.rel.1) would have the following entries (only the file name is shown here):

```
tom
sue
rich
rich/mystuff
```

The TOC for Figure 8 (backup.rel.2) would have the following entries (only the file name is shown here):

```
.
./tom
./sue
./rich
./rich/mystuff
```

Determining Whether Relative or Absolute

To determine whether a tape created by the backup command is relative or absolute, use the previous command for verifying a tape and examine the list of files. If the file names start with a "/", the backup is ABSOLUTE. Anything else is a RELATIVE backup.

Indicating Data to be Restored

To restore a file(s) or directory(s) from a backup tape, you must specify the name exactly as shown in the table of contents. Multiple files and/or directories may be specified on the command line.

(Note: Specify the directory/file names as they appear on the backup media. Use "restore -Tvf /dev/rmt0" to see how the files appear on the media.)

Restoring from a Relative Backup

The following command would restore the directories tom, sue, their files, and their subdirectories from the archive created in Figure 7 (backup.rel.1). The "-d" flag indicates that the names specified are directories and that all files in the directories should be restored.

```
cd /home
restore -xdvf /dev/rmt0 ./tom ./sue
```

The following would restore all of the data on the tape into the current directory from the archive created in Figure 8 (backup.rel.2).

```
cd /home
restore -xvf /dev/rmt0
```

Use the following commands to restore a file(s) or directory(s) to a directory other than the one from which it was backed up. A reason to do this is to avoid overwriting particular existing files. The following example works for the archive created in Figure 8 (backup.rel.2).

```
cd /tmp
restore -xvdf /dev/rmt0 ./home/rich/mystuff
```

The result is:

```
/tmp
   /home             <-- no files or other directory entries
      /rich          <-- no files or other directory entries
         /mystuff
            (files)
```

Restoring from an Absolute Backup

The following command would restore the directories tom, sue, their files, and their subdirectories to the /home directory. The "-d" flag indicates that the names specified are directories and that all files in the directories should be restored. This example assumes the archive was made with the script in Figure 5 (backup.abs.1) or Figure 6 (backup.abs.2).

```
restore -xdvf /dev/rmt0 /home/tom /home/sue
```

The following would restore the /home directory, its files, and its subdirectories. This example assumes the archive was made with the script in Figure 6 (backup.abs.2).

```
restore -xdvf /dev/rmt0 /home
```

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