

Controlling file permissions with umask

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 - **Controlling file permissions with umask**

In the preceding section you learned how to change the permissions on individual file and directories using the **chmod** command. You should also be aware of the default permissions assigned to all of your files and directories at the time you create them. You can list or change the default permission by using the **umask** command.

Default permissions are assigned by the system whenever you create a new file or directory, and these are governed by the umask setting. Unless set up by yourself or the system administrator, your default umask setting will be 0000, which means that new files you create will have read and write permission for everyone (0666 or -rw-rw-rw-), and new directories that you create will have read, write and search permissions for everyone (0777 or drwxrwxrwx). You will almost certainly want to change your umask setting to a non-zero value, to make the default values to the newly created files and directories more restrictive.

The number given as a parameter to the umask command works in a opposite manner to the number given to the chmod command. The 'mask' serves to remove permissions as opposed to granting them. That is, the digits in the umask number are 'subtracted' from 777 for directories or 666 for files when you are creating their initial permissions. For example, suppose you type:

```
% umask 022
```

Then when you create new files their default permissions will be 644 (666 minus 022, i.e. -rw-r--r--). When you create new directories their default permissions will be 755 (drwxr-xr-x). If the umask value were instead set to 077, your default permissions would be 600 (-rw-----) and your default directory permissions would be 700 (drwx-----).

For reference, the following table shows the mappings between umask values and default permissions. BE VERY CAREFUL not to confuse umask and chmod permissions, as they are entirely different (a binary inversion of each other) and are NOT INTERCHANGABLE!!

Octal	Binary	Perms	Octal	Binary	Perms
0	000	rwx	4	100	-wx
1	001	rw-	5	101	-w-
2	010	r-x	6	110	--x
3	011	r--	7	111	---

Login Details

Email:

Password:

NOT currently queued
Refresh in: 2:41.
0 user(s) ahead in queue.

Queue

Stats

You must register and login before you can use a virtual machine

To discover what umask you are currently working with, type:

```
% umask
```

Here are some examples of settings for umask

- **umask 077** - Assigns permissions so that only you have read/write access for files, and read/write/search for directories you own. All others have no access permissions to your files or directories.
- **umask 022** - Assigns permissions so that only you have read/write access for files, and read/write/search for directories you own. All others have read access only to your files, and read/search access to your directories.
- **umask 002** - Assigns permissions so that only you and members of your group have read/write access to files, and read/write/search access to directories you own. All others have read access only to your files, and read/search to your directories.

If you set umask at the shell prompt, it will only apply to the current login session. It will not apply to future login sessions. To apply umask setting automatically at login, you would add the umask command to your .login file (C Shell users) or .profile (Bourne and Korn Shell users).

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