LESSON – 21

FTP (FILE TRANSFER PROTOCOL)

LEARNING OUTCOMES

- Explain the Linux FTP Services.

- Explore on working mechanism of FTP System.

- Configure the Very Secure FTP Daemon (vsftpd) as a Server

- Demonstrate how to access FTP server through ftp clients.

Linux FTP

- The File Transfer Protocol(FTP) is used as one of the most common means of copying files between servers over the internet

- Most web based download sites use the built in FTP capability of web browsers and therefore, many server oriented OS includes FTP application as a part of the software suite.

- The Ubuntu Linux FTP Server use Very Secure FTP Daemon (vsftpd) package

FTP Overview

- FTP relies on a pair of TCP ports to get the job done. It operates in two connection channels:

  - FTP Control Channel, TCP Port 21:
    - All commands send and the ftp server's responses to those commands will go over the control connection.
    - But, any data sent back (such as "ls" directory lists or actual file data in either direction) will go over the data connection.

  - FTP Data Channel, TCP Port 20:
    - This port is used for all subsequent data transfers between the client and server.

How FTP Works

- The FTP works on a client/server model. The server component is called FTP Daemon.

- It continuously listens for FTP requests from remote clients. When a request is received, it manages the login and sets up the connection.

- For the duration of the session it executes any of commands sent by the FTP client.

- Access to an FTP server can be managed in two ways:
    - Anonymous
    - Authenticated

How FTP Works (contd.)

- In the Anonymous mode,
  - remote clients can access the FTP server by using the default user account called "anonymous" or "ftp" and sending an email address as the password.

- In the Authenticated mode,
  - a user must have an account and a password
  - As a general rule, the FTP daemon will hide the root directory of the FTP server and change it to the FTP Home directory.

- Therefore, this hides the rest of the file system from remote sessions.

FTP Server

- FTP server use vsftpd package
  - Check whether vsftpd is installed with following command:
      # dpkg -l | grep vsftpd

  - If not found, install vsftpd
      # apt install vsftpd

- Make sure that the vsftpd service runs even after rebooting system
      # systemctl enable vsftpd

FTP Server Configuration

- The vsftpd.conf configuration file is available at /etc/vsftpd.conf

- Configure vsftpd.conf by using any editor such as vi(m), nano, gedit, etc.

    vim /etc/vsftpd.conf

- Find following line and change to:

    anonymous_enable = NO #disallow anonymous, unidentified users
    local_enable = YES #allow local user to login
    write_enable = YES #allow local user to be able to write to a directory
    chroot_local_user = YES #local user will be "chroot jail". Deny access to other parts of the system
    user_sub_token=$USER
    local_root=/home/$USER/ftp
    allow_writeable_chroot=YES
    pasv_enable=Yes
    pasv_min_port=40000
    pasv_max_port=50000

- Save and exit the file with :*wq*

Firewall Configuration

- Allow ftp service and port 21 through firewall

  # firewall-cmd --permanent –-add-port=21/tcp
  # firewall-cmd --permanent –-add-service=ftp

- Restart firewall

  # firewall-cmd –-reload

Creating FTP users

- By default, the root user is not allow to login to ftp server for security purpose.
- Create normal user account for testing ftp server.

        # adduser test
        # passwd test_user

- Connect ftp server with created user 'ftp

ftp FTP_Server_IPAddress //eg. '192.168.1.3'

Connected to 192.168.1.3 (192.168.1.3).
220 Welcome to UNIXMEN FTP service.
Name (192.168.1.3:root): ftp
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
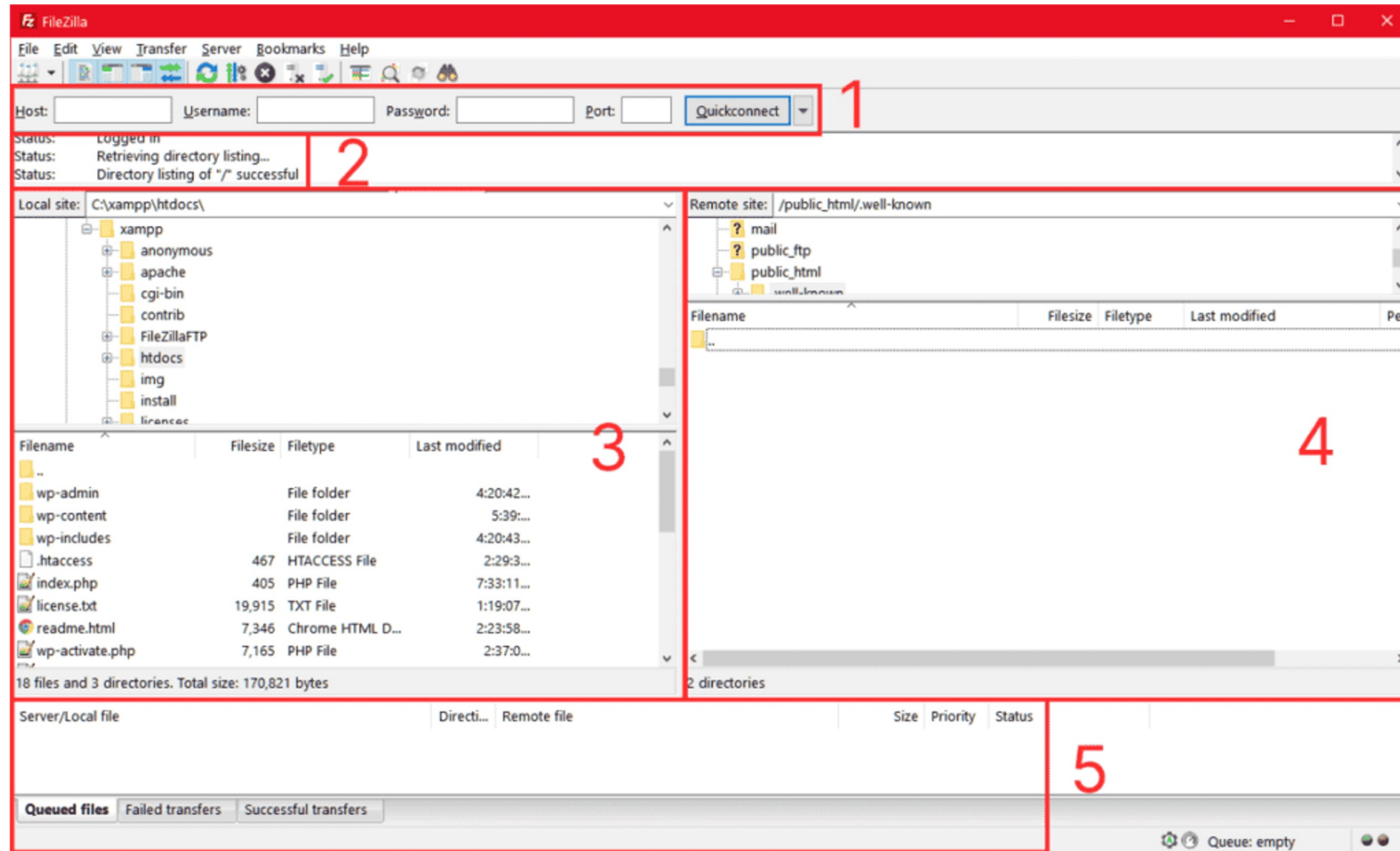*Using binary mode to transfer files.*

ftp>

Accessing from Client

- You can login to ftp server from your client system as:

  $ ftp FTP_Server_IPAddress //eg. '192.168.1.3'

- Accessing FTP Server via FileZilla:

  - You can install FileZilla client application and access ftp server
  - It is a graphical application which is more-user friendly

FileZilla Client

Reference

- https://www.digitalocean.com/community/tutorials/how-to-set-up-vsftpd-for-a-user-s-directory-on-ubuntu-20-04

- S. Sham, V.Soyinka, "Linux Administration: A Beginner's Guide", 4e, Tata McGraw-Hill, 2005

- Michael Jam, "RHCSA/RHCE Red Hat Linux Certification Study Guide", 6e, Tata McGraw-Hill, 2011

SUMMARY

- **You have learnt;**

  - How FTP works for sharing files
  - How to configure VSFTPD Server and its operations
  - Testing FTP Server through ftp command and FileZilla Client