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Linux / Unix: Find and Delete All Empty Directories & Files

Author: Vivek Gite • Last updated: September 11, 2015 • [12 comments](#)

How do I find out all empty files and directories on a Linux / Apple OS X / BSD / Unix-like operating systems and delete them in a single pass?



You need to use the combination of find and rm command.

[donotprint]

Tutorial details	
Difficulty level	Easy
Root privileges	No
Requirements	find command
Est. reading time	2 minutes

[/donotprint]GNU/find has an option to delete files with `-delete` option. Please note that Unix / Linux filenames can contain blanks and newlines, this default behaviour is often problematic; filenames containing blanks and/or newlines are incorrectly processed by many utilities including rm command. To avoid problems you need to pass the `-print0` option to find command and pass the `-0` option to xargs command, which prevents such problems.

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WARNING! These examples may crash your computer if executed. Some background process (daemons) may use empty files as a lock files or as default location to lock (chroot) down daemons. Do not delete those files. Usually, located in `/var/`, `/lib/` and other important locations.

Method # 1: Find and delete everything with find command only

The syntax is as follows to find and delete all empty directories using BSD or GNU find command:

```
find /path/to/dir -empty -type d -delete
```

Find and delete all empty files:

```
find /path/to/dir -empty -type f -delete
```

Delete empty directories

In this example, delete empty directories from `~/Downloads/`

```
find ~/Downloads/ -empty -type d -delete
```

Delete empty files

In this example, delete empty files from `~/Downloads/`

```
find ~/Downloads/ -empty -type -f -delete
```

Sample session:

Fig.01: Delete empty directories and files.

How to count all empty files or directories?

The syntax is as follows:

```
## count empty dirs only ##  
find /path/ -empty -type d | wc -l  
  
## count empty files only ##  
find /path/ -empty -type f | wc -l
```

Where,

- `-empty` : Only find empty files and make sure it is a regular file or a directory.
- `-type d` : Only match directories.
- `-type f` : Only match files.

- `-delete` : Delete files. Always put `-delete` option at the end of find command as find command line is evaluated as an expression, so putting `-delete` first will make find try to delete everything below the starting points you specified.

This is useful when you need to clean up empty directories and files in a single command.

Method # 2: Find and delete everything using xargs and rm/rmdir command

The syntax is as follows to find and delete all empty directories using xargs command:

```
## secure and fast version ###  
find /path/to/dir/ -type d -empty -print0 | xargs -0 -I {} /bin/rmdir "{}"
```

OR

```
## secure but may be slow due to -exec ##  
find /path/to/dir -type d -empty -print0 -exec rmdir -v "{}" \;
```

The syntax is as follows to delete all empty files:

```
## secure and fast version ###  
find /path/to/dir/ -type f -empty -print0 | xargs -0 -I {} /bin/rm "{}"
```

OR

```
## secure but may be slow due to -exec ##  
find . -type f -empty -print0 -exec rm -v "{}" \;
```

See man pages – xargs(1)

About the author: Vivek Gite is the founder of nixCraft, the oldest running blog about Linux and open source. He wrote more than 7k+ posts and helped numerous readers to master IT topics. Join the nixCraft community via [RSS Feed](#), [Email Newsletter](#) or follow on [Twitter](#).

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Scott Carlson • Oct 25, 2012 @ 12:26

my pruneEmptyDirs script looks like :

```
perl -MFile::Find -e"finddepth(sub{rmdir},'.')
```

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Balakrishnan B • Oct 25, 2012 @ 17:47

zsh only

To delete all empty directories

1. `rmdir -ignore-fail-on-non-empty **/(/)`
2. `rmdir **/(/^(F)`

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AngelVG • Oct 11, 2013 @ 15:42

Take care:

If you have the directory `/home/ftp/pub`

empty, the command

```
find /home/ftp/pub -type d -empty -exec rm {} ;
```

deleted the pub directory (i tested this in FreeBSD 9.1)

The solution:

add the option

```
-depth 1
```

example

```
find /home/ftp/pub -depth 1 -type d -empty -exec rm {} ;
```

For example, for maintain my ftp directory clear (up to 7 days), y have this lines in script `/usr/home/backups/scripts/script-del-old.sh` with this

```
#!/bin/sh
```



```
# Files
find /usr/home/ftp/pub -atime +1w -exec rm {} ;
echo
# Directories

find /usr/home/ftp/pub -depth 1 -type d -empty -atime +1w -exec rm {} ;
```

Executions permissions

```
# chmod +x /usr/home/backups/scripts/script-del-old.sh
```

and in my cron add

```
00 01 * * * root /usr/home/backups/scripts/script-del-old.sh
```

This is all, bye.

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Allen Cohen • Jan 15, 2015 @ 22:28

No such syntax: “-atime +1w”

Must use: “-atime +7”

Also there’s “-amin ...” for minutes ago

I prefer to use the modification times rather than access times.

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AngelVG • Nov 1, 2013 @ 16:29

Hi, some correction...

For example, for maintain my ftp directory clear (up to 7 days)

the correct command is

Files

```
find /usr/home/invitadoftp/pub -type f -mtime +1w -exec rm {} ;
```

Direcories

```
find /usr/home/invitadoftp/pub -depth 1 -type d -empty -mtime +1w -exec rm {} ;
```

Please update may older command and delete this

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uniqueinx • Jul 17, 2014 @ 12:14

nice one ;)

[reply](#) [link](#)

Anderson Figueiredo • Aug 22, 2014 @ 11:24

Very good... thanks!

[reply](#) [link](#)

Ryan T • Jan 2, 2015 @ 19:30

For Delete empty directories you need '-type d' not '-type -d'. Same with the file removal example.

```
find ~/Downloads/ -empty -type d -delete
```

```
find ~/Downloads/ -empty -type f -delete
```

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 **nixCraft** • Jan 3, 2015 @ 17:37

Thanks for the heads up!

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J A • Aug 8, 2020 @ 12:07

There is still an error

```
find ~/Downloads/ -empty -type -f -delete
```

it should be

```
find ~/Downloads/ -empty -type f -delete
```

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Allan Nila Chongwe • Oct 1, 2015 @ 8:09

When deleting empty files, the above example will not work. For example if you execute the command 'find ~/Downloads/ -empty -type -f -delete' you will get the following error message; find: Arguments to -type should contain only one letter. The solution is to remove the minus (-) in front of the f option. Thus the correct command should be 'find ~/Downloads/ -empty -type f -delete' without the quotes (') ofcourse.

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anthony • Feb 3, 2016 @ 1:23

What you must realise is that not all UNIX machines has the latest and greatest find!

Solaris for example uses a very old version (no -empty or -delete).

Here is one that finds OR finds and removes empty directories on either solaris or linux

```
find "$dir" -depth -type d |
while read sub; do
# case "$sub" in */*) ;; *) continue ;; esac # sub-dir only
[ "`cd "$sub"; echo .* * ?`" = ". .. * ?" ] || continue
```

```
echo rmdir "$sub"
```

```
#rmdir "$sub"
```

```
done
```

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