

Changing File Attributes

This tip explains how to use `chattr` to keep important system files secure. The "change attribute" command, or `chattr`, can be used to add or change existing file attributes for things such as synchronous updates, tighter file security, and more. However, this command is only available on ext2 or ext3 partitions.

A list of common attributes and their associated flags is listed below. For a more complete list see `man chattr`.

- (A) Don't update atime
- (S) synchronous updates
- (a) append only
- (d) no dump
- (i) immutable
- (j) data journalling
- (t) no tail-merging

Note: The 'j' option can only be used with ext3.

Note: The 'j', 'a' and 'i' options are only available to the superuser.

To set attributes on files, use the `chattr` command and to view attributes, use the `lsattr` command.

Code Listing 1: Examples of using `chattr` and `lsattr`

```
// Set the immutable bit on a file so it cannot be changed or removed
# chattr +i myfile
# lsattr myfile
----i----- myfile
// Testing the immutable flag by attempting to delete the file
# rm myfile
rm: cannot remove `myfile': Operation not permitted
// Set myfile to append-only
# chattr +a myfile
# lsattr myfile
-----a----- myfile
# echo testing > myfile
myfile: Operation not permitted
# echo testing >> myfile
// no errors - file was appended to
```

Some instances where this may be useful is keeping important files safe from deletion. Remember that even root can't delete a file that is immutable or append-only without first explicitly removing that attribute. Using this flag on `/etc/passwd` or `/etc/shadow` files keeps them safe from an accidental `rm -f` and also ensures no new accounts can be added in the event of an exploit. Keeping other files append-only means once they are written, that data can't be changed. Logs are a good candidate for this to keep them from being tampered with. With `chattr` and `lsattr`, you now have a few new tools to keep your system secure.

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