

Install and Configure Samba File Server on Ubuntu for File Sharing

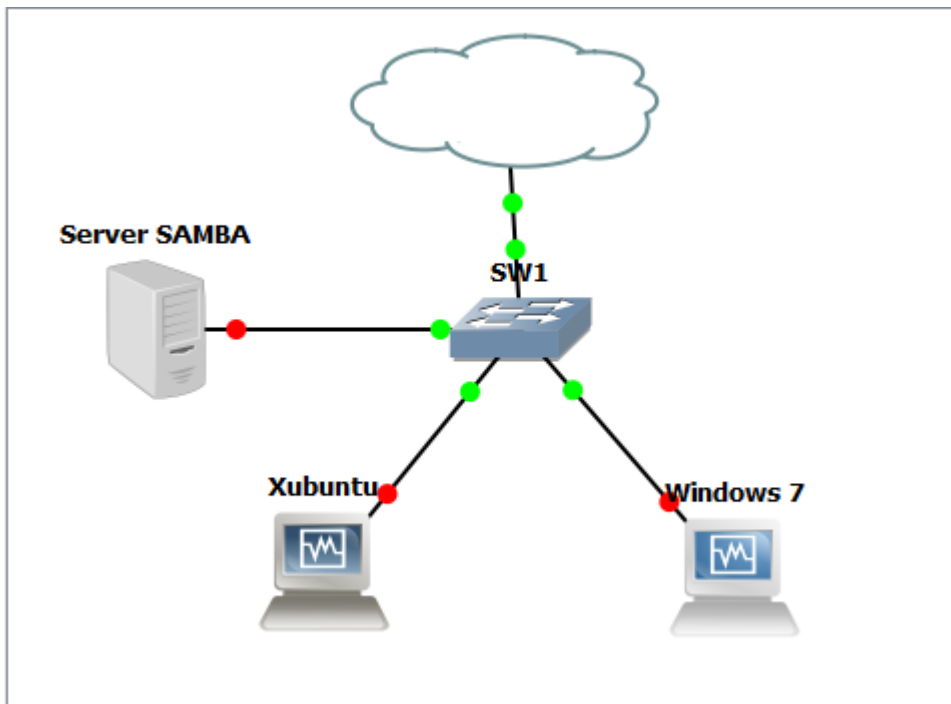


Table of Contents

- [Install and Configure Samba File Server on Ubuntu for File Sharing](#)
 - [Table of Contents](#)
 - [Introduction](#)
 - [How to Install Samba Server on Ubuntu](#)
 - [Create a Private Samba Share](#)
 - [Explanation:](#)
 - [How to Create a Samba Public Share Without Authentication](#)
 - [Accessing Samba Shared Folder From Windows](#)
 - [Connecting Error](#)
 - [Accessing Samba Share Folder in Nautilus File Manager on Linux](#)
 - [Work Cited](#)

Introduction

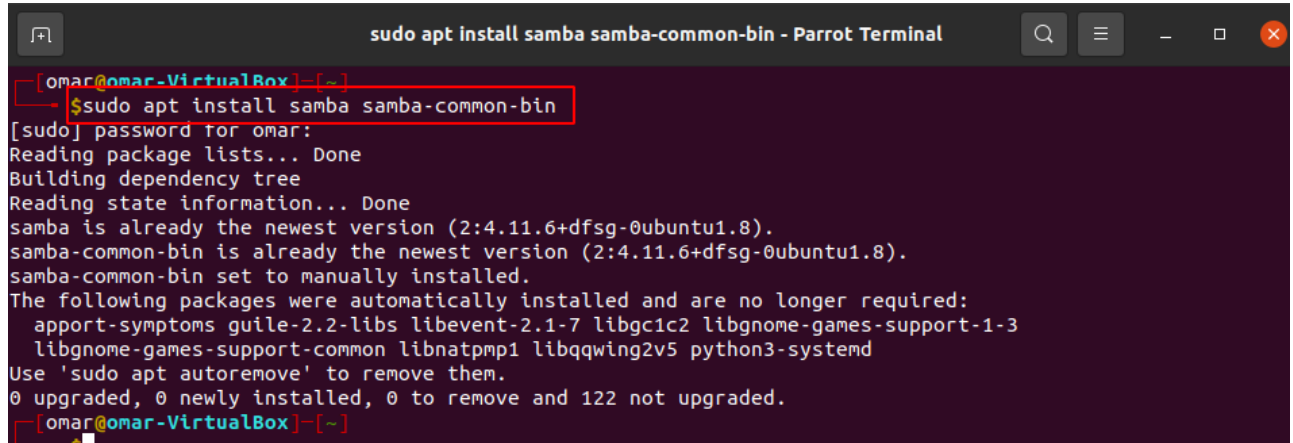
In this tutorial, we're going to learn how to install and configure a Samba server on Ubuntu to share files on the local network. Samba is a free and open-source SMB/CIFS protocol implementation for Unix and Linux that allows for file and print sharing between Unix/Linux, Windows, and macOS machines in a local area network.

Samba is usually installed and run on Linux. It comprises several programs that serve different but related purposes, the most important two of which are:

- **smbd**: provides SMB/CIFS service (file sharing and printing), can also act as a Windows domain controller.
- **nmbd**: This daemon provides NetBIOS name service, listens for name-server requests. It also allows the Samba server to be found by other computers on the network.

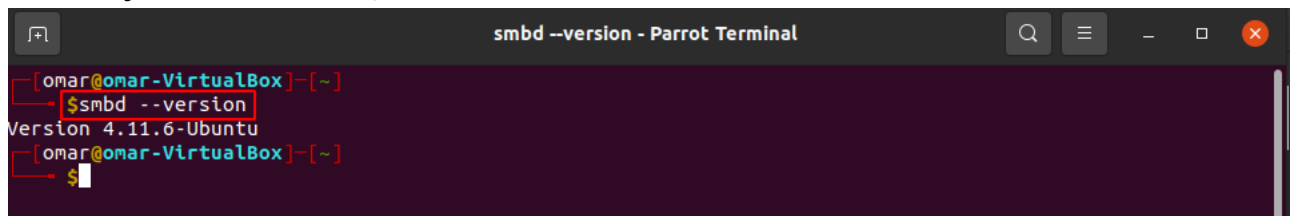
How to Install Samba Server on Ubuntu

- Samba is included in most Linux distributions. To install Samba on Ubuntu, simply run the following command in terminal. **sudo apt install samba samba-common-bin**

A terminal window titled "sudo apt install samba samba-common-bin - Parrot Terminal" showing the command being executed. The output indicates that both packages are already the newest versions and were manually installed. It also lists several automatically installed packages that are no longer required and can be removed with 'sudo apt autoremove'.

```
[omar@omar-VirtualBox]~$ sudo apt install samba samba-common-bin
[sudo] password for omar:
Reading package lists... Done
Building dependency tree
Reading state information... Done
samba is already the newest version (2:4.11.6+dfsg-0ubuntu1.8).
samba-common-bin is already the newest version (2:4.11.6+dfsg-0ubuntu1.8).
samba-common-bin set to manually installed.
The following packages were automatically installed and are no longer required:
  apport-symptoms guile-2.2-libs libevent-2.1-7 libgc1c2 libgnome-games-support-1-3
  libgnome-games-support-common libnatpmp1 libqqwing2v5 python3-systemd
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 122 not upgraded.
[omar@omar-VirtualBox]~$
```

- To check your Samba version, run: **smbd --version**

A terminal window titled "smbd --version - Parrot Terminal" showing the command being executed. The output displays the version as 4.11.6-Ubuntu.

```
[omar@omar-VirtualBox]~$ smbd --version
Version 4.11.6-Ubuntu
[omar@omar-VirtualBox]~$
```

- To check if Samba service is running, issue the following command. **systemctl status smb nmbd**

```

systemctl status smb nmbd - Parrot Terminal

omar@omar-VirtualBox:~$ systemctl status smb nmbd
● smbd.service - Samba SMB Daemon
   Loaded: loaded (/lib/systemd/system/smbd.service; enabled; vendor preset: enabled)
   Active: active (running) since Sun 2021-05-16 01:21:14 EDT; 15min ago
     Docs: man:smbd(8)
           man:samba(7)
           man:smb.conf(5)
   Process: 880 ExecStartPre=/usr/share/samba/update-apparmor-samba-profile (code=exited, status=0/SUCCESS)
   Main PID: 885 (smbd)
    Status: "smbd: ready to serve connections..."
     Tasks: 4 (limit: 2315)
    Memory: 11.5M
    CGroup: /system.slice/smbd.service
            └─885 /usr/sbin/smbd --foreground --no-process-group
              └─887 /usr/sbin/smbd --foreground --no-process-group
                └─888 /usr/sbin/smbd --foreground --no-process-group
                  └─889 /usr/sbin/smbd --foreground --no-process-group

May 16 01:21:14 omar-VirtualBox systemd[1]: Starting Samba SMB Daemon...
May 16 01:21:14 omar-VirtualBox systemd[1]: Started Samba SMB Daemon.

● nmbd.service - Samba NMB Daemon
   Loaded: loaded (/lib/systemd/system/nmbd.service; enabled; vendor preset: enabled)
   Active: active (running) since Sun 2021-05-16 01:21:14 EDT; 16min ago
     Docs: man:nmbd(8)
           man:samba(7)
           man:smb.conf(5)
   Main PID: 808 (nmbd)
    Status: "nmbd: ready to serve connections..."
     Tasks: 1 (limit: 2315)
    Memory: 7.4M
    CGroup: /system.slice/nmbd.service
            └─808 /usr/sbin/nmbd --foreground --no-process-group

May 16 01:21:14 omar-VirtualBox systemd[1]: Starting Samba NMB Daemon...
May 16 01:21:14 omar-VirtualBox systemd[1]: Started Samba NMB Daemon.
lines 1-35/35 (END)

```

- To start these two services, issue the following command: **sudo systemctl start smb nmbd**

```

sudo systemctl start smb nmbd - Parrot Terminal

omar@omar-VirtualBox:~$ sudo systemctl start smb nmbd
omar@omar-VirtualBox:~$
$

```

- Once started, **smbd** will be listening on TCP port 139 and 445. **nmbd** will be listening on UDP port 137 and 138.
- TCP 139: used for file and printer sharing and other operations.
- TCP 445: the NetBIOS-less CIFS port.
- UDP 137: used for NetBIOS network browsing.
- UDP 138: used for NetBIOS name service.
- If you have enabled the UFW firewall on Ubuntu, then you need to open the above ports in the firewall with the following command. **sudo ufw allow samba**

```

sudo ufw allow samba - Parrot Terminal

omar@omar-VirtualBox:~$ sudo ufw allow samba
Skipping adding existing rule
Skipping adding existing rule (v6)
omar@omar-VirtualBox:~$
$

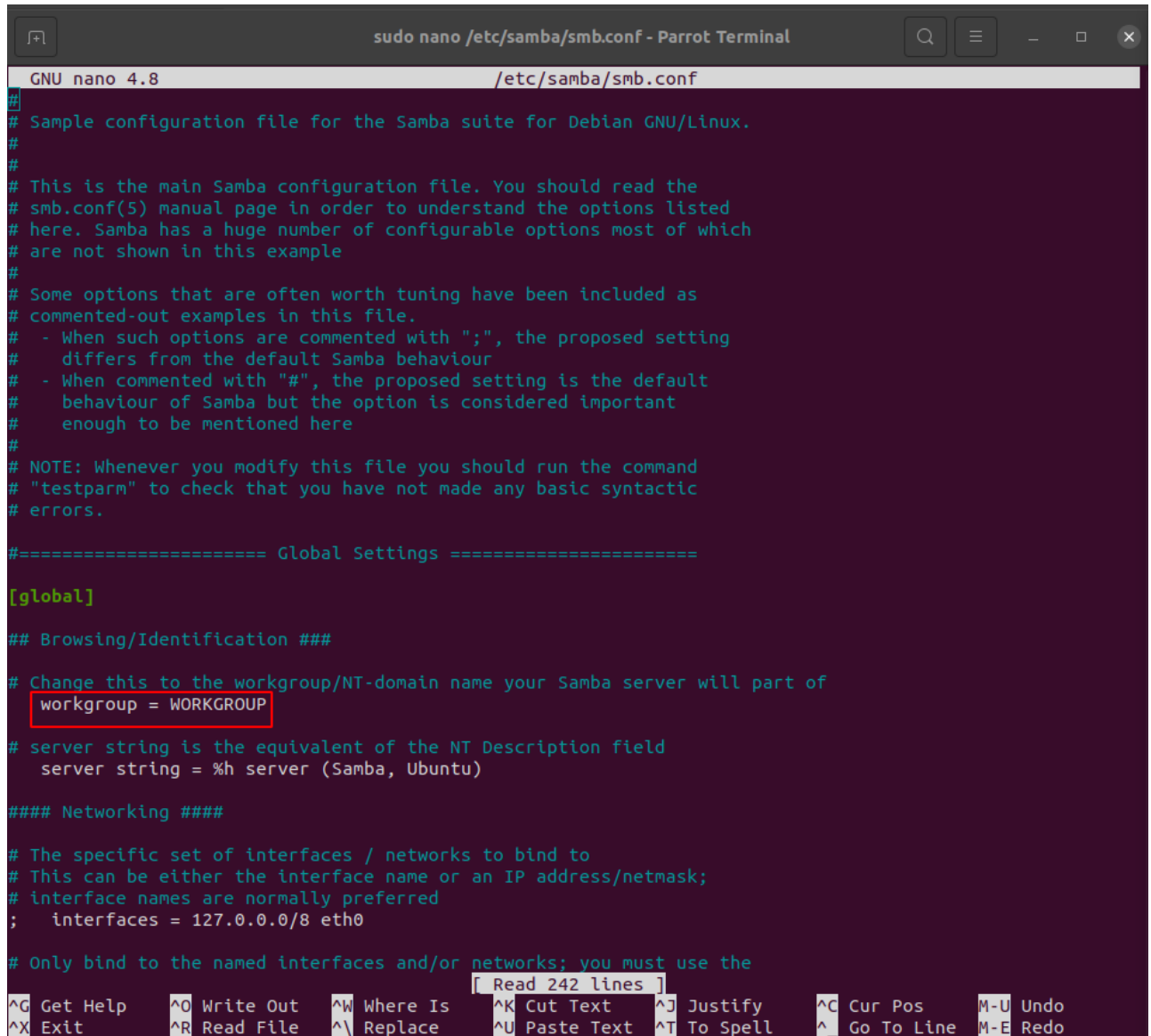
```

Create a Private Samba Share

In this section, we will see how to create a private Samba share that requires the client to enter username and password in order to gain access. The main Samba configuration file is located at: `/etc/samba/smb.conf`. You can edit it in terminal with a command line text editor like nano:

`sudo nano /etc/samba/smb.conf`

- In the **[global]** section, make sure the value of **workgroup** is the same with the **workgroup** settings of Windows computers.



```
sudo nano /etc/samba/smb.conf - Parrot Terminal
GNU nano 4.8 /etc/samba/smb.conf
#
# Sample configuration file for the Samba suite for Debian GNU/Linux.
#
#
# This is the main Samba configuration file. You should read the
# smb.conf(5) manual page in order to understand the options listed
# here. Samba has a huge number of configurable options most of which
# are not shown in this example
#
# Some options that are often worth tuning have been included as
# commented-out examples in this file.
# - When such options are commented with ";", the proposed setting
#   differs from the default Samba behaviour
# - When commented with "#", the proposed setting is the default
#   behaviour of Samba but the option is considered important
#   enough to be mentioned here
#
# NOTE: Whenever you modify this file you should run the command
# "testparm" to check that you have not made any basic syntactic
# errors.

===== Global Settings =====

[global]

## Browsing/Identification ###

# Change this to the workgroup/NT-domain name your Samba server will part of
workgroup = WORKGROUP

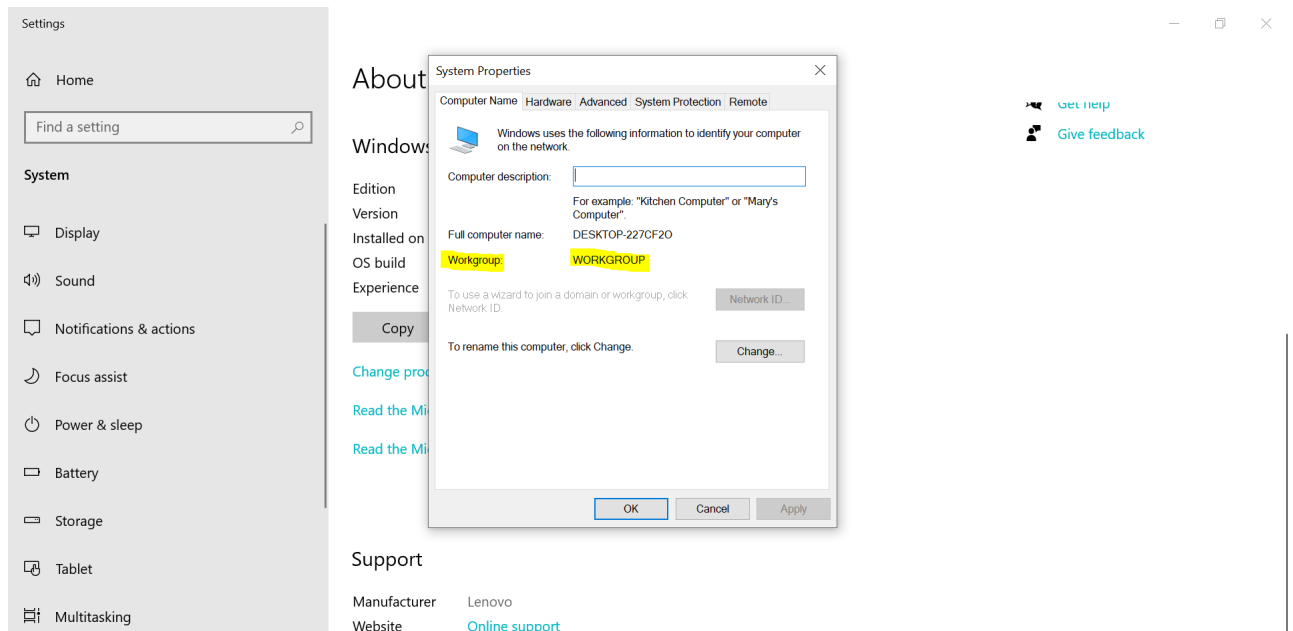
# server string is the equivalent of the NT Description field
server string = %h server (Samba, Ubuntu)

#### Networking ####

# The specific set of interfaces / networks to bind to
# This can be either the interface name or an IP address/netmask;
# interface names are normally preferred
; interfaces = 127.0.0.0/8 eth0

# Only bind to the named interfaces and/or networks; you must use the
[ Read 242 lines ]
^G Get Help  ^O Write Out  ^W Where Is   ^K Cut Text   ^J Justify    ^C Cur Pos    M-U Undo
^X Exit      ^R Read File  ^\ Replace    ^U Paste Text ^T To Spell   ^_ Go To Line  M-E Redo
```

- You can find the setting on your Windows computer by going to Control Panel > System and Security > System.



- Then scroll down to the bottom of the file. (In nano text editor, you can achieve that by pressing CTRL+W then CTRL+V.) Add a new section like below. [Private] comment = needs username and password to access path = /srv/samba/private/ browseable = yes guest ok = no writable = yes valid users = @samba

```
fg - Parrot Terminal
GNU nano 4.8 /etc/samba/smb.conf Modified
# The path below should be writable by all users so that their
# profile directory may be created the first time they log on
;[profiles]
; comment = Users profiles
; path = /home/samba/profiles
; guest ok = no
; browseable = no
; create mask = 0600
; directory mask = 0700

[printers]
comment = All Printers
browseable = no
path = /var/spool/samba
printable = yes
guest ok = no
read only = yes
create mask = 0700

# Windows clients look for this share name as a source of downloadable
# printer drivers
[print$]
comment = Printer Drivers
path = /var/lib/samba/printers
browseable = yes
read only = yes
guest ok = no

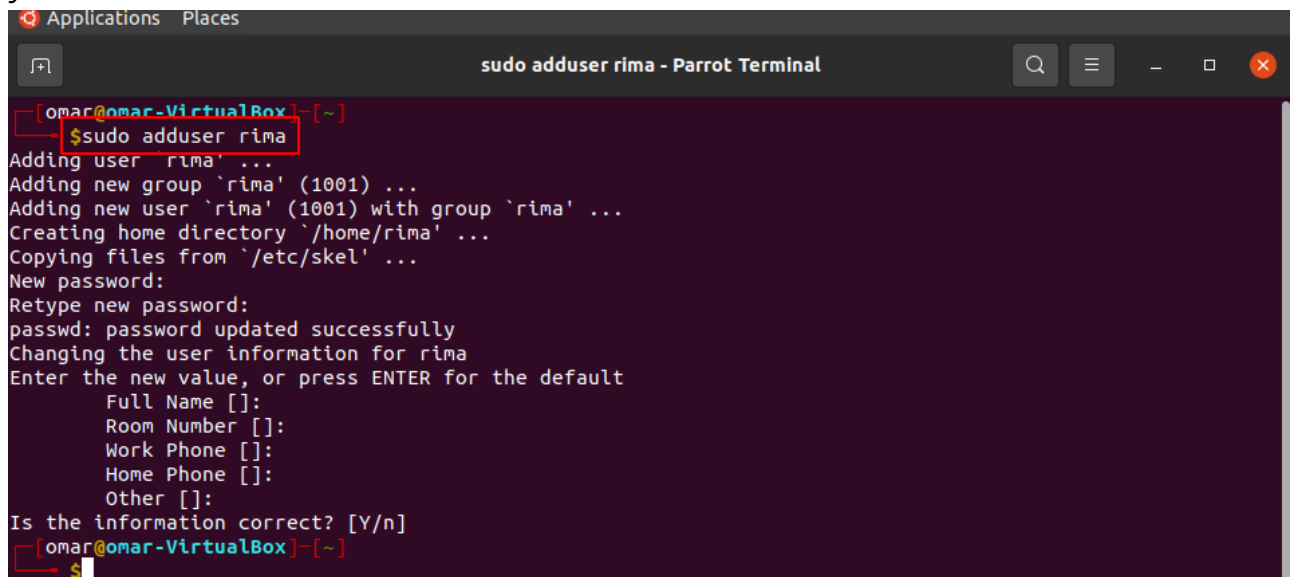
# Uncomment to allow remote administration of Windows print drivers.
# You may need to replace 'lpadmin' with the name of the group your
# admin users are members of.
# Please note that you also need to set appropriate Unix permissions
# to the drivers directory for these users to have write rights in it
; write list = root, @lpadmin

[Private]
comment = needs username and password to access
path = /srv/samba/private/
browseable = yes
guest ok = no
writable = yes
valid users = @samba

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos M-U Undo
^X Exit ^R Read File ^A Replace ^U Paste Text ^T To Spell ^_ Go To Line M-E Redo
```

Explanation:

- **Private** is the folder name that will be displayed on the Windows network.
- The comment is a description for the shared folder.
- The path parameter specifies the path to the shared folder. I use **/srv/samba/private/** as an example. You can also use a folder in your home directory.
- **browseable = yes:** Allow other computers in the network to see the Samba server and Samba share. If set to no, users have to know the name of the Samba server and then manually enter a path in the file manager to access the shared folder.
- **guest ok = no:** Disable guest access. In other words, you need to enter username and password on the client computer to access the shared folder.
- **writable = yes:** Grants both read and write permission to clients.
- **valid users = @samba:** Only users in the samba group are allowed to access this Samba share.
- Save and close the file. (To save the file in nano text editor, press Ctrl+O, then press Enter to confirm the file name to write. To close the file, press Ctrl+X.) Now we need to create a Samba user. First, we need to create a standard Linux user account with the following command. Replace username with your desired username. **sudo adduser username**



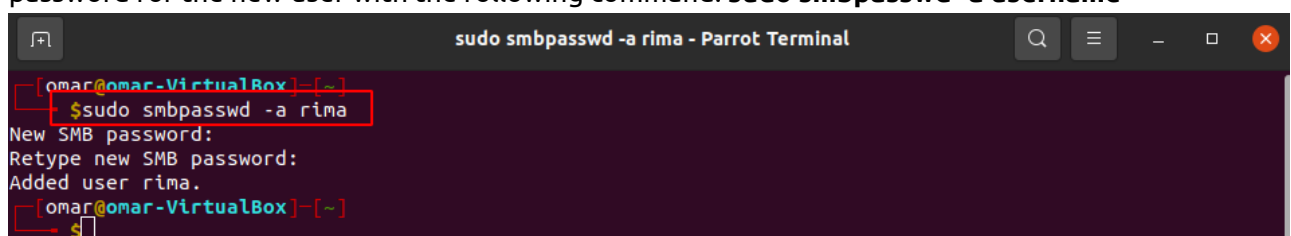
```

Applications  Places
sudo adduser rima - Parrot Terminal

[omar@omar-VirtualBox]~$ sudo adduser rima
Adding user `rima' ...
Adding new group `rima' (1001) ...
Adding new user `rima' (1001) with group `rima' ...
Creating home directory `/home/rima' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for rima
Enter the new value, or press ENTER for the default
  Full Name []:
  Room Number []:
  Work Phone []:
  Home Phone []:
  Other []:
Is the information correct? [Y/n]
[omar@omar-VirtualBox]~$

```

- You will be prompted to set an Unix password. After that, you also need to set a separate Samba password for the new user with the following command: **sudo smbpasswd -a username**



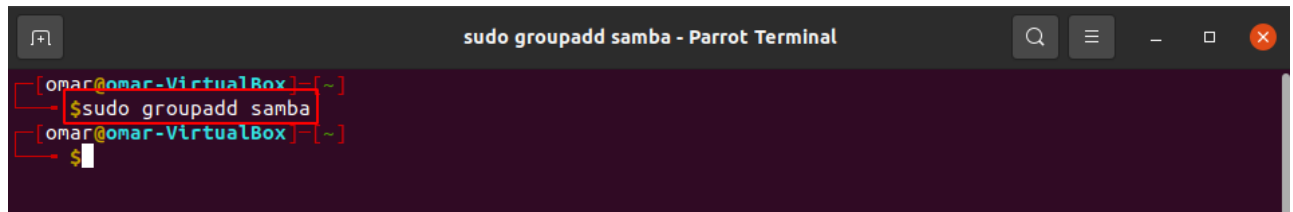
```

Applications  Places
sudo smbpasswd -a rima - Parrot Terminal

[omar@omar-VirtualBox]~$ sudo smbpasswd -a rima
New SMB password:
Retype new SMB password:
Added user rima.
[omar@omar-VirtualBox]~$

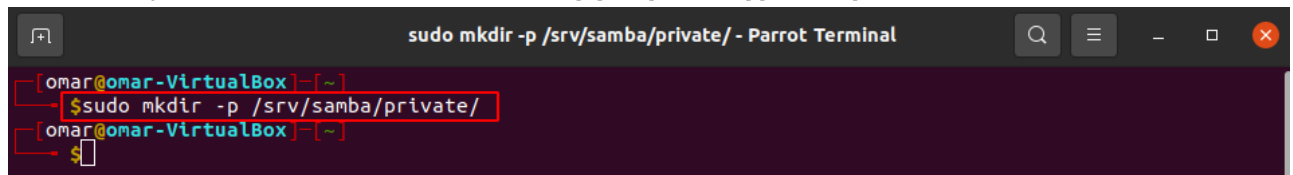
```

- Create the samba group. **sudo groupadd samba**



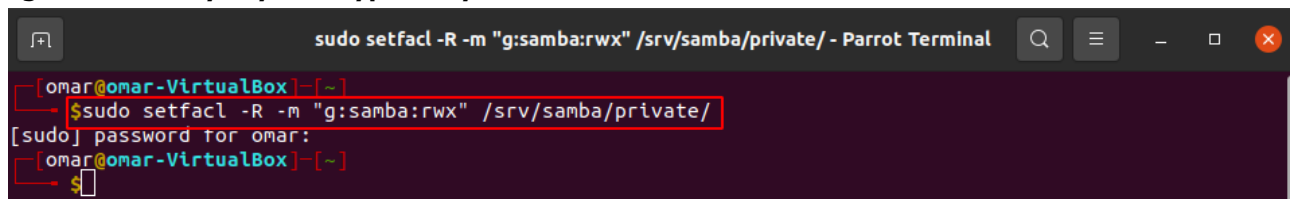
```
sudo groupadd samba - Parrot Terminal
[omar@omar-VirtualBox] ~
$ sudo groupadd samba
[omar@omar-VirtualBox] ~
$
```

- And add this user to the samba group. **sudo gpasswd -a username samba user-group**
- Create the private share folder. **sudo mkdir -p /srv/samba/private/**



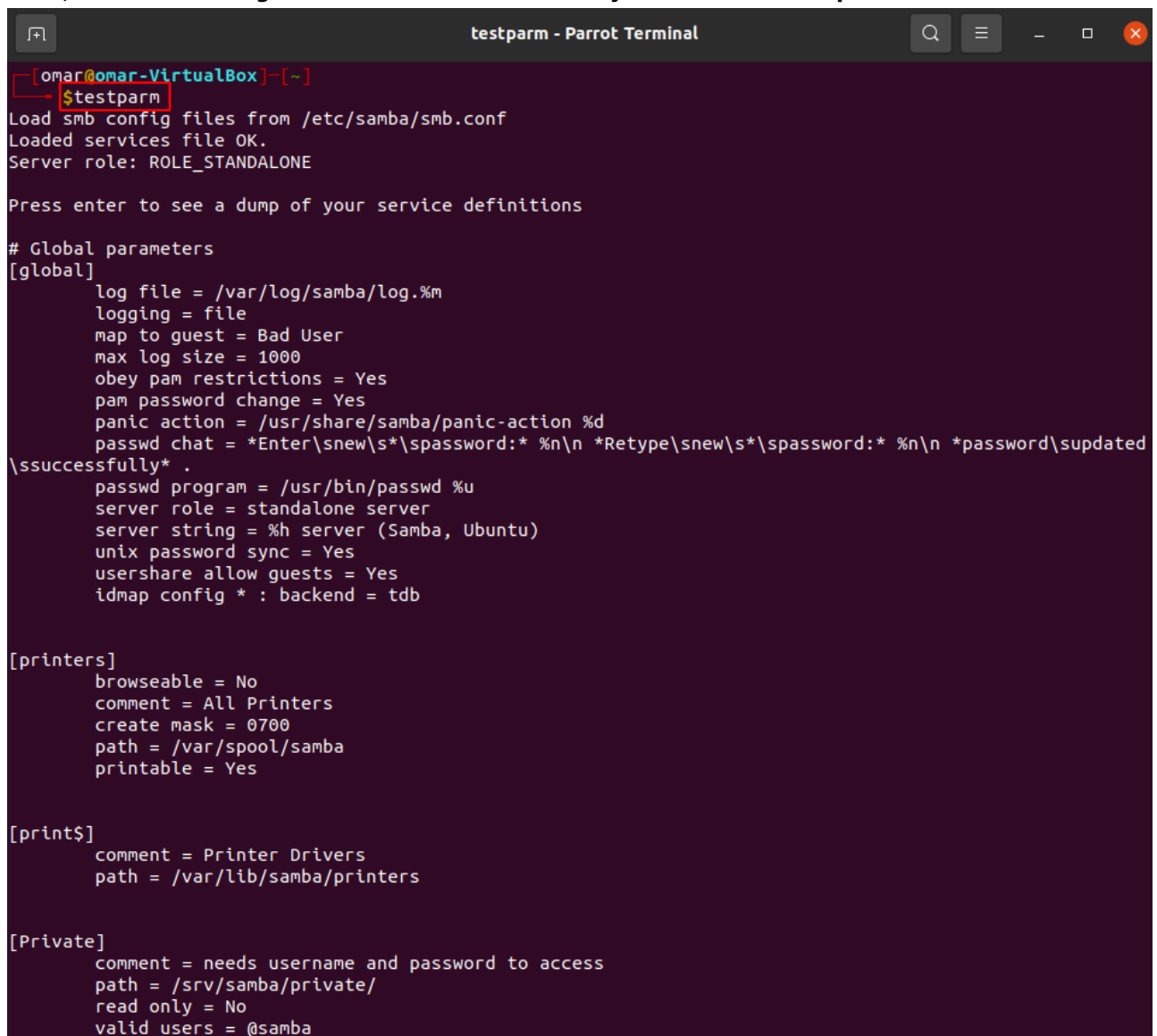
```
sudo mkdir -p /srv/samba/private/ - Parrot Terminal
[omar@omar-VirtualBox] ~
$ sudo mkdir -p /srv/samba/private/
[omar@omar-VirtualBox] ~
$
```

- The samba group needs to have read, write and execute permission on the shared folder. You can grant these permissions by executing the following command. (If your system doesn't have the **setfacl** command, you need to install the **acl** package with **sudo apt install acl**.) **sudo setfacl -R -m "g:samba:rwx" /srv/samba/private/**



```
sudo setfacl -R -m "g:samba:rwx" /srv/samba/private/ - Parrot Terminal
[omar@omar-VirtualBox] ~
$ sudo setfacl -R -m "g:samba:rwx" /srv/samba/private/
[sudo] password for omar:
[omar@omar-VirtualBox] ~
$
```

- Next, run the following command to check if there's syntactic errors. **testparm**



```

[omar@omar-VirtualBox]~$ testparm
Load smb config files from /etc/samba/smb.conf
Loaded services file OK.
Server role: ROLE_STANDALONE

Press enter to see a dump of your service definitions

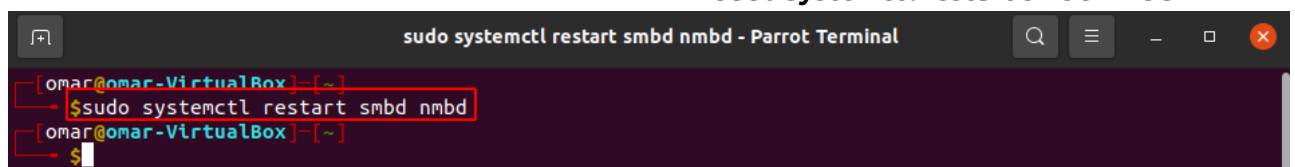
# Global parameters
[global]
    log file = /var/log/samba/log.%m
    logging = file
    map to guest = Bad User
    max log size = 1000
    obey pam restrictions = Yes
    pam password change = Yes
    panic action = /usr/share/samba/panic-action %d
    passwd chat = *Enter\snew\s*\spassword:* %n\n *Retye\snew\s*\spassword:* %n\n *password\supdated\ssuccessfully* .
    passwd program = /usr/bin/passwd %u
    server role = standalone server
    server string = %h server (Samba, Ubuntu)
    unix password sync = Yes
    usershare allow guests = Yes
    idmap config * : backend = tdb

[printers]
    browseable = No
    comment = All Printers
    create mask = 0700
    path = /var/spool/samba
    printable = Yes

[print$]
    comment = Printer Drivers
    path = /var/lib/samba/printers

[Private]
    comment = needs username and password to access
    path = /srv/samba/private/
    read only = No
    valid users = @samba
  
```

- Now all left to do is to restart smbd and nmbd daemon. **sudo systemctl restart smbd nmbd**



```

[omar@omar-VirtualBox]~$ sudo systemctl restart smbd nmbd
[omar@omar-VirtualBox]~$
  
```

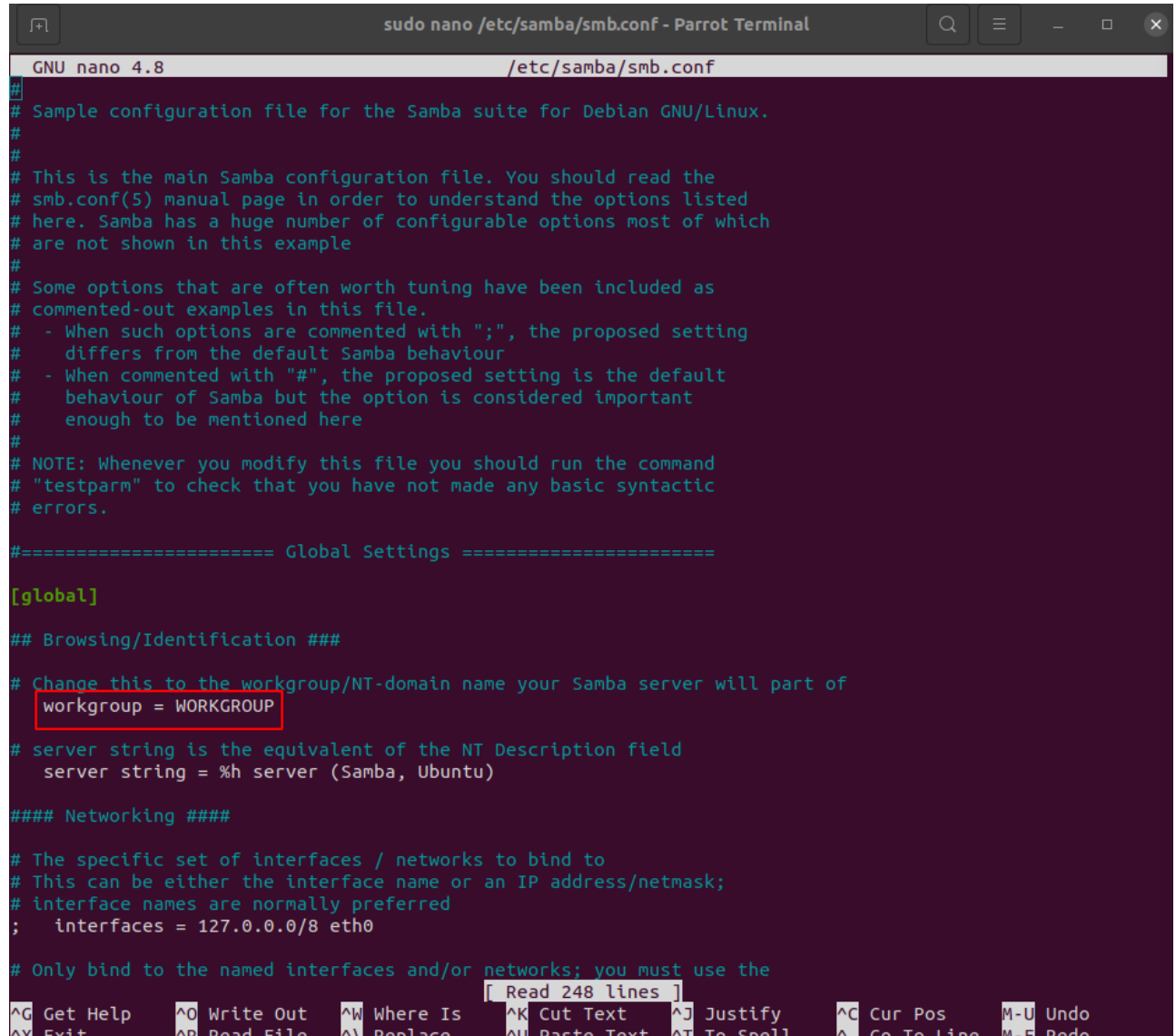
How to Create a Samba Public Share Without Authentication

To create a public share without requiring username and password, the following conditions must be met.

- Set **security = user** in the global section of Samba configuration file. Although you can create a public share with the security = share mode, but this security mode is deprecated. It is strongly suggested that you avoid share mode.
- Set map to **guest = bad user** in the global section of Samba configuration file. This will cause **smbd** to use a guest account to authenticate clients who don't have registered account on the Samba server. Since it's a guest account, Samba clients don't need to enter password.
- Set guest **ok = yes** in the share definition to allow guest access.
- Grant read, write and execute permission of the public folder to the **nobody** account, which is the default guest account.

As a matter of fact, the first two conditions are already met as Samba by default uses these two settings.

- Here's a step-by-step guide to create a public share. First, open and edit the Samba configuration file.
sudo nano /etc/samba/smb.conf
- In the [global] section, make sure the value of workgroup is the same with the workgroup settings of Windows computers.



```
GNU nano 4.8 /etc/samba/smb.conf
#
# Sample configuration file for the Samba suite for Debian GNU/Linux.
#
#
# This is the main Samba configuration file. You should read the
# smb.conf(5) manual page in order to understand the options listed
# here. Samba has a huge number of configurable options most of which
# are not shown in this example
#
# Some options that are often worth tuning have been included as
# commented-out examples in this file.
# - When such options are commented with ";", the proposed setting
# differs from the default Samba behaviour
# - When commented with "#", the proposed setting is the default
# behaviour of Samba but the option is considered important
# enough to be mentioned here
#
# NOTE: Whenever you modify this file you should run the command
# "testparm" to check that you have not made any basic syntactic
# errors.

===== Global Settings =====

[global]

## Browsing/Identification ##

# Change this to the workgroup/NT-domain name your Samba server will part of
workgroup = WORKGROUP

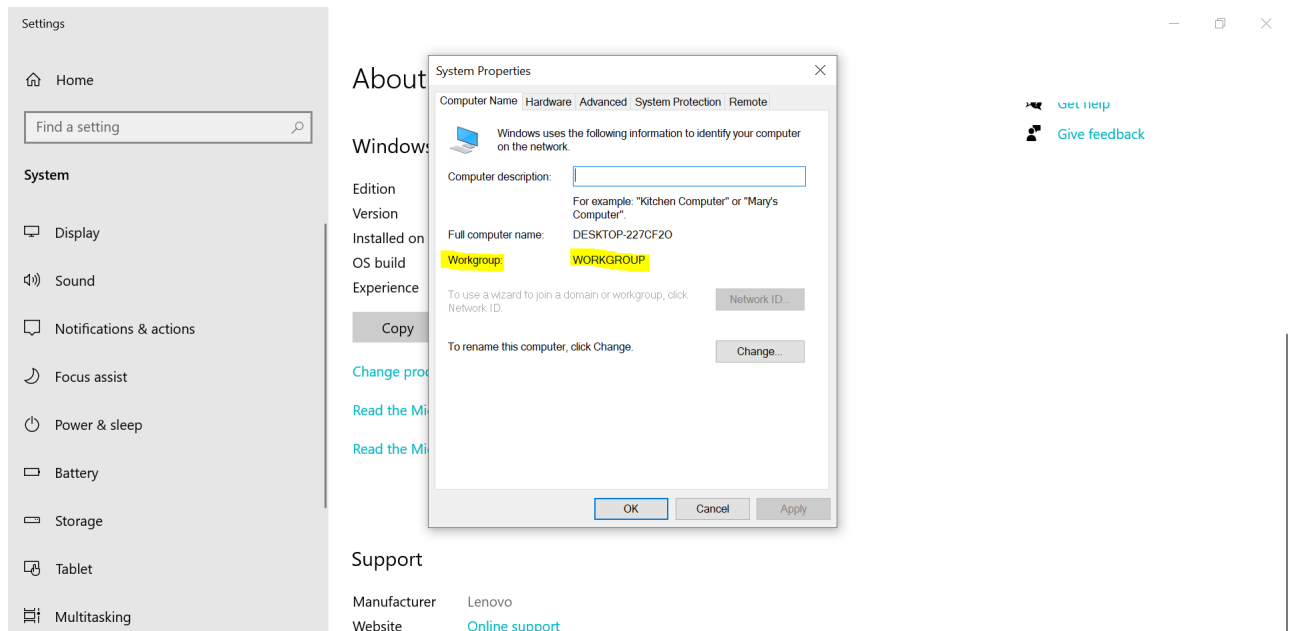
# server string is the equivalent of the NT Description field
server string = %h server (Samba, Ubuntu)

#### Networking ####

# The specific set of interfaces / networks to bind to
# This can be either the interface name or an IP address/netmask;
# interface names are normally preferred
; interfaces = 127.0.0.0/8 eth0

# Only bind to the named interfaces and/or networks; you must use the
```

- You can find the setting on your Windows computer by going to Control Panel > System and Security > System.



- Then scroll down to the bottom of the file and paste the following lines.

[public] comment = public share, no need to enter username and password path = /srv/samba/public/
browseable = yes writable = yes guest ok = yes

```

GNU nano 4.8 /etc/samba/smb.conf Modified
; create mask = 0600
; directory mask = 0700

[printers]
comment = All Printers
browseable = no
path = /var/spool/samba
printable = yes
guest ok = no
read only = yes
create mask = 0700

# Windows clients look for this share name as a source of downloadable
# printer drivers
[print$]
comment = Printer Drivers
path = /var/lib/samba/printers
browseable = yes
read only = yes
guest ok = no
# Uncomment to allow remote administration of Windows print drivers.
# You may need to replace 'lpadmin' with the name of the group your
# admin users are members of.
# Please note that you also need to set appropriate Unix permissions
# to the drivers directory for these users to have write rights in it
; write list = root, @lpadmin
[Private]
comment = needs username and password to access
path = /srv/samba/private/
browseable = yes
guest ok = no
writable = yes
valid users = @samba

[public]
comment = public share, no need to enter username and password
path = /srv/samba/public/
browseable = yes
writable = yes
guest ok = yes

```

- Save and close the file. Next, create the **/srv/samba/public/** folder. **sudo mkdir -p /srv/samba/public**

```

sudo mkdir -p /srv/samba/public - Parrot Terminal

[omar@omar-VirtualBox]~$ sudo mkdir -p /srv/samba/public
[sudo] password for omar:
[omar@omar-VirtualBox]~$

```

- Then make sure the nobody account has read, write and execute permission on the public folder by executing the following command. (If your system doesn't have the setfacl command, you need to install the acl package with **sudo apt install acl**.) **sudo setfacl -R -m "u:nobody:rwx" /srv/samba/public/**

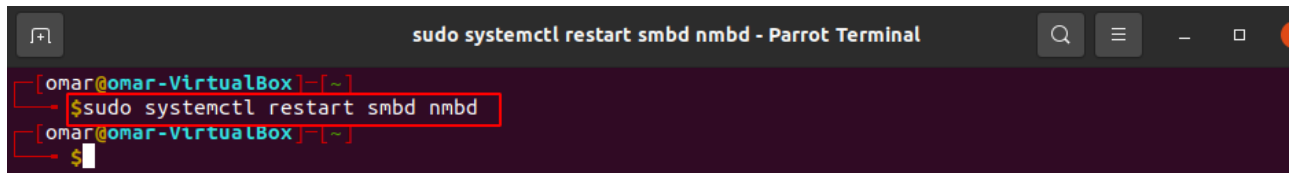
```

sudo setfacl -R -m "u:nobody:rwx" /srv/samba/public/ - Parrot Terminal

[omar@omar-VirtualBox]~$ sudo setfacl -R -m "u:nobody:rwx" /srv/samba/public/
[omar@omar-VirtualBox]~$

```

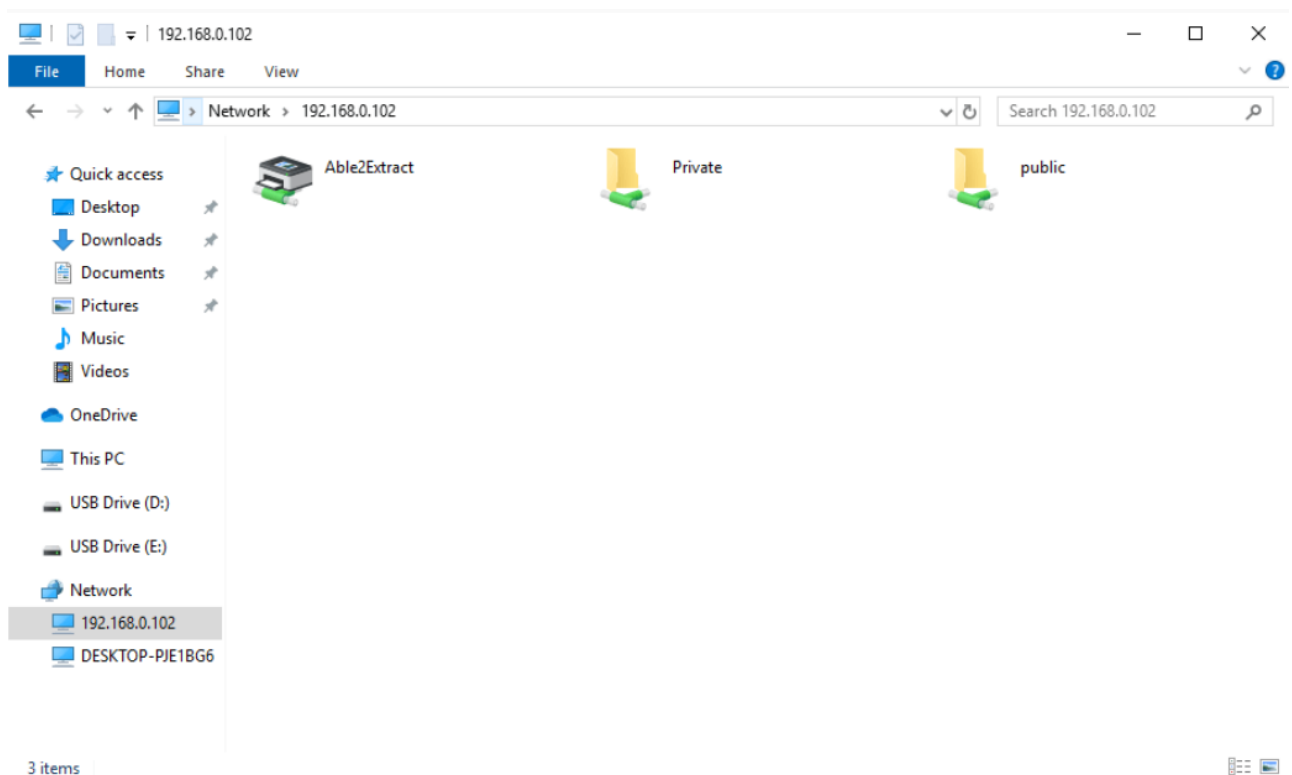
- Restart smbd and nmbd. **sudo systemctl restart smbd nmbd**



```
sudo systemctl restart smbd nmbd - Parrot Terminal
omar@omar-VirtualBox: ~
$ sudo systemctl restart smbd nmbd
omar@omar-VirtualBox: ~
$
```

Accessing Samba Shared Folder From Windows

- On a Windows computer that is in the same **network**, open File Explorer and click Network on the left pane. If you see the following message, then you need to click on the message and turn on network discovery and file sharing. **File sharing is turned off. Some network computers and devices might not be visible.**
- Next, enter \ followed by the IP address of Samba server in the address bar of File Explorer, You will see a list of shared resources on the Samba server.



- Once connected, you can read, write and delete files in the Samba shared folder.

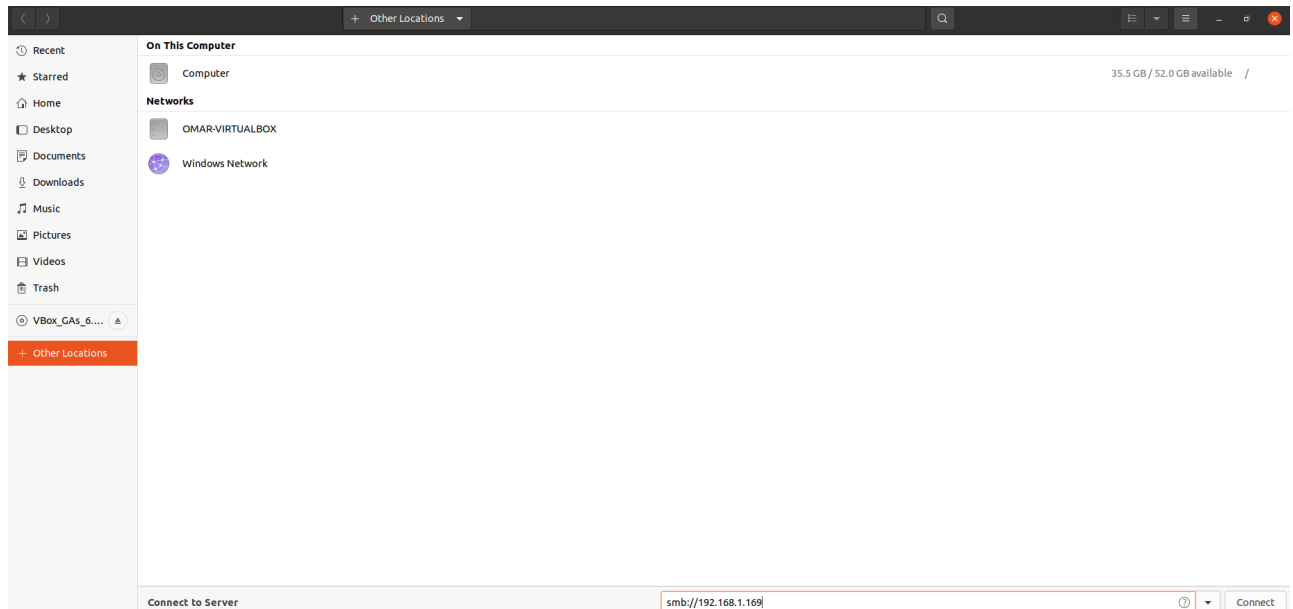
Connecting Error

- If you get the following error: **You do not have permission to access \\hostname\share-name. Contact your network administrator to request access.**
- You can try connecting to the Samba share from the command prompt. Open up a command prompt, then run the following command to close current Samba session. **net use \\samba-server-ip\share-name /delete**
- Next, connect to the Samba share with the following command: **net use \\samba-server-ip\share-name /user:samba-username password**

- Once the above command completed successfully, go to the Network tab in File Explorer and now you should be able to access the Samba share.

Accessing Samba Share Folder in Nautilus File Manager on Linux

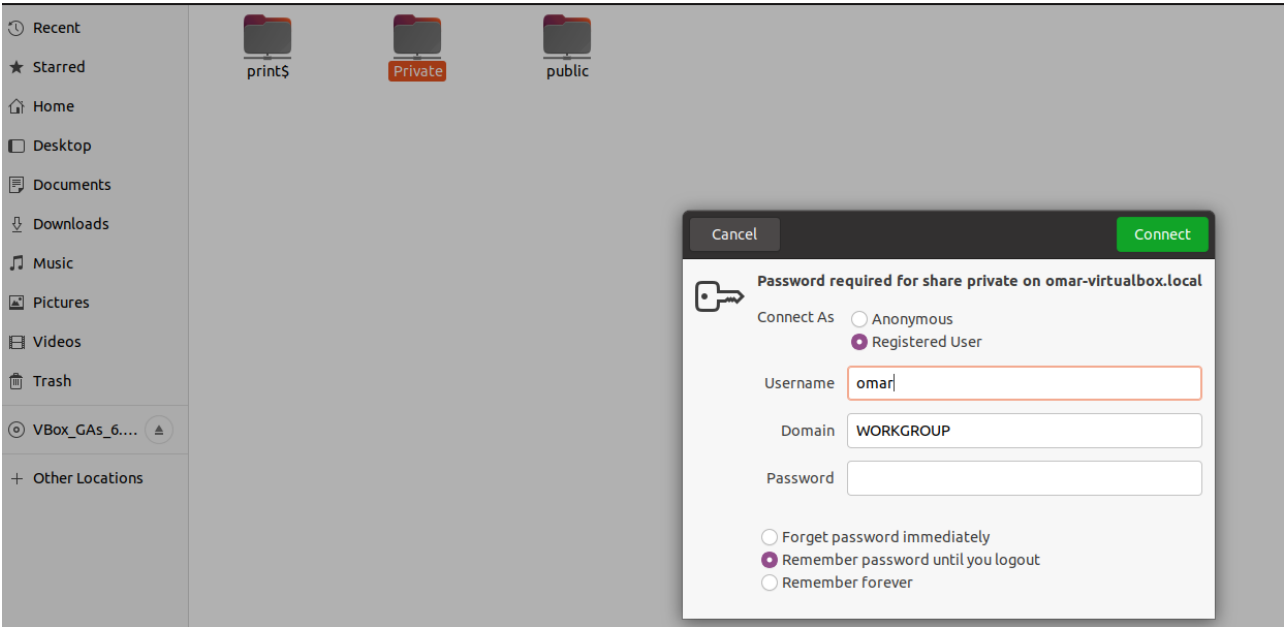
- If you are using Nautilus file manager, then click Other Locations on the left pane. On the bottom, you will see an option to connect to server. To access your Samba share, type in smb:// followed by the IP address of the Samba server and press Enter.



- You will see a list of shared resources on the Samba server.



- If you click the private shared folder, then you will need to enter the Samba username and password. If you click the public shared folder, then choose to connect as Anonymous.



Work Cited

[link1](#) [link2](#) [link3](#) [link4](#)