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How to Sync New and Changed Files Using 'rsync' Command

Aaron Kili │ Last Updated: August 8, 2024 │ Read Time: 3 mins │ Linux Commands │ 13 Comments

As a system administrator or Linux power user, you may have probably come across or even on several occasions, used the versatile Linux rsync command, which enables users to expeditiously copy or synchronize files locally and remotely. It is as well a great tool popularly used for backup operations and mirroring.

Some of its eminent features and advantages include; it is exceptionally versatile in that, it can copy locally, to/from a remote shell or remote rsync, it is also remarkably flexible, allowing users to specify any number of files to copy.

Furthermore, it permits copying of links, devices, file or directory owner, groups, and permissions. It also supports usage without root privileges coupled with many more.

One imperative differential of **rsync** in comparison to other file-coying commands in Linux is its use of the remote-update protocol, to transfer only the difference between files or directory content.

Therefore, in this article, we shall examine how **rsync** can help us only sync new or changed files or directory content while making backups and beyond in Linux.

To start with, you need to remember that the conventional and simplest form of using rsync is as follows:

```
rsync options source destination
```

That said, let us dive into some examples to uncover how the concept above actually works.

Syncing Files Locally Using Rsync

Using the command below, being able to copy files from my **Documents** directory to **/tmp/documents** directory locally:

```
rsync -av Documents/* /tmp/documents
```

In the command above, the option:

- `-a` – means archive mode.

- `-v` – means verbose, showing details of ongoing operations.

```
aaronkilik@tecmint ~ $ rsync -av Documents/* /tmp/documents
sending incremental file list
Linux-T-Shirts
Lutan Fyah-Stop-Backstabber Riddim.mp3
Mix of Backstabber Riddim (Oneness Records 2011).mp3
TipsForSysAdmins.zip
WampServer2.5.zip
account_details.csv
account_details.xlsx
ext.jpeg
groups.csv
groups.xlsx
last_login.csv
last_login.xlsx
money-730x280.jpg
sudoers.csv
sudoers.xlsx
5 best calendar apps for Linux/
5 best calendar apps for Linux/5 best calendar apps for Linux.odt
5 best calendar apps for Linux/5 best calendar apps for Linux.odt.zip
Tecmint-Deals/
Tecmint-Deals/.~lock.Master the #1 Linux OS with the 'Ubuntu Linux: Go
from Beginner to Power User' Course (90% off).odt#
Tecmint-Deals/Dive into a coding career with the Pay What You Want: 201
6 Learn to Code Bundle.odt
Tecmint-Deals/Dive into a coding career with the Pay What You Want: 201
6 Learn to Code Bundle.odt.zip
Tecmint-Deals/Enjoy Online Security, Anonymity For Life With TigerVPN F
```

Sync Files Locally

By default, **rsync** only copies new or changed files from a source to destination, when I add a new file into my **Documents** directory, this is what happens after running the same

command a second time:

```
rsync -av Documents/* /tmp/documents
```

```
aaronkilik@tecmint ~ $ rsync -av Documents/* /tmp/documents
sending incremental file list
Tecmint.com/How to Sync New or Changed Files Over Rsync/
Tecmint.com/How to Sync New or Changed Files Over Rsync/example-one.png

sent 106,915 bytes   received 60 bytes   213,950.00 bytes/sec
total size is 115,868,019   speedup is 1,083.13
aaronkilik@tecmint ~ $
```

Sync New Updated Files

As you can observe and notice from the output of the command, only the new file is copied to the destination directory.

[You might also like: [How to Sync Two Apache Web Servers/Websites Using Rsync](#)]

The `--update` or `-u` option allows **rsync** to skip files that are still new in the destination directory, and one important option, `--dry-run` or `-n` enables us to execute a test operation without making any changes. It shows us what files are to be copied.

```
rsync -aunv Documents/* /tmp/documents
```

```
aaronkilik@tecmint ~ $ rsync -aunv Documents/* /tmp/documents
sending incremental file list
lost
all/
all/Linux-T-Shirts
all/account_details.csv
all/groups.xlsx
all/last_login.csv
all/last_login.xlsx
all/sudoers.xlsx
bin/
bin/test_script

sent 11,855 bytes   received 70 bytes   23,850.00 bytes/sec
total size is 115,925,828   speedup is 9,721.24 (DRY RUN)
aaronkilik@tecmint ~ $
```

Dry Run Rsync Before Syncing Files

After executing a test run, we can then do away with the `-n` and perform a real operation:

```
rsync -auv Documents/* /tmp/documents
```

```
aaronkilik@tecmint ~ $ rsync -auv Documents/* /tmp/documents
sending incremental file list
lost
Tecmint.com/How to Sync New or Changed Files Over Rsync/
Tecmint.com/How to Sync New or Changed Files Over Rsync/dry-run-example
.png
all/
all/Linux-T-Shirts
all/account_details.csv
all/groups.xlsx
all/last_login.csv
all/last_login.xlsx
all/sudoers.xlsx
bin/
bin/test_script

sent 80,340 bytes  received 228 bytes  161,136.00 bytes/sec
total size is 115,967,286  speedup is 1,439.37
aaronkilik@tecmint ~ $
```

Sync Updated Files

Syncing Files From Local to Remote Linux

In the example below, I am copying files from my local machine to a remote server with the IP address – 10.42.1.5. So as to only sync new files on the local machine, that do not exist on the remote machine, we can include the `--ignore-existing` option:

```
rsync -av --ignore-existing Documents/* aaronkilik@10.42.1.5:~/all/
```

```
aaronkilik@tecmint ~ $ rsync -av --ignore-existing Documents/* aaronkilik@10.42.1.5:~/all/
aaronkilik@10.42.1.5's password:
sending incremental file list
Tecmint.com/How to Sync New or Changed Files Over Rsync/
Tecmint.com/How to Sync New or Changed Files Over Rsync/.~lock.How to Sync New or Changed
Files Over Rsync.odt#

sent 12,063 bytes  received 62 bytes  2,694.44 bytes/sec
total size is 116,665,415  speedup is 9,621.89
aaronkilik@tecmint ~ $
```

Sync Files Local to Remote Linux

Subsequently, to sync only updated or modified files on the remote machine that have changed on the local machine, we can perform a dry run before copying files as below:

```
rsync -av --dry-run --update Documents/* aaronkilik@10.42.1.5:~/all/
rsync -av --update Documents/* aaronkilik@10.42.1.5:~/all/
```


Check Sync Only Updated Files

To update existing files and prevent the creation of new files in the destination, we utilize the `--existing` option.

You can run through the `man rsync` page to discover additionally useful options for advanced usage, as I had mentioned earlier, **rsync** is a very powerful and versatile Linux tool, and many System Administrator and Linux power users know just how advantageous it is.

Most importantly, you can as well share your view on the examples we have covered here or even better still, offer us valuable tips on using this vital command line tool through the

comment section below.

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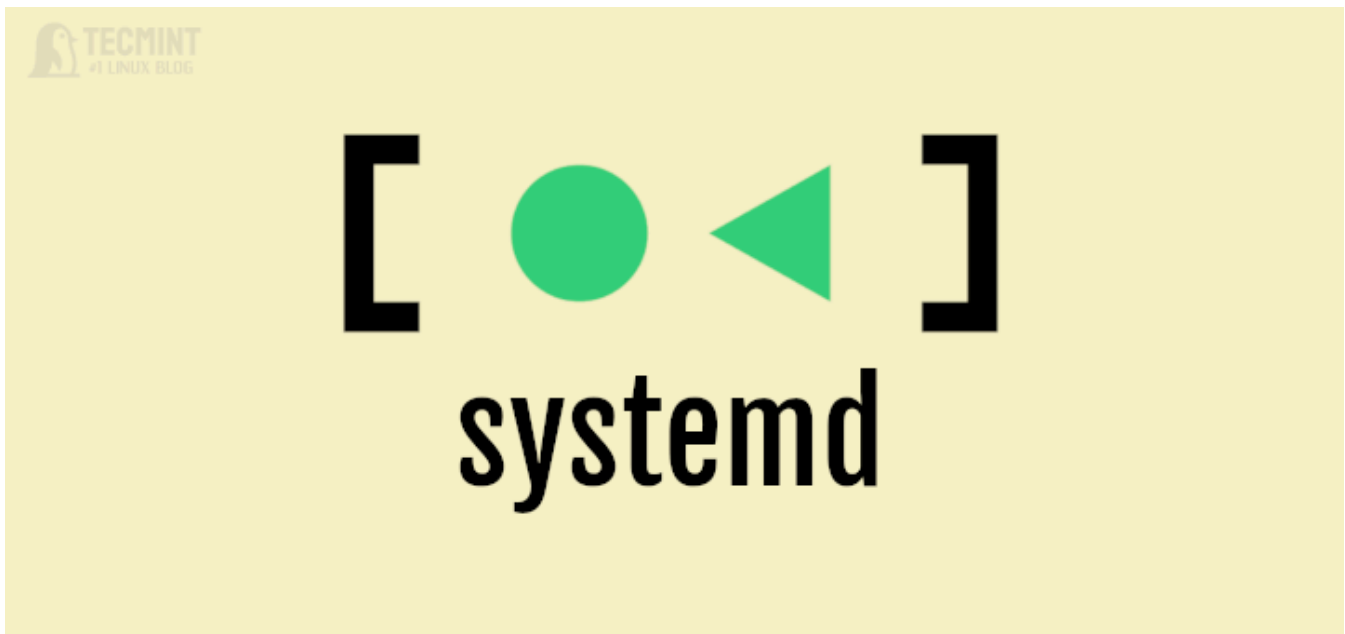**10 Lesser Known Linux Commands – Part 2**

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Coco

April 9, 2022 at 2:18 am

Hello, I have a routine with **rsync** to backup remote folders, however, after reboot, I needed to mount my remote folders again when I run my rsync show one error.

```
rsync: change_dir "/mnt/REMOTEFOLDER" failed: No such file or directory (2)
```

What happened?

Thanks.

Reply

AllSeeingEye

October 16, 2021 at 5:16 am

You've made a typo:

It's "man rsync" and not "rsync man" ;)

Anyway, nice tutorial :)

Reply

Admin

Ravi Saive

October 18, 2021 at 2:29 pm

@Chatnoir,

Thanks, corrected the command in the article…

Reply

Imola Fodor
November 13, 2020 at 7:19 pm

Hi! When I use:

```
# rsync -av /mapped_drive/src_folder/ /mylocal/dest_folder
```

I get to have a new folder named "**dest_folder**" inside /**mylocal/dest_folder** that starts to get filled with all files from /**src_folder**.

What I would need is that the /**mylocal/dest_folder** (that has already some files from the /**src_folder**) gets the rest of the files. Is something wrong with my line of code? When changing it to have also the — `-ignore-existing`, it still continues to fill the /**mylocal/dest_folder/dest_folder** and not the /**mylocal/dest_folder**.

Thanks in advance!

Reply

Admin

Ravi Saive
November 16, 2020 at 1:19 pm

@Imola,

Try to run this command and see..

```
# rsync -av /mapped_drive/src_folder/ /mylocal/dest_folder/
```

Reply

Imola Fodor
November 26, 2020 at 6:56 pm

Thank you, Ravi! I missed the forward slashes indeed!

Reply

jay mee
September 25, 2020 at 7:32 pm

I have made a script–based app that helps with backing up files to remote server /
smb share – `https://github.com/jamieduk/LanBackup_Full` .

but would like it to update files and ignore if files are the same can you look at
backup.sh inside the web part of the project and advise the best command to use
to update files that have changed and ignore files of the same size?

Reply

CRAIG
August 21, 2020 at 3:11 am

Hi, Thanks for this. I use Rsync to backup my unraid photos and videos to my local
raspberry pi external HDD. Photos run fine and checks for files already in the drive
and only copy's new files however videos seem to apart to copy the same file
already on the drive as if they were new and I run out of disk space.

Any ideas on how I can have rclone check what's already on the drive and only copy the new files. My video script is the same as my photos script so. It sure why it feels the need to copy the files again.

Thanks.

[Reply](#)

Arthur

[November 7, 2019 at 10:20 pm](#)

Very well explained! Sometimes man pages can be very long and boring :D Thanks for the article

[Reply](#)

Imteyaz

[February 22, 2018 at 7:43 pm](#)

Thanks for writing this post.

[Reply](#)

Aaron Kili

[February 23, 2018 at 12:38 pm](#)

Welcome, thanks for reading it and for the kinds words of appreciation.

Reply

Mark

[August 19, 2016 at 6:14 pm](#)

Love this, thanks Aaron, I'm fairly new to Linux myself and these articles help me tremendously with enhancing my skills

Reply

Aaron Kili K

[August 20, 2016 at 5:40 pm](#)

@Mark

Welcome, many thanks for loving our articles and the kind words of appreciation.

Reply

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