FTP:

File Transfer Protocol (FTP) is a standard network protocol used to transfer files between systems over a TCP/IP network.

Key Points

- FTP is used to **transfer data between servers.**
- It transfers data in binary format (example: 010101001).
- Only files can be transferred through FTP, not directories.
- FTP is a stable and fast file delivery service.

Binary vs Encryption

Concept	Description
Binary	Data is transferred as raw bits (0s and 1s). Easy to interpret but not secure
Encryption	Data is locked using secret keys. Even if intercepted, it cannot be read without decryption

FTP Service Details:

Property	Description
Package Name	vsftpd
Service Name	vsftpd
Daemon	vsftpd
Conf file	etc/vsftpd/vsftpd.conf
Ports	21 (Control/Connection), 20 (Data Transfer)

Service and Daemon Concepts

- The service must be running for clients to connect.
- The daemon is the background process that operates when the service starts.
- When the service stops, the daemon stops as well.

FTP Server Setup Example

Server 1 (FTP Server): 192.168.23.145
Server 2 (FTP Client): 192.168.23.146

Steps on Server 1 (FTP Server)

Step 1: Install **vsftpd** package

Command: yum install vsftpd

```
[root@ftp-server ~]# yum install vsftpd
Updating Subscription Management repositories.
Unable to read consumer identity

This system is not registered with an entitlement server. You can use subscription-manager to register.

Last metadata expiration check: 0:00:46 ago on Tue 11 Nov 2025 07:57:34 AM EST.
Dependencies resolved.
================================================================================
 Package            Architecture       Version              Repository       Size
================================================================================
Installing:
 vsftpd             x86_64             3.0.3-35.el8          AppStream        181 k

Transaction Summary
================================================================================
Install  1 Package

Total size: 181 k
Installed size: 347 k
Is this ok [y/N]: y
Complete!
[root@ftp-server ~]# rpm -qa | grep vsftpd
vsftpd-3.0.3-35.el8.x86_64
[root@ftp-server ~]#
```

Step 2: Start and enable the service

Commands:
systemctl start vsftpd
systemctl enable vsftpd

```
[root@ftp-server ~]# systemctl start vsftpd.service
[root@ftp-server ~]# systemctl enable vsftpd.service
Created symlink /etc/systemd/system/multi-user.target.wants/vsftpd.service → /usr/lib/systemd/system/vsftpd.service.
[root@ftp-server ~]# systemctl is-enabled vsftpd.service
enabled
[root@ftp-server ~]# systemctl status vsftpd.service
● vsftpd.service - Vsftpd ftp daemon
   Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; enabled; vendor preset: disabled)
   Active: active (running) since Tue 2025-11-11 08:02:44 EST; 41s ago
 Main PID: 29512 (vsftpd)
    Tasks: 1 (limit: 10929)
   Memory: 588.0K
   CGroup: /system.slice/vsftpd.service
           └─29512 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf

Nov 11 08:02:44 ftp-server systemd[1]: Starting Vsftpd ftp daemon...
Nov 11 08:02:44 ftp-server systemd[1]: Started Vsftpd ftp daemon.
[root@ftp-server ~]#
```
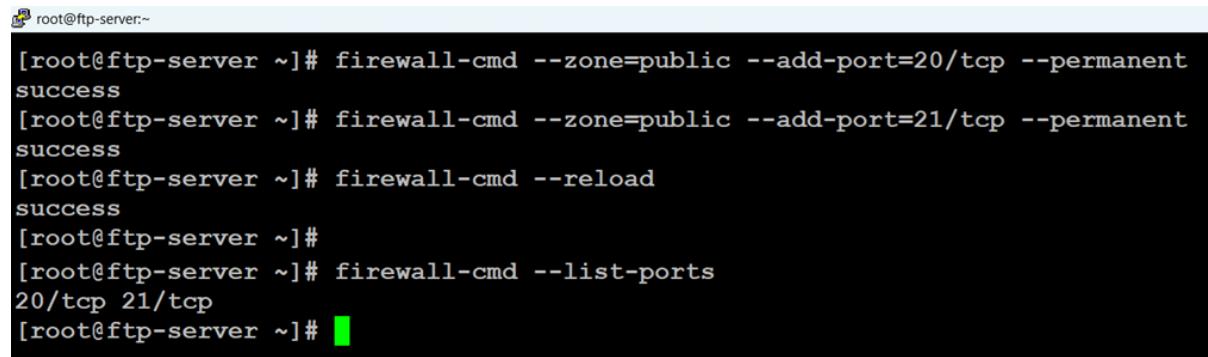
Step 3: To allow FTP ports (20 and 21) through the OS firewall and enable selinux rules
Commands:

firewall-cmd --permanent --add-port=21/tcp

firewall-cmd --permanent --add-port=20/tcp

firewall-cmd --reload

       Or

systemctl stop firewalld

```
root@ftp-server:~

[root@ftp-server ~]# firewall-cmd --zone=public --add-port=20/tcp --permanent
success
[root@ftp-server ~]# firewall-cmd --zone=public --add-port=21/tcp --permanent
success
[root@ftp-server ~]# firewall-cmd --reload
success
[root@ftp-server ~]#
[root@ftp-server ~]# firewall-cmd --list-ports
20/tcp 21/tcp
[root@ftp-server ~]#
```

Commands:

setsebool -P ftpd_anon_write on

setsebool -P ftpd_full_access on

setsebool -P ftpd_use_passive_mode on

getsebool -a | grep ftp   **##listout ftp rules**

setenforce 0

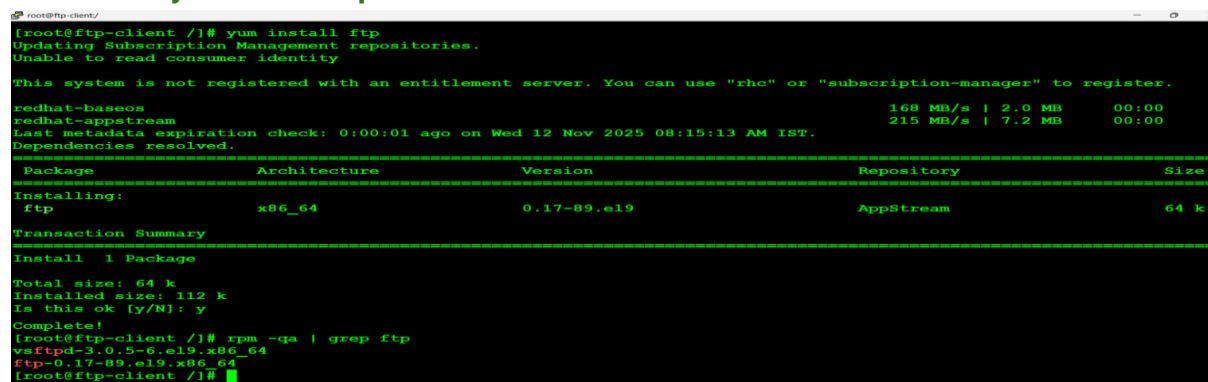Step 4: Create a user for FTP login

Commands:

useradd ftpuser

passwd ftpuser

su - ftpuser

      Create files and insert data

Steps on Server 2 (FTP Client)

Step 1: Install the ftp client package

Command: **yum install ftp**

```
root@ftp-client:/

[root@ftp-client /]# yum install ftp
Updating Subscription Management repositories.
Unable to read consumer identity

This system is not registered with an entitlement server. You can use "rhc" or "subscription-manager" to register.

redhat-baseos                                                      168 MB/s | 2.0 MB      00:00
redhat-appstream                                                   215 MB/s | 7.2 MB      00:00
Last metadata expiration check: 0:00:01 ago on Wed 12 Nov 2025 08:15:13 AM IST.
Dependencies resolved.
=================================================================================================
 Package              Architecture            Version                Repository             Size
=================================================================================================
Installing:
 ftp                  x86_64                  0.17-89.el9            AppStream              64 k

Transaction Summary
=================================================================================================
Install  1 Package

Total size: 64 k
Installed size: 112 k
Is this ok [y/N]: y
Complete!
[root@ftp-client /]# rpm -qa | grep ftp
vsftpd-3.0.5-6.el9.x86_64
ftp-0.17-89.el9.x86_64
[root@ftp-client /]#
```

Step 2: Connect to the FTP server

Command:
ftp 192.168.23.145
Username: ftpuser
Password: ********


```
root@ftp-client:/
[root@ftp-client /]# ftp 192.168.23.145
Connected to 192.168.23.145 (192.168.23.145).
220 (vsFTPd 3.0.3)
Name (192.168.23.145:root): ftpuser
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp>
```

Step 3: Common FTP Commands

Command	Description
ls	List files on the remote server
!ls	List files on the local system
pwd	Show current remote directory
!pwd	Show current local directory
cd	Change directory on remote system
lcd	Change directory on local system
get [filename]	Download a file from remote to local
put [file]	Upload a file from local to remote
mget [files]	Download multiple files
mput [files]	Upload multiple files
bye / quit	Exit FTP session