

# Lab Assignment



Cybersecurity Professional Program

Linux Security

## Services and Hardening

**LNK-05-L2**

**Install and Configure Samba**

## Lab Objective

Understand how to transfer files between Windows and Linux using Samba and FTP.

## Lab Mission

Perform a basic configuration of Samba, provide access to Samba shares via an MS Windows client machine, and create an FTP server to transfer files from another machine.

## Lab Duration

30–40 minutes

## Requirements

- Knowledge of FTP commands
- Knowledge of the Samba protocol
- Working knowledge of operating systems

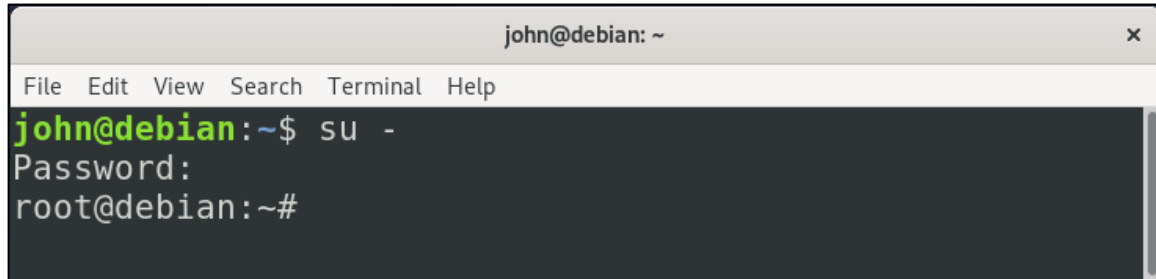
## Resources

- Environment & Tools
  - VirtualBox
    - Debian
  - Windows

## Lab Task 1: Samba Setup

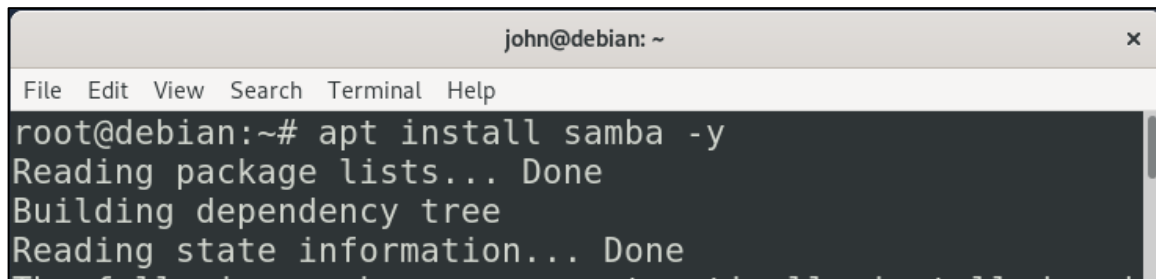
In this task, you will install the Samba service in the Debian VM.

- 1 Open the terminal in the Debian machine and use the command **`su -`** to switch to the root user.



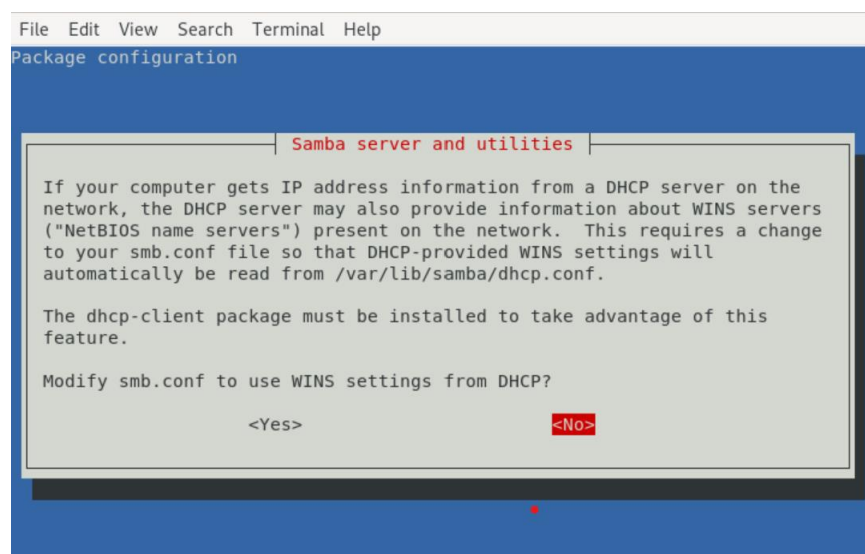
```
john@debian: ~  
File Edit View Search Terminal Help  
john@debian:~$ su -  
Password:  
root@debian:~#
```

- 2 Use the command **`apt install samba -y`** to install the Samba service.

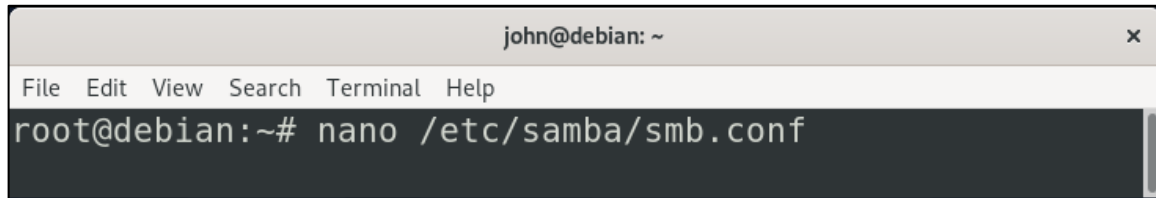


```
john@debian: ~  
File Edit View Search Terminal Help  
root@debian:~# apt install samba -y  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done
```

- 3 When prompted, select **No**.



- 4 Use the command ***nano /etc/samba/smb.conf*** to access the service configuration file.



```
john@debian: ~
File Edit View Search Terminal Help
root@debian:~# nano /etc/samba/smb.conf
```

- 5 Scroll to the end of the file and add the following information:

**[Files]:** The name of the share

**comment = my files:** Brief comment describing the share

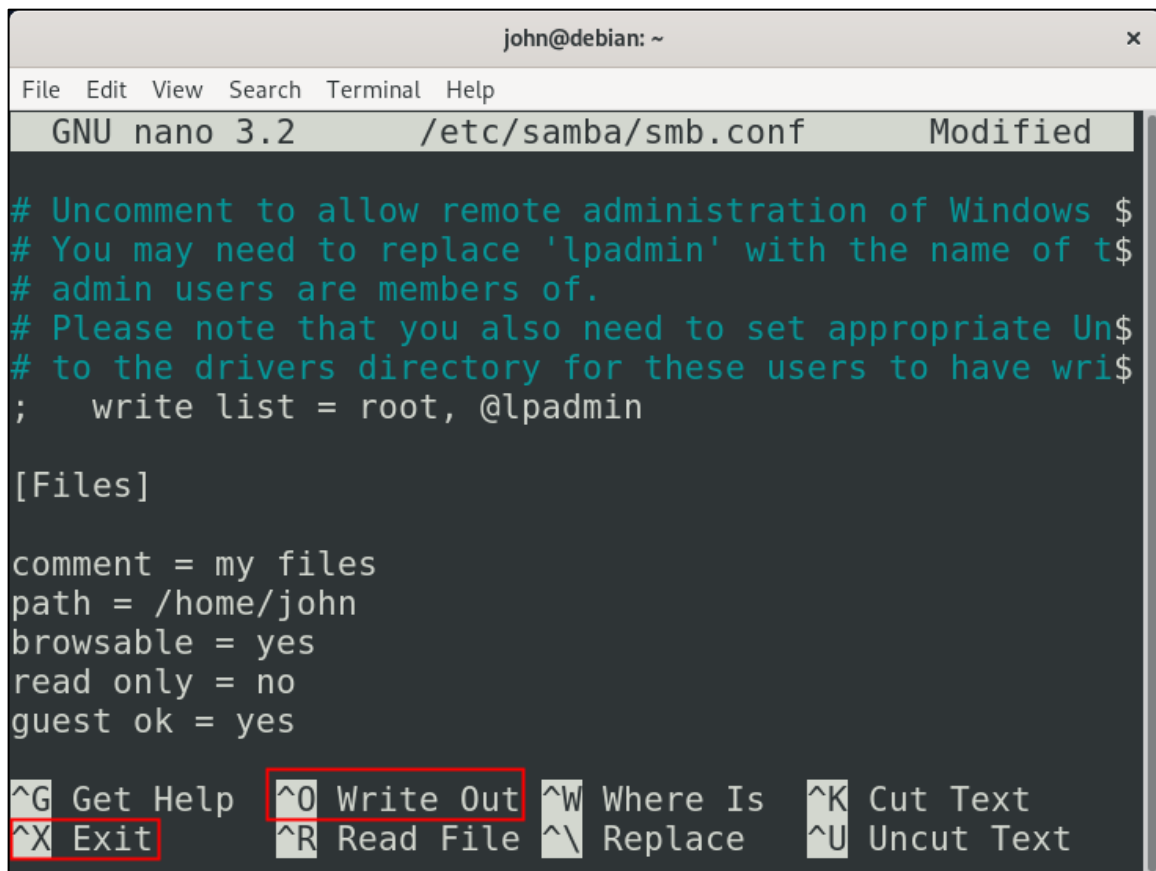
**path = /home/<your user>:** Absolute path to the share

**browsable = yes:** If users can browse to the share

**read only = no:** If users can write to the share

**guest ok = yes:** If guests can access the share

Save and exit the file.



```
john@debian: ~
File Edit View Search Terminal Help
GNU nano 3.2 /etc/samba/smb.conf Modified

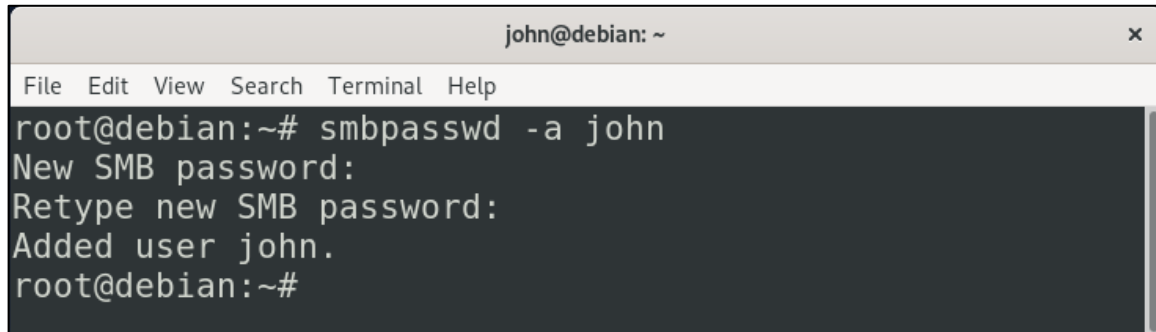
# Uncomment to allow remote administration of Windows $
# You may need to replace 'lpadmin' with the name of t$
# admin users are members of.
# Please note that you also need to set appropriate Un$
# to the drivers directory for these users to have wri$
; write list = root, @lpadmin

[Files]

comment = my files
path = /home/john
browsable = yes
read only = no
guest ok = yes

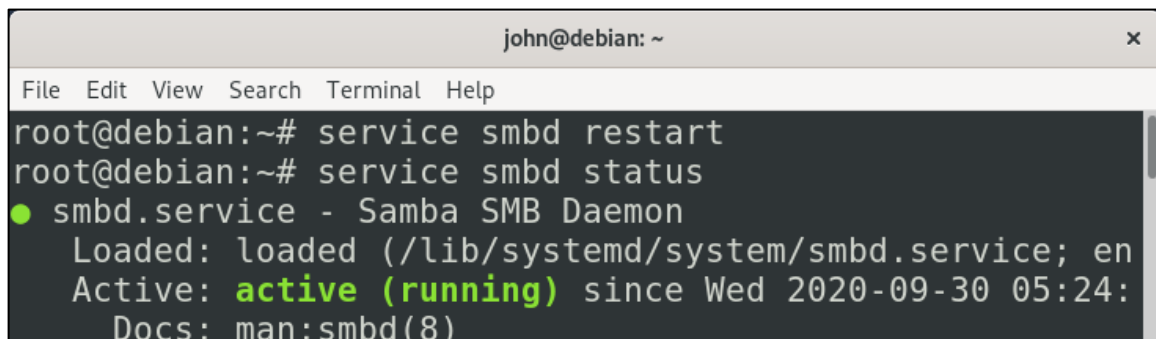
^G Get Help ^O Write Out ^W Where Is ^K Cut Text
^X Exit ^R Read File ^\ Replace ^U Uncut Text
```

- 6 Use the command ***smbpasswd -a <user>*** to add your user to the SMB service. Enter a new password when asked.



```
john@debian: ~
File Edit View Search Terminal Help
root@debian:~# smbpasswd -a john
New SMB password:
Retype new SMB password:
Added user john.
root@debian:~#
```

- 7 Use the command ***service smbd restart*** to activate the service. Use the command ***service smbd status*** to verify it is active.



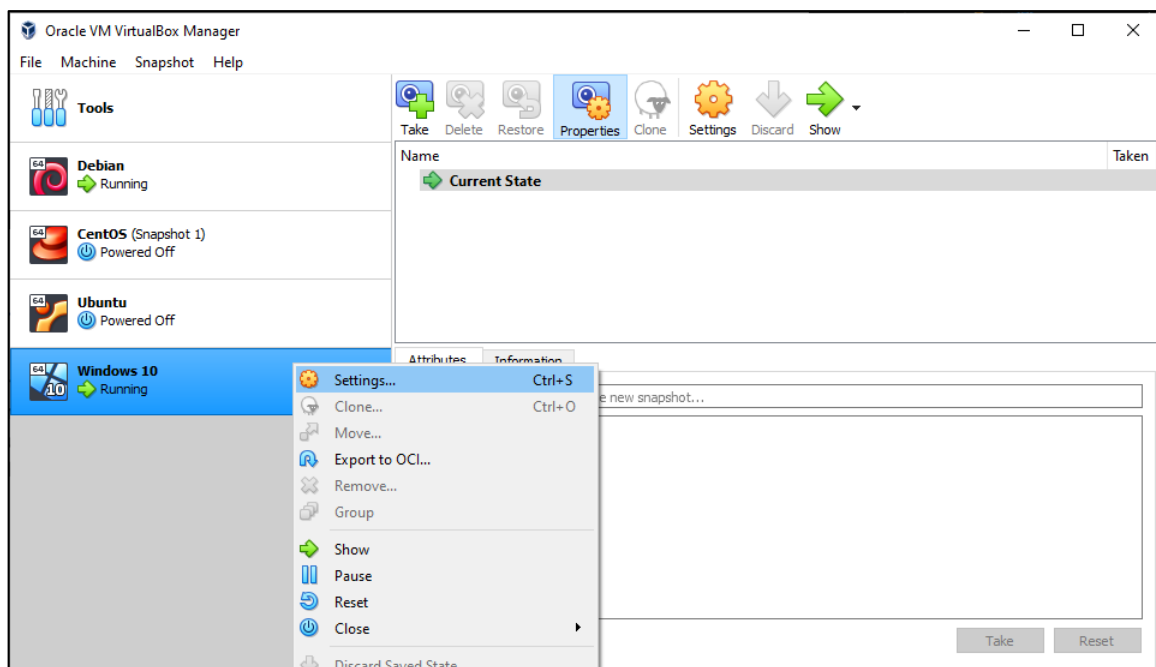
```
john@debian: ~
File Edit View Search Terminal Help
root@debian:~# service smbd restart
root@debian:~# service smbd status
● smbd.service - Samba SMB Daemon
   Loaded: loaded (/lib/systemd/system/smbd.service; en
   Active: active (running) since Wed 2020-09-30 05:24:
   Docs: man:smbd(8)
```

## Lab Task 2: Connect to the Share

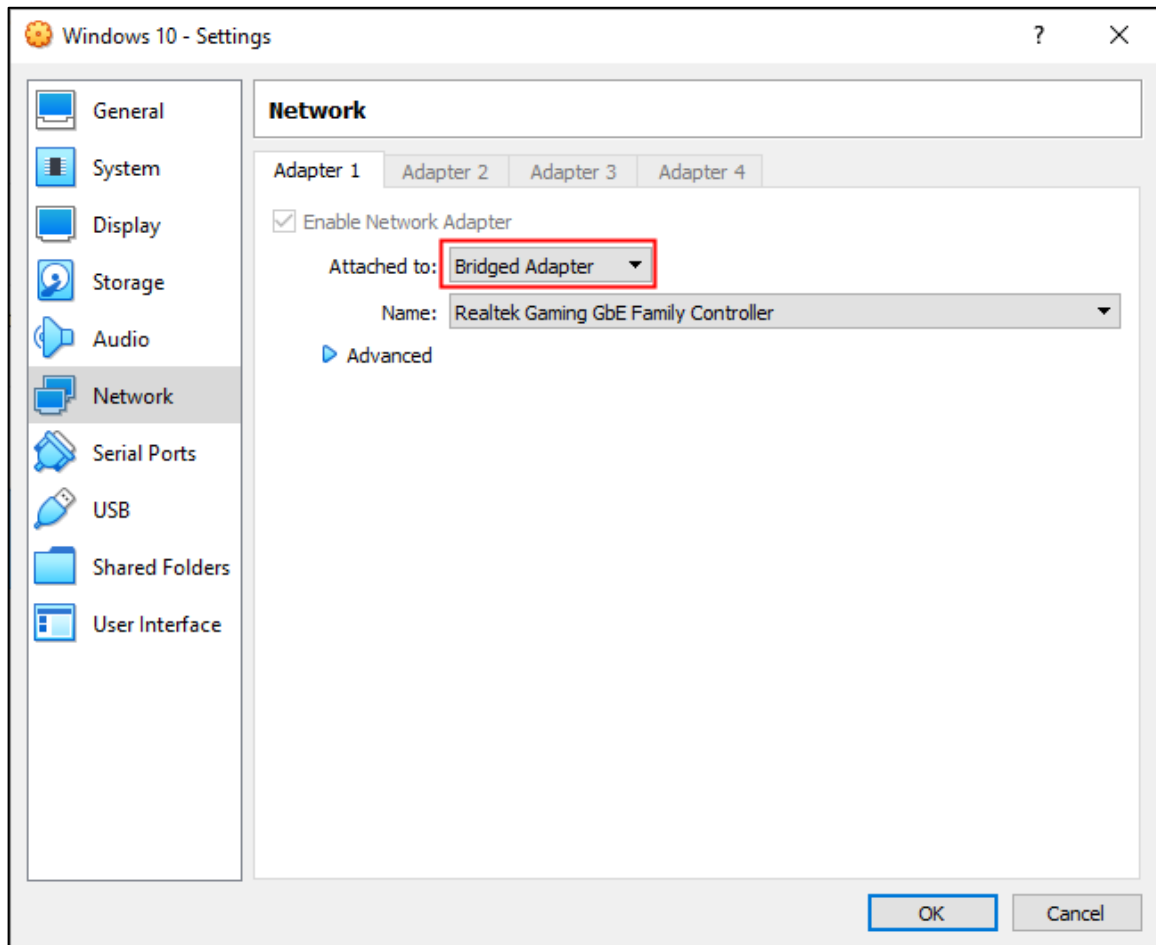
In this task, you will connect to the directory shared in Debian from a Windows machine. Use an existing Windows machine (virtual or host). If you don't have a Windows machine, follow the Windows 10 installation guide to create one.

**Note:** If you install a new Windows VM, follow only the first three procedures in the installation guide.

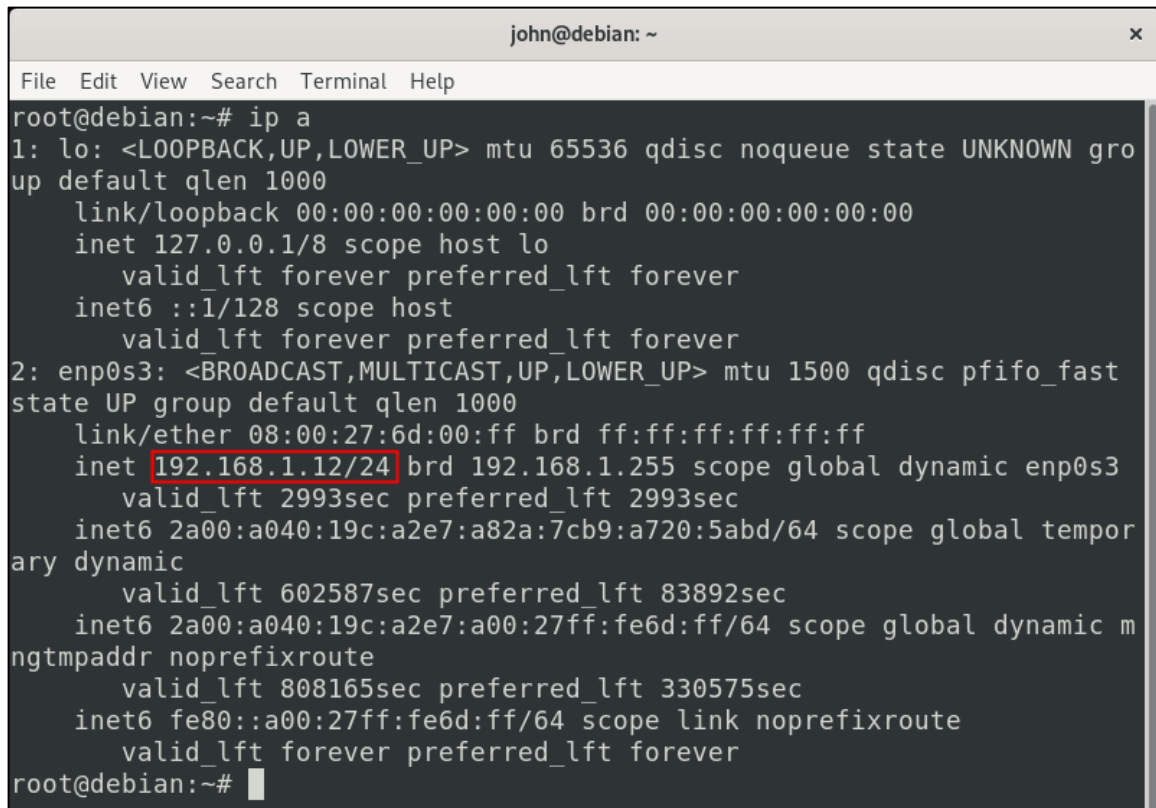
- 1 Open your Windows VM settings by right-clicking the VM and selecting **Settings...**



- 2 In the settings window, navigate to **Network** and ensure the adapter is set to **Bridged Adapter**.



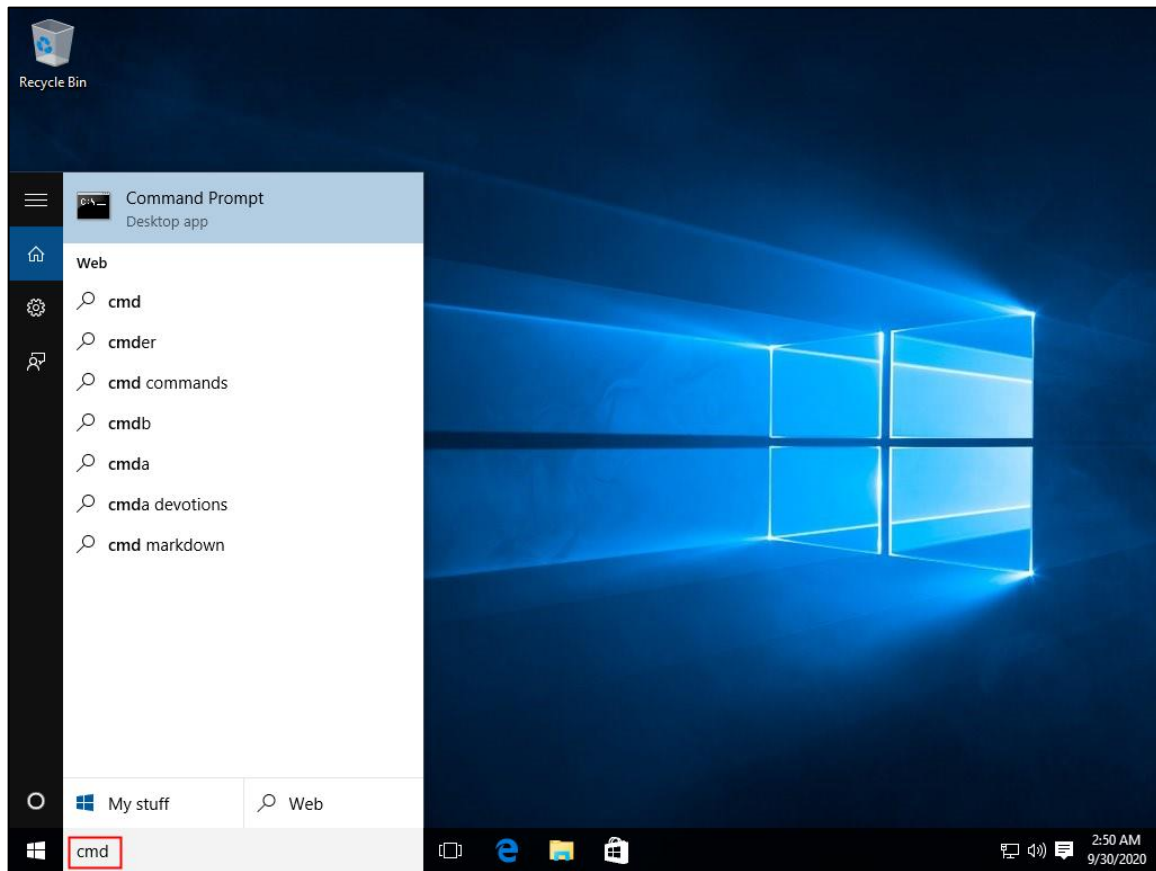
- 3 In your Debian machine, use the command ***ip a*** to check its IP address.



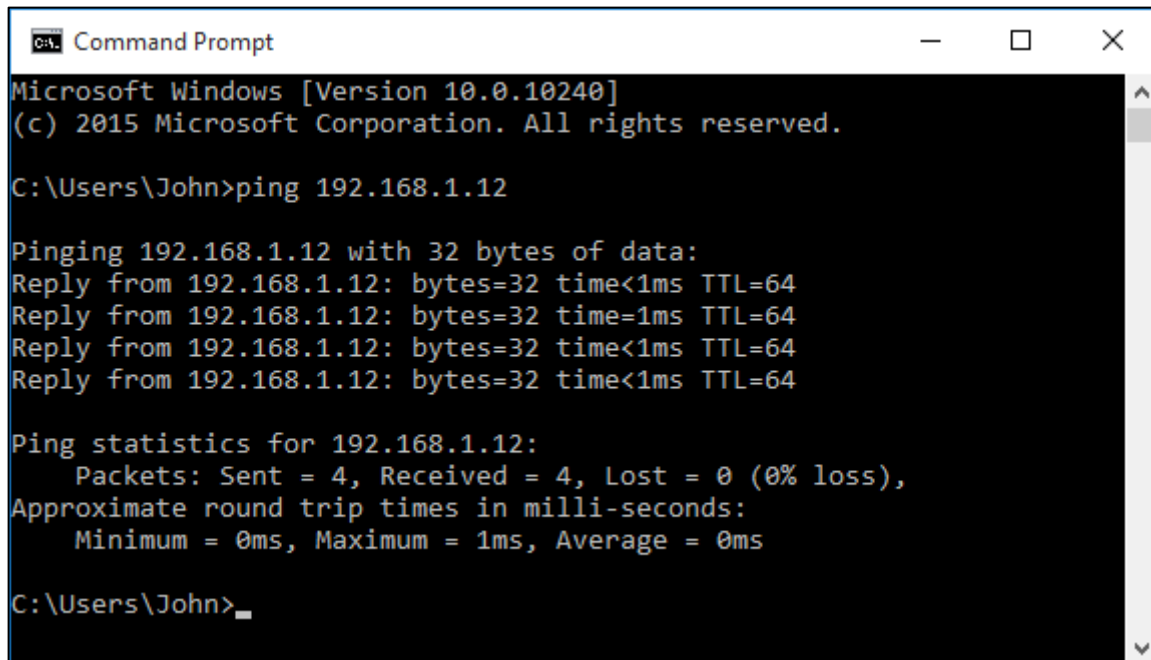
```
john@debian: ~
File Edit View Search Terminal Help
root@debian:~# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:6d:00:ff brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.12/24 brd 192.168.1.255 scope global dynamic enp0s3
        valid_lft 2993sec preferred_lft 2993sec
    inet6 2a00:a040:19c:a2e7:a82a:7cb9:a720:5abd/64 scope global temporary dynamic
        valid_lft 602587sec preferred_lft 83892sec
    inet6 2a00:a040:19c:a2e7:a00:27ff:fe6d:ff/64 scope global dynamic mngtmpaddr noprefixroute
        valid_lft 808165sec preferred_lft 330575sec
    inet6 fe80::a00:27ff:fe6d:ff/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
root@debian:~#
```



#### 4 Open the CMD in the Windows machine.



- 5 Use the command **ping <Debian IP>** to verify both machines can communicate.



```
Microsoft Windows [Version 10.0.10240]
(c) 2015 Microsoft Corporation. All rights reserved.

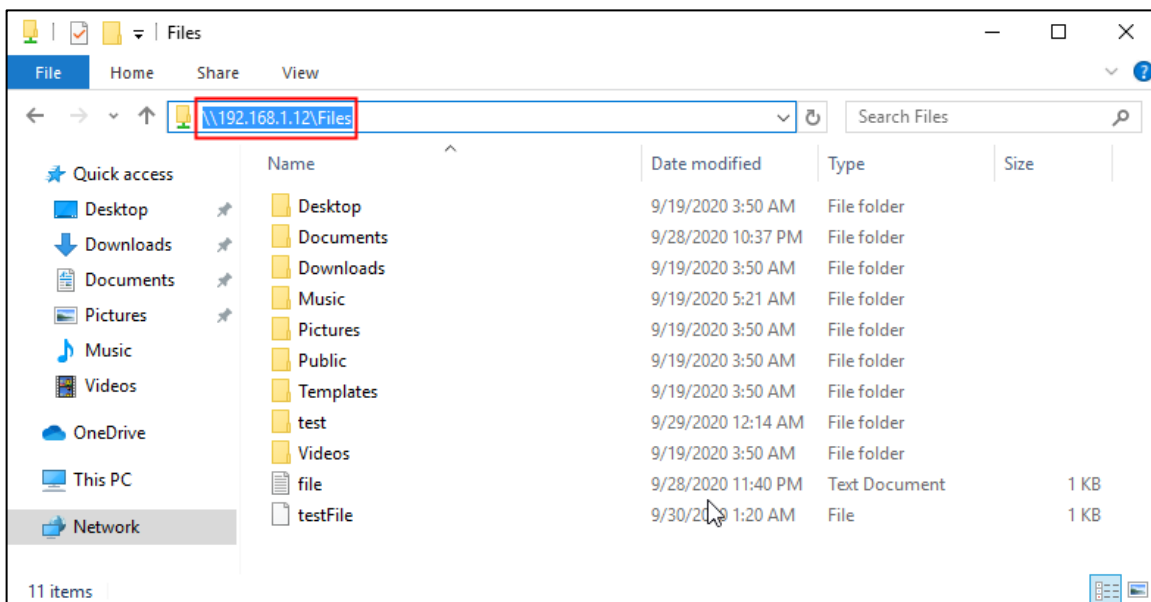
C:\Users\John>ping 192.168.1.12

Pinging 192.168.1.12 with 32 bytes of data:
Reply from 192.168.1.12: bytes=32 time<1ms TTL=64
Reply from 192.168.1.12: bytes=32 time=1ms TTL=64
Reply from 192.168.1.12: bytes=32 time<1ms TTL=64
Reply from 192.168.1.12: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.1.12:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\Users\John>
```

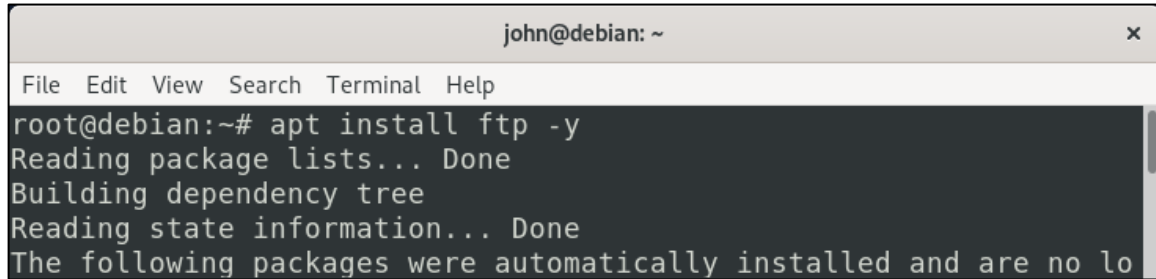
- 6 Open the File Explorer in Windows and insert the path to the Debian's shared file as follows: **\\<IP>\Files**



## Lab Task 3: Install the FTP Server

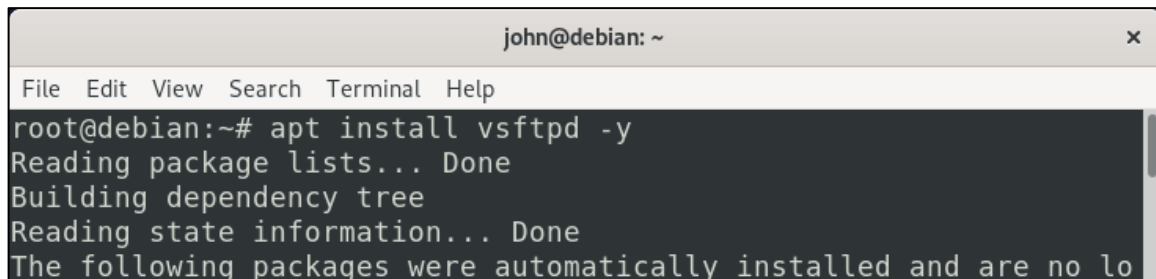
Create an FTP server and transfer files to it.

- 1 In the Debian machine, use the command ***apt install ftp -y*** to install the FTP service.



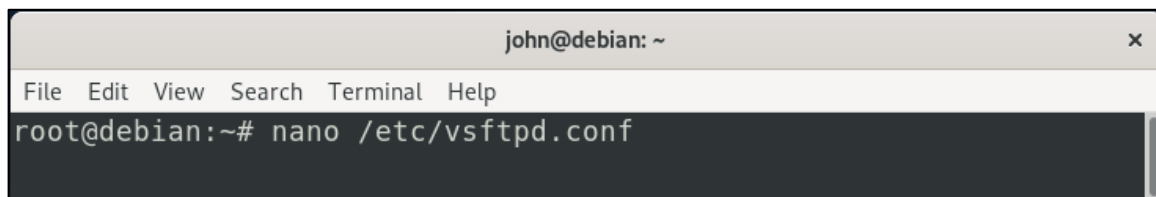
```
john@debian: ~  
File Edit View Search Terminal Help  
root@debian:~# apt install ftp -y  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
The following packages were automatically installed and are no lo
```

- 2 Use the command ***apt install vsftpd -y*** to install the vsftpd service.



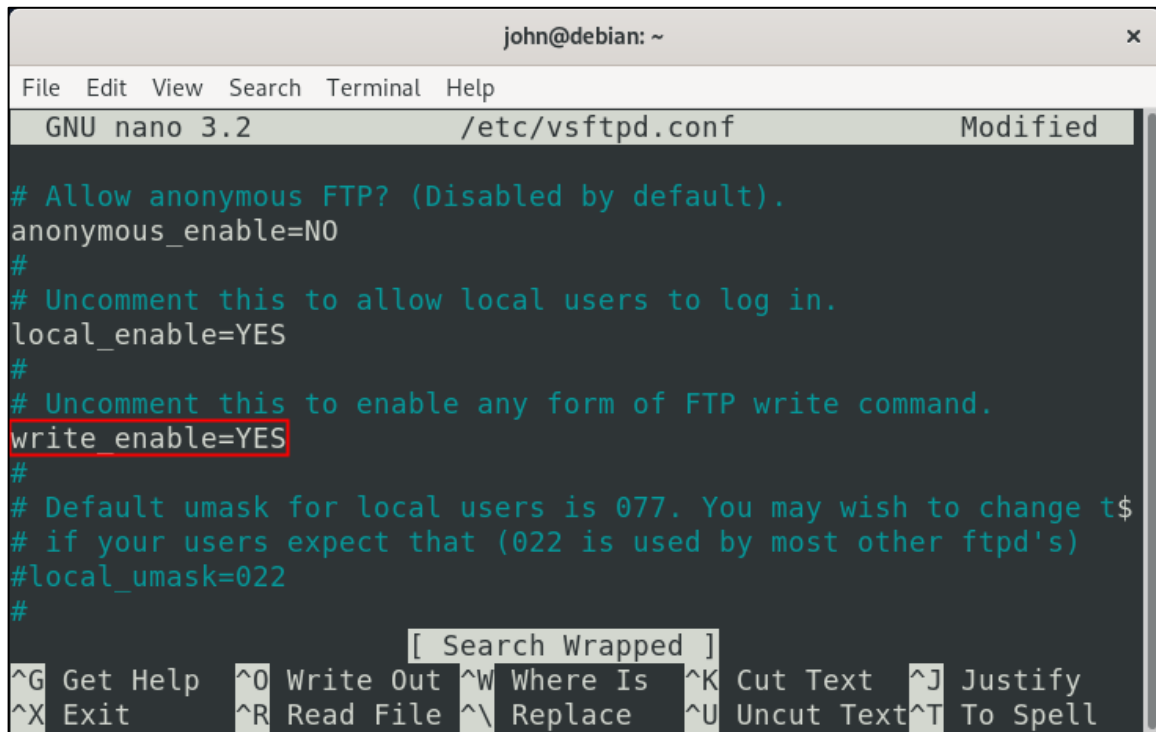
```
john@debian: ~  
File Edit View Search Terminal Help  
root@debian:~# apt install vsftpd -y  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
The following packages were automatically installed and are no lo
```

- 3 Use the command ***nano /etc/vsftpd.conf*** to open the service's configuration file.



```
john@debian: ~  
File Edit View Search Terminal Help  
root@debian:~# nano /etc/vsftpd.conf
```

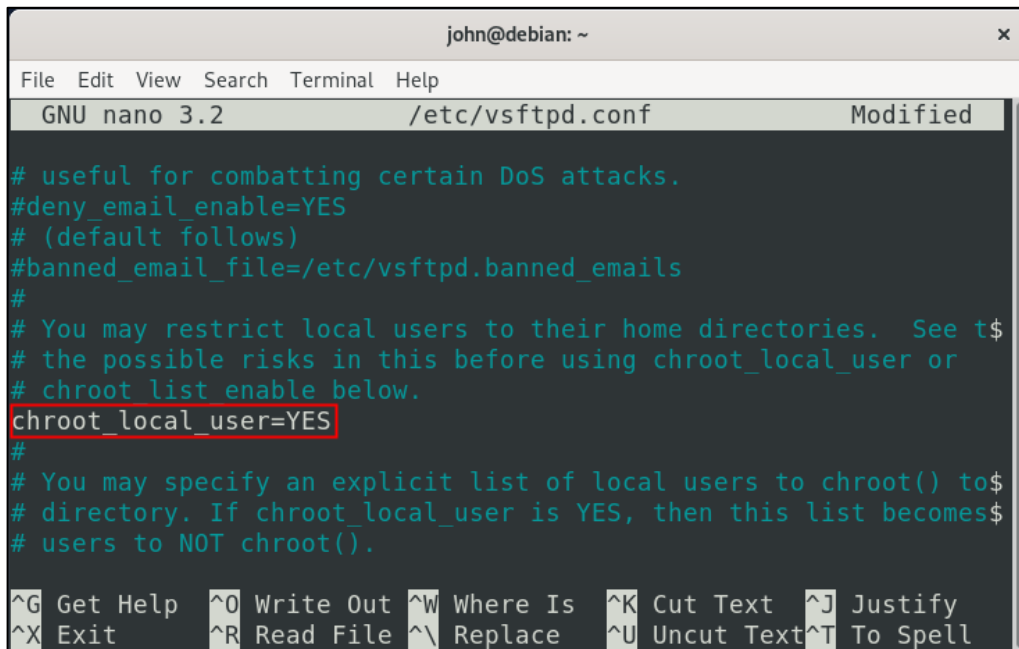
- 4 Use **Ctrl + w** to search for the option **write\_enable=YES** and uncomment it. This option enables uploading files to Debian.



```
john@debian: ~
File Edit View Search Terminal Help
GNU nano 3.2 /etc/vsftpd.conf Modified

# Allow anonymous FTP? (Disabled by default).
anonymous_enable=NO
#
# Uncomment this to allow local users to log in.
local_enable=YES
#
# Uncomment this to enable any form of FTP write command.
write_enable=YES
#
# Default umask for local users is 077. You may wish to change this
# if your users expect that (022 is used by most other ftpd's)
#local_umask=022
#
[ Search Wrapped ]
^G Get Help  ^O Write Out ^W Where Is  ^K Cut Text  ^J Justify
^X Exit      ^R Read File ^\ Replace   ^U Uncut Text ^T To Spell
```

- 5 Use **Ctrl + w** to search for the option **chroot\_local\_user=YES** and uncomment it. This option prevents all local users from leaving their home directory.



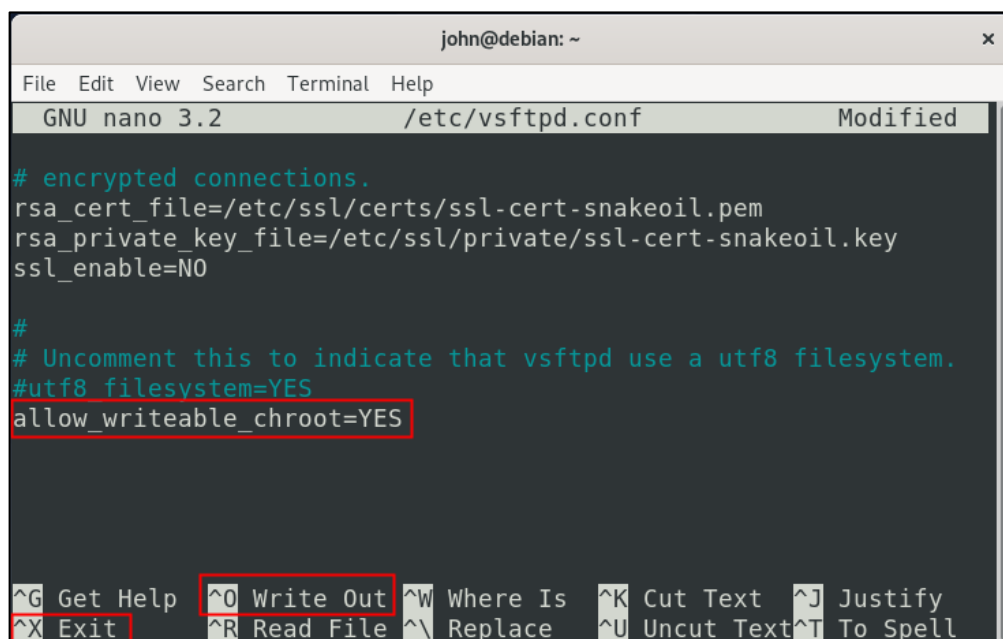
A screenshot of a terminal window showing the nano text editor editing the file /etc/vsftpd.conf. The window title is 'john@debian: ~'. The nano editor's menu bar shows 'File Edit View Search Terminal Help'. The status bar at the top indicates 'GNU nano 3.2' and 'Modified'. The file content includes several commented-out lines. The line 'chroot\_local\_user=YES' is highlighted with a red box. Below the file content, the nano editor's keyboard shortcuts are displayed: '^G Get Help', '^O Write Out', '^W Where Is', '^K Cut Text', '^J Justify', '^X Exit', '^R Read File', '^\_ Replace', '^U Uncut Text', and '^T To Spell'.

```
john@debian: ~
File Edit View Search Terminal Help
GNU nano 3.2 /etc/vsftpd.conf Modified

# useful for combatting certain DoS attacks.
#deny_email_enable=YES
# (default follows)
#banned_email_file=/etc/vsftpd.banned_emails
#
# You may restrict local users to their home directories. See t$
# the possible risks in this before using chroot_local_user or
# chroot list enable below.
chroot_local_user=YES
#
# You may specify an explicit list of local users to chroot() to$
# directory. If chroot_local_user is YES, then this list becomes$
# users to NOT chroot().

^G Get Help  ^O Write Out ^W Where Is  ^K Cut Text  ^J Justify
^X Exit      ^R Read File ^_ Replace   ^U Uncut Text ^T To Spell
```

- 6 Add the option **allow\_writeable\_chroot=YES** to the end of the file and uncomment it. This option bypasses the check for write permission in the vsftpd config file. Save and exit the file.



A screenshot of a terminal window showing the nano text editor editing the file /etc/vsftpd.conf. The window title is 'john@debian: ~'. The nano editor's menu bar shows 'File Edit View Search Terminal Help'. The status bar at the top indicates 'GNU nano 3.2' and 'Modified'. The file content includes several commented-out lines. The line 'allow\_writeable\_chroot=YES' is highlighted with a red box. Below the file content, the nano editor's keyboard shortcuts are displayed: '^G Get Help', '^O Write Out', '^W Where Is', '^K Cut Text', '^J Justify', '^X Exit', '^R Read File', '^\_ Replace', '^U Uncut Text', and '^T To Spell'.

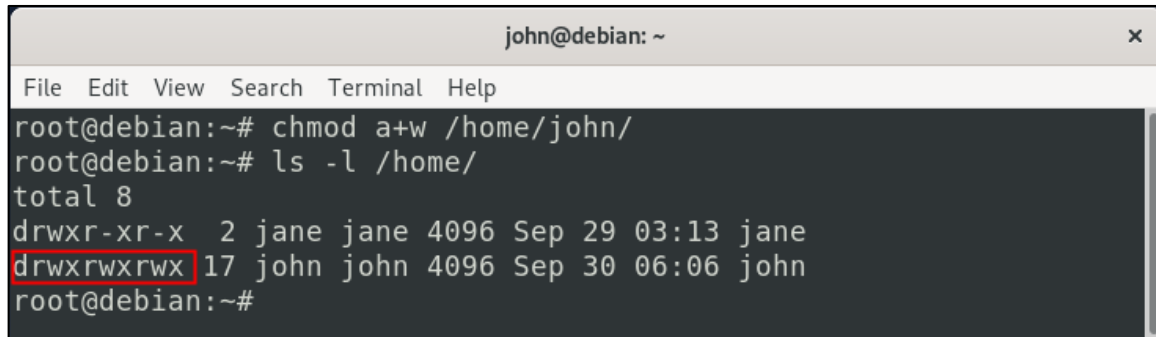
```
john@debian: ~
File Edit View Search Terminal Help
GNU nano 3.2 /etc/vsftpd.conf Modified

# encrypted connections.
rsa_cert_file=/etc/ssl/certs/ssl-cert-snakeoil.pem
rsa_private_key_file=/etc/ssl/private/ssl-cert-snakeoil.key
ssl_enable=NO

#
# Uncomment this to indicate that vsftpd use a utf8 filesystem.
#utf8_filesystem=YES
allow_writeable_chroot=YES

^G Get Help  ^O Write Out ^W Where Is  ^K Cut Text  ^J Justify
^X Exit      ^R Read File ^_ Replace   ^U Uncut Text ^T To Spell
```

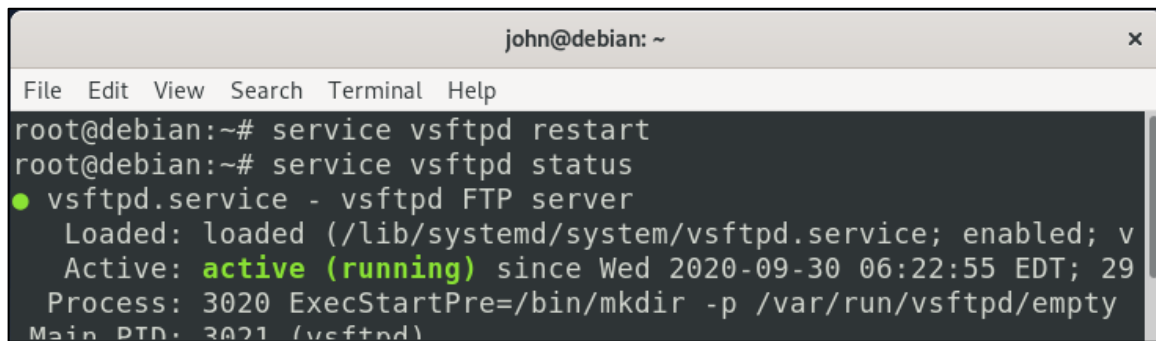
- 7 Use the command ***chmod a+w /home/<your user>*** to provide everyone with write permission to your home directory. Verify it with the ***ls -l /home/*** command.

A terminal window titled 'john@debian: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal shows the following commands and output:

```
root@debian:~# chmod a+w /home/john/
root@debian:~# ls -l /home/
total 8
drwxr-xr-x  2 jane jane 4096 Sep 29 03:13 jane
drwxrwxrwx 17 john john 4096 Sep 30 06:06 john
root@debian:~#
```

The permissions 'drwxrwxrwx' for the 'john' directory are highlighted with a red box.

- 8 Use the command ***service vsftpd restart*** to restart the service. Then use the command ***service vsftpd status*** to verify the service is active.

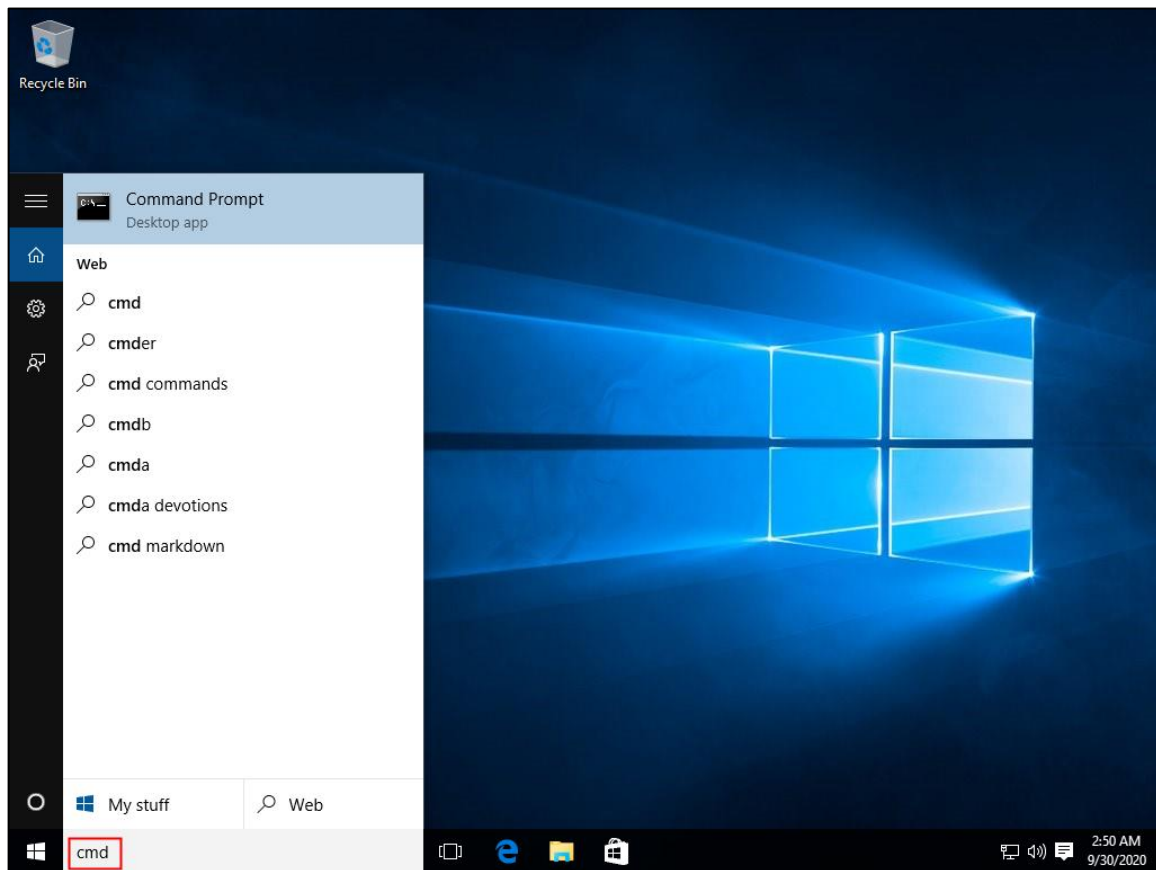
A terminal window titled 'john@debian: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal shows the following commands and output:

```
root@debian:~# service vsftpd restart
root@debian:~# service vsftpd status
● vsftpd.service - vsftpd FTP server
   Loaded: loaded (/lib/systemd/system/vsftpd.service; enabled; v
   Active: active (running) since Wed 2020-09-30 06:22:55 EDT; 29
   Process: 3020 ExecStartPre=/bin/mkdir -p /var/run/vsftpd/empty
   Main PID: 3021 (vsftpd)
```

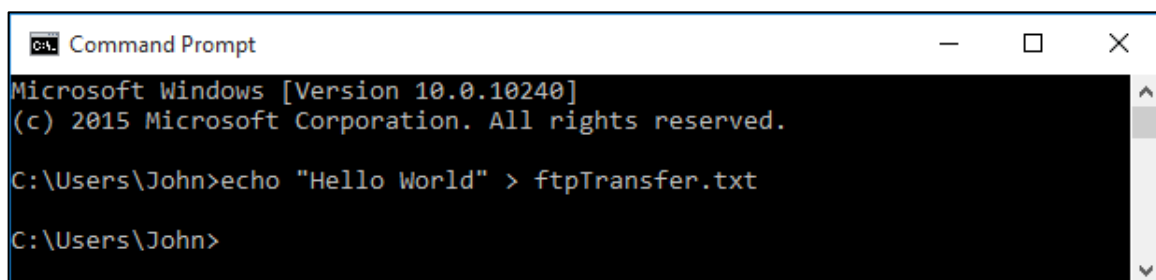
## Lab Task 4: Connect to the FTP Server

In this task, you will connect from the Windows machine to the FTP service installed on the Debian machine.

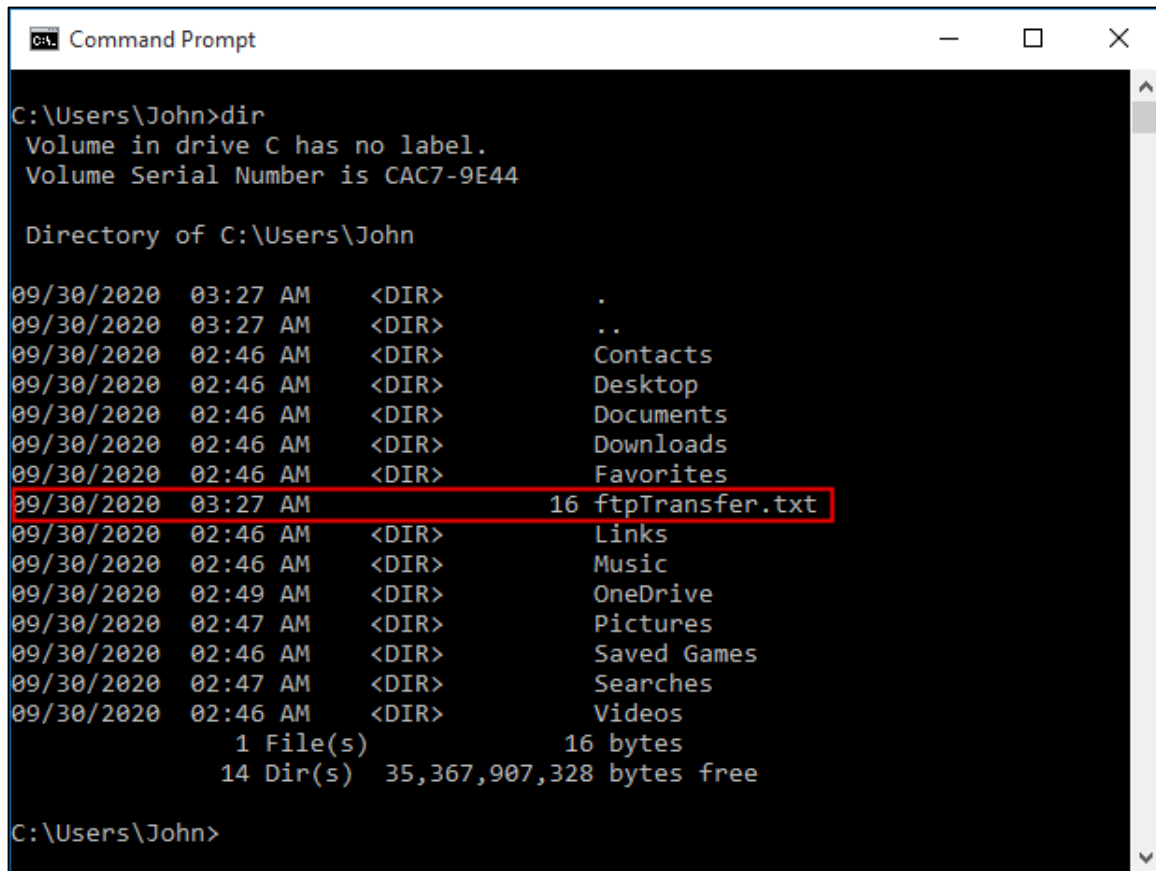
- 1 In the Windows machine, open the CMD.



- 2 Use the command `echo "Hello World" > ftpTransfer.txt` to create a new file with the "Hello World" text.



- 3 In the CMD, use the command **dir** to verify the file was created.



```
Command Prompt

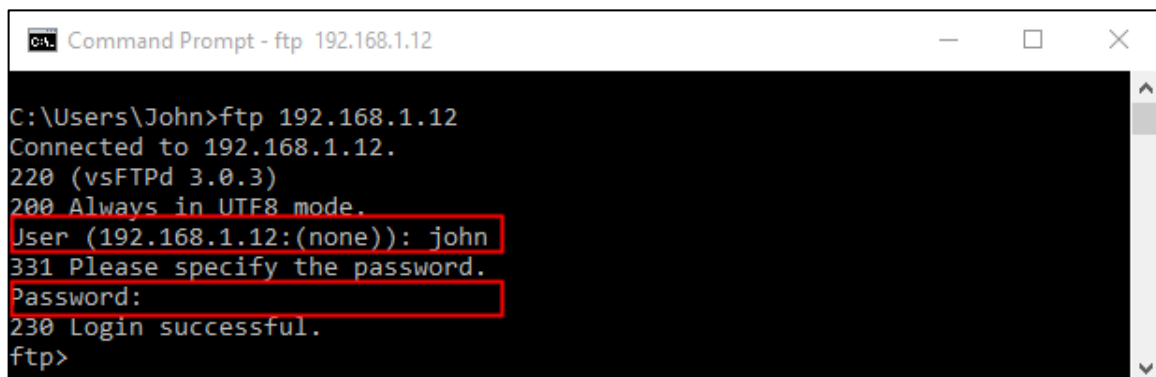
C:\Users\John>dir
Volume in drive C has no label.
Volume Serial Number is CAC7-9E44

Directory of C:\Users\John

09/30/2020  03:27 AM    <DIR>          .
09/30/2020  03:27 AM    <DIR>          ..
09/30/2020  02:46 AM    <DIR>          Contacts
09/30/2020  02:46 AM    <DIR>          Desktop
09/30/2020  02:46 AM    <DIR>          Documents
09/30/2020  02:46 AM    <DIR>          Downloads
09/30/2020  02:46 AM    <DIR>          Favorites
09/30/2020  03:27 AM             16 ftpTransfer.txt
09/30/2020  02:46 AM    <DIR>          Links
09/30/2020  02:46 AM    <DIR>          Music
09/30/2020  02:49 AM    <DIR>          OneDrive
09/30/2020  02:47 AM    <DIR>          Pictures
09/30/2020  02:46 AM    <DIR>          Saved Games
09/30/2020  02:47 AM    <DIR>          Searches
09/30/2020  02:46 AM    <DIR>          Videos
               1 File(s)              16 bytes
              14 Dir(s) 35,367,907,328 bytes free

C:\Users\John>
```

- 4 In the CMD, use the command **ftp <Debian IP>** to open the connection to the FTP server. Specify your username and password when requested.

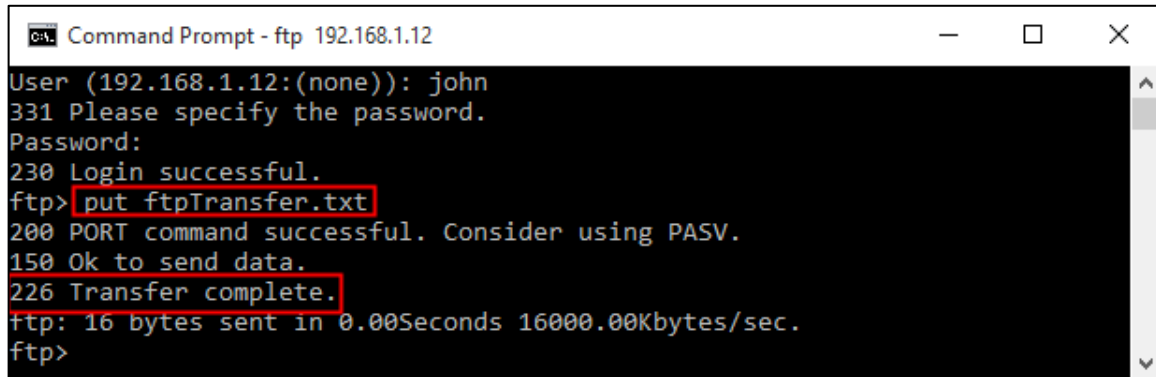


```
Command Prompt - ftp 192.168.1.12

C:\Users\John>ftp 192.168.1.12
Connected to 192.168.1.12.
220 (vsFTPd 3.0.3)
200 Always in UTF8 mode.
User (192.168.1.12:(none)): john
331 Please specify the password.
Password:
230 Login successful.
ftp>
```

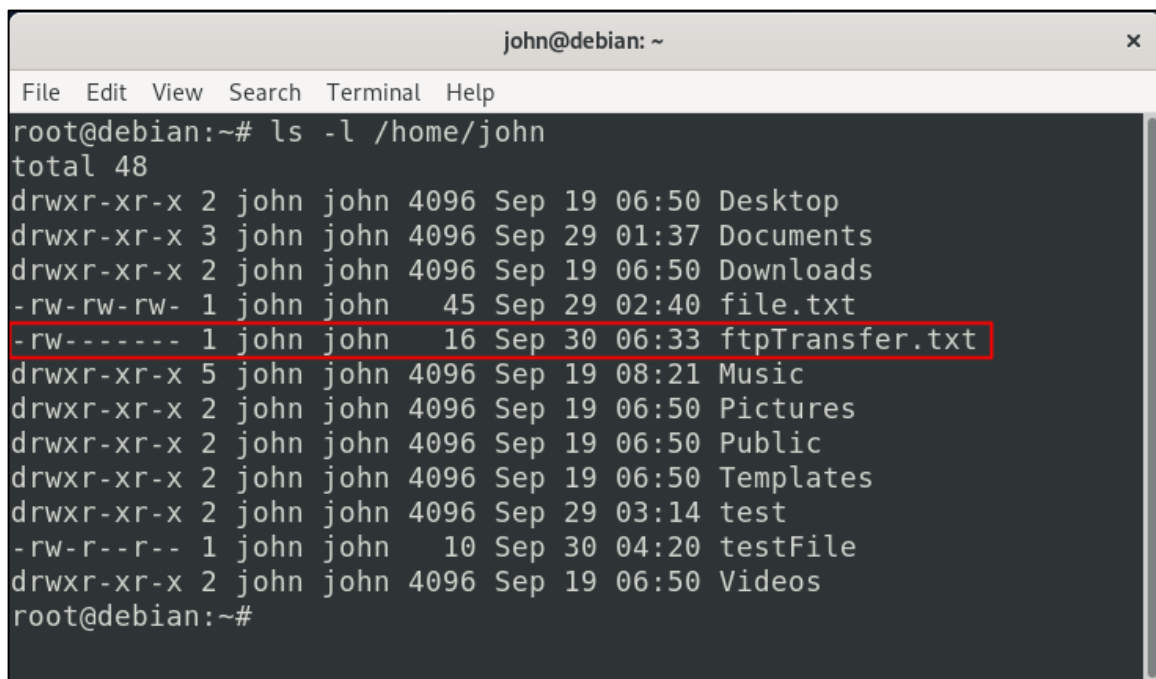


- 5 Use the command ***put ftpTransfer.txt*** to upload the ***ftpTransfer.txt*** file to the FTP server.



```
Command Prompt - ftp 192.168.1.12
User (192.168.1.12:(none)): john
331 Please specify the password.
Password:
230 Login successful.
ftp> put ftpTransfer.txt
200 PORT command successful. Consider using PASV.
150 Ok to send data.
226 Transfer complete.
ftp: 16 bytes sent in 0.00Seconds 16000.00Kbytes/sec.
ftp>
```

- 6 In the Debian machine, check if the file exists in your home directory by running the ***ls -l /home/[user]*** command.



```
john@debian: ~
File Edit View Search Terminal Help
root@debian:~# ls -l /home/john
total 48
drwxr-xr-x 2 john john 4096 Sep 19 06:50 Desktop
drwxr-xr-x 3 john john 4096 Sep 29 01:37 Documents
drwxr-xr-x 2 john john 4096 Sep 19 06:50 Downloads
-rw-rw-rw- 1 john john 45 Sep 29 02:40 file.txt
-rw----- 1 john john 16 Sep 30 06:33 ftpTransfer.txt
drwxr-xr-x 5 john john 4096 Sep 19 08:21 Music
drwxr-xr-x 2 john john 4096 Sep 19 06:50 Pictures
drwxr-xr-x 2 john john 4096 Sep 19 06:50 Public
drwxr-xr-x 2 john john 4096 Sep 19 06:50 Templates
drwxr-xr-x 2 john john 4096 Sep 29 03:14 test
-rw-r--r-- 1 john john 10 Sep 30 04:20 testFile
drwxr-xr-x 2 john john 4096 Sep 19 06:50 Videos
root@debian:~#
```