

Version Control System



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•[Jun 16, 2023](#)•

4 min read

Version Control System

It is a system that tracks the changes to any file that falls under it. Usually, this system contains development codes of different projects/applications that developers push as a part of each sprint or release.

It keeps the information and data of each time and person who have pushed the files to the system. In case of any issues in the application or project(let's say) the team can revert the changes of previously existing files.

There are two types of version control systems:-

1. **Centralized version control system** -

It is a central repository where the code lies. Developers check-out the code, modifies it and then check-in the code to the repository. Let's say there is a computer and a server, The server operates as the central location. When a developer changes the source code in his local machine, those changes get saved in the central server. The working copy is available in the local machine, but the versions are saved in the server.

2. **Distributed version control system** -

It is a remote repository where the code lies. It has both local and remote repositories. The complete versions of the projects, and all the changes can be pushed to the remote repository and can be fetched for any version of the code. Developers work independently and then merge the code whenever they want.

Why do we choose DVCS over CVCS?

1. DVCS has the biggest advantage in that it allows you to work offline and gives flexibility. You have the entire history of the code on your hard drive, so all the changes you will be making in your server or to your repository which doesn't require an internet connection, but this is not the case with CVCS.
2. DVCS is faster than CVCS because you don't need to communicate with the remote server for each command. You do everything locally which gives you the benefit to work faster than CVCS.
3. Working on branches is easy in DVCS. Every developer has an entire history of the code in DVCS, so developers can share their changes before merging all the 'sets of changes to the remote server. In CVCS it's difficult and time-consuming to work on branches because it requires communicating with the server directly.

GIT



It is a free and open-source tool which follows distributed version control system. It is installed on the local computer to track the local file changes that are pushed to it. The advantages is as below:-

- Every developer has an entire copy of the code on their local systems
- Any changes made to the source code can be tracked by others.
- There is regular communication between the developers.

GITHUB



It is a remote repository hosted on the internet that is an advanced version of Git. It also follows the DVCS methodology. It has both public and enterprise accounts. It makes it easy for developers to share code files and collaborate with fellow developers on open-source projects. GitHub also serves as a social networking site where developers can openly network, collaborate, and pitch their work.

Let's do some hands-on

Installing Git in a Linux server.


```
ubuntu@ip-172-31-55-4:~$ sudo apt-get update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease [110 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease [110 kB]
Get:4 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 Packages [9,418 kB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe Translation-en [5,408 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 DEP-11 Metadata [1,400 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 Packages [29.1 kB]
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Get:32 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [5,841 kB]
Get:33 http://security.ubuntu.com/ubuntu jammy-security/main Translation-en [4,411 kB]
```

Let's set up our Github account.

Let's create a local git repository and push the files from local to remote repository i.e from Git to Github.



 Overview

biswarajsahoo111

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```

ubuntu@ip-172-31-55-4:~$ mkdir git
ubuntu@ip-172-31-55-4:~$ 
ubuntu@ip-172-31-55-4:~$ cd git
ubuntu@ip-172-31-55-4:~/git$ mkdir dir1
ubuntu@ip-172-31-55-4:~/git$ mkdir dir2
ubuntu@ip-172-31-55-4:~/git$ vi file1
ubuntu@ip-172-31-55-4:~/git$ vi file2
ubuntu@ip-172-31-55-4:~/git$ ls -ltr
total 16
drwxrwxr-x 2 ubuntu ubuntu 4096 Mar 15 13:35 dir1
drwxrwxr-x 2 ubuntu ubuntu 4096 Mar 15 13:35 dir2
-rw-rw-r-- 1 ubuntu ubuntu  23 Mar 15 13:35 file1
-rw-rw-r-- 1 ubuntu ubuntu  54 Mar 15 13:36 file2
ubuntu@ip-172-31-55-4:~/git$ git init
hint: Using 'master' as the name for the initial branch. This default
hint: is subject to change. To configure the initial branch name to use
hint: of your new repositories, which will suppress this warning, call
hint:
hint:   git config --global init.defaultBranch <name>
hint:
hint: Names commonly chosen instead of 'master' are 'main', 'trunk' and
hint: 'development'. The just-created branch can be renamed via this
hint:
hint:   git branch -m <name>
Initialized empty Git repository in /home/ubuntu/git/.git/

```

```

ubuntu@ip-172-31-55-4:~/git$ git add .
ubuntu@ip-172-31-55-4:~/git$ git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   file1
        new file:   file2

ubuntu@ip-172-31-55-4:~/git$ git commit -m "my first commit"
[master (root-commit) 2fb9ad2] my first commit
 2 files changed, 2 insertions(+)
 create mode 100644 file1
 create mode 100644 file2
ubuntu@ip-172-31-55-4:~/git$ git branch
* master

```

Now check the repository in Github.

The file should be now pushed to Github from local repository

Task:-

1. Create a new repository on GitHub and clone it to your local machine

Make some changes to a file in the repository and commit them to the repository using Git

```
ubuntu@ip-172-31-55-4:~/git_new$ git init
hint: Using 'master' as the name for the initial branch. This default
hint: is subject to change. To configure the initial branch name for
hint: of your new repositories, which will suppress this warning,
hint: use:
hint:   git config --global init.defaultBranch <name>
hint: Names commonly chosen instead of 'master' are 'main', 'trunk'
hint: and 'development'. The just-created branch can be renamed via this
hint: command:
hint:   git branch -m <name>
Initialized empty Git repository in /home/ubuntu/git_new/.git/
```

```
I am growing my skill sets to achieve my goal as a DevOps engineer
Growing day by day.
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```

2. Push the changes back to the repository on GitHub

Thank you for reading my article.

Have a nice day.



WRITTEN BY Biswaraj Sahoo --AWS Community Builder | DevOps Engineer | Docker | Linux | Jenkins | AWS | Git | Terraform | Docker | kubernetes
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