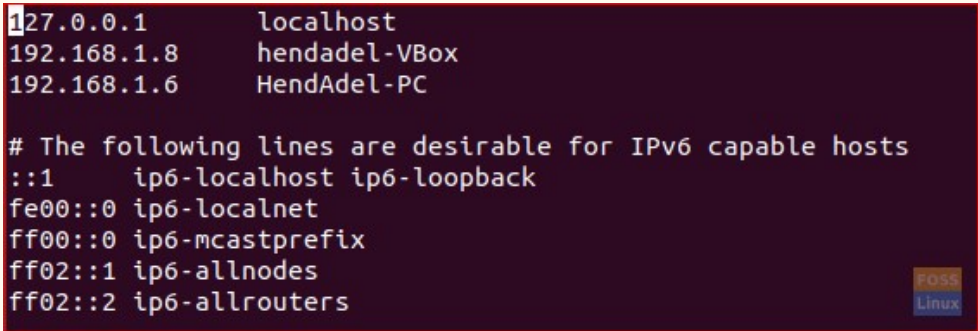
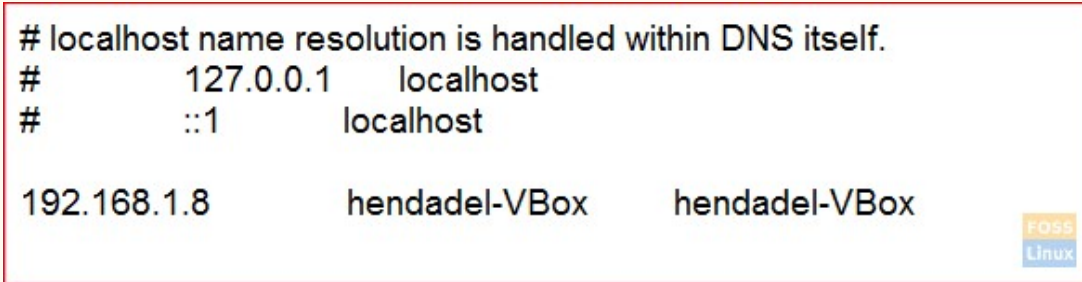
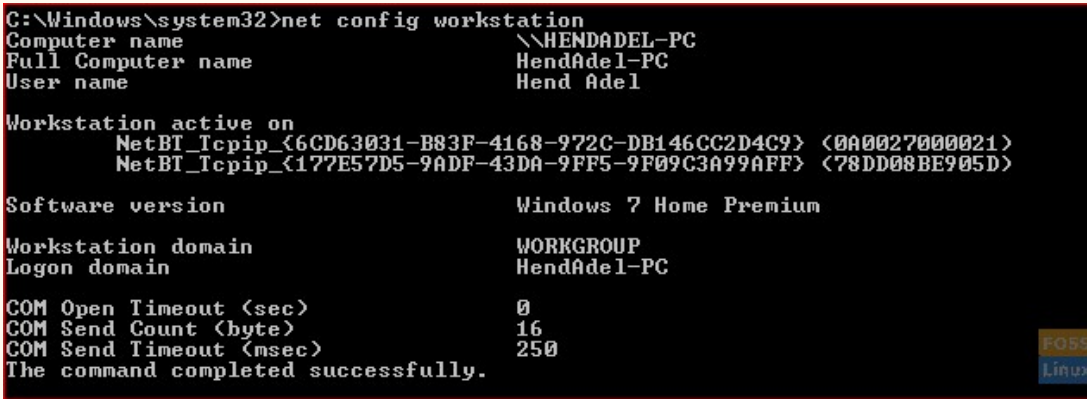
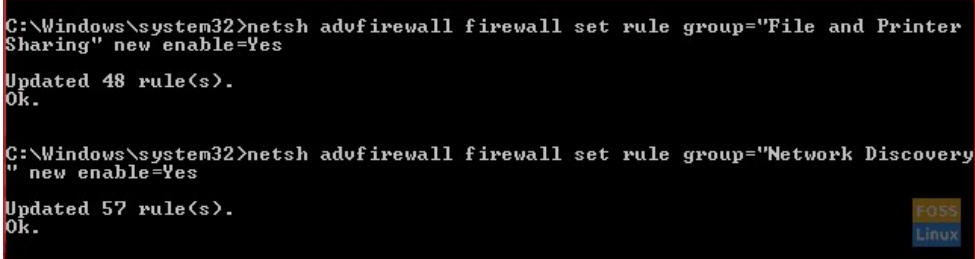


	<b>Experiment No : 10</b>	<b>Date :</b>
<b>Title</b>	<b>Configuration of Samba Server</b>	
<b>Aim</b>	To Set up a Samba Server and creating a print server	
<b>Hardware Requirement</b>	Personal Computer	
<b>Software Requirement</b>	Linux Operating System(Ubuntu 16.04) , Shell-Interpreter	
<b>Theory</b>	<p>Samba is an open-source software suite that runs on Unix/Linux based platforms but is able to communicate with Windows clients like a native application. So Samba is able to provide this service by employing the Common Internet File System (CIFS). At the heart of this CIFS is the Server Message Block (SMB) protocol. Samba does this by performing these 4 key things –</p> <ul style="list-style-type: none"> <li>• File &amp; print services</li> <li>• Authentication and Authorization</li> <li>• Name resolution</li> <li>• Service announcement (browsing)</li> </ul> <p>Samba can be run on many different platforms including Linux, Unix, OpenVMS and operating systems other than Windows and allows the user to interact with a Windows client or server natively. It can basically be described as the Standard Windows interoperability suite of programs for Linux and Unix.</p>	

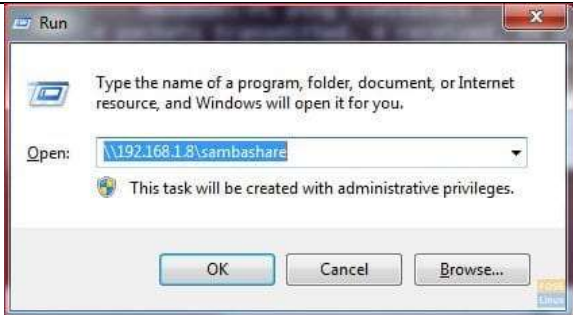
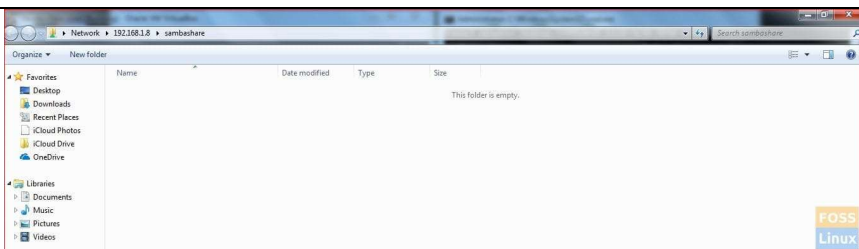
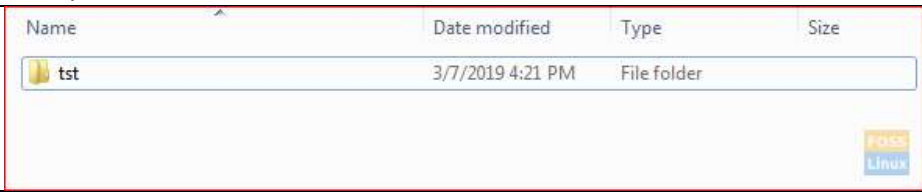
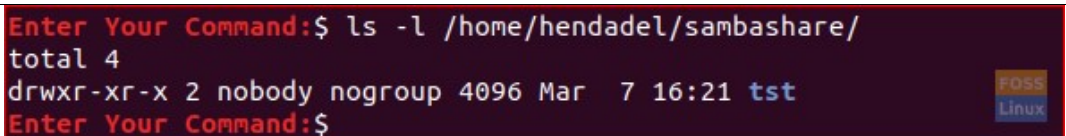
Installation Step By Step	
<b>Step-1</b>	<b>Setting up Ubuntu and Windows Hosts</b>
	On Ubuntu, put your Ubuntu IP and hostname in the /etc/hosts file. Also, add a record for the Windows IP and hostname.
	<b>\$sudo vi /etc/hosts</b>
	 <pre> 127.0.0.1    localhost 192.168.1.8  hendadel-VBox 192.168.1.6  HendAdel-PC  # The following lines are desirable for IPv6 capable hosts ::1        ip6-localhost ip6-loopback fe00::0    ip6-localnet ff00::0    ip6-mcastprefix ff02::1    ip6-allnodes ff02::2    ip6-allrouters </pre>
	On Windows, put your machine IP and hostname. Also, add a record for your Ubuntu IP and hostname.
	<b>notepad C:\\Windows\\System32\\drivers\\etc\\hosts</b>
	 <pre> # localhost name resolution is handled within DNS itself. #          127.0.0.1    localhost #          ::1         localhost  192.168.1.8          hendadel-VBox      hendadel-VBox </pre>
<b>Step-2</b>	<b>Configure domains</b>
	Both machines must be in the same domain, check the default Windows workstation domain using the next command
	<b>net config workstation</b>

	 <pre> C:\Windows\system32&gt;net config workstation Computer name                \\HENDADEL-PC Full Computer name          HendAdel-PC User name                   Hend Adel  Workstation active on     NetBI_Tcpip_{6CD63031-B83F-4168-972C-DB146CC2D4C9} {0A00270000021}     NetBI_Tcpip_{177E57D5-9ADF-43DA-9FF5-9F09C3A99AFF} {78DD08BE905D}  Software version             Windows 7 Home Premium  Workstation domain          WORKGROUP Logon domain                HendAdel-PC  COM Open Timeout &lt;sec&gt;      0 COM Send Count &lt;byte&gt;       16 COM Send Timeout &lt;msec&gt;     250 The command completed successfully. </pre>
	As you can see from the previous screenshot, the Windows domain is WORKGROUP.
<b>Step 3</b>	<b>Enable File Sharing on Windows</b>
	Enable File Sharing on Windows, open cmd with administrator privileges and run the next two commands.
	<pre> netsh advfirewall firewall set rule group="File and Printer Sharing" new enable=Yes netsh advfirewall firewall set rule group="Network Discovery" new enable=Yes </pre>
	The output should be like below:
	 <pre> C:\Windows\system32&gt;netsh advfirewall firewall set rule group="File and Printer Sharing" new enable=Yes  Updated 48 rule(s). Ok.  C:\Windows\system32&gt;netsh advfirewall firewall set rule group="Network Discovery " new enable=Yes  Updated 57 rule(s). Ok. </pre>
<b>Step-4</b>	<b>Install Samba on Ubuntu</b>
	Ensure that your Ubuntu updated
	<pre> \$sudo apt-get update \$sudo apt-get upgrade </pre>
	Run next command to install Samba on Ubuntu.


	<b>\$sudo apt-get install samba samba-common python-glade2 system-config-samba</b>
	<pre> Enter Your Command:\$ sudo apt-get install samba samba-common python-glade2 system-config-samba Reading package lists... Done Building dependency tree Reading state information... Done The following packages were automatically installed and are no longer required:   linux-headers-4.15.0-29 linux-headers-4.15.0-29-generic linux-image-4.15.0-29-generic   linux-modules-extra-4.15.0-29-generic Use 'sudo apt autoremove' to remove them. The following additional packages will be installed:   attr libverbs-providers libcephfs2 libglade2-0 libibverbs1 libnl-route-3-200 libpython-stdlib librados2 libuser1 python python-cairo   python-crypto python-dnspython python-gobject-2 python-gtk2 python-ldb python-libuser python-minimal python-samba python-tdb python2.7   python2.7-minimal samba-common-bin samba-dsdb-modules samba-vfs-modules tdb-tools Suggested packages:   python-doc python-tk python-crypto-doc python-gtk2-doc python-gobject-2-dbg python-gpgme python2.7-doc binfmt-support bind9 bind9utils   ctdb ldb-tools ntp   chrony smbldap-tools winbind heimdal-clients The following NEW packages will be installed:   attr libverbs-providers libcephfs2 libglade2-0 libibverbs1 libnl-route-3-200 libpython-stdlib librados2 libuser1 python python-cairo   python-crypto python-dnspython python-glade2 python-gobject-2 python-gtk2 python-ldb python-libuser python-minimal python-samba python-tdb   python2.7 python2.7-minimal samba samba-common samba-common-bin samba-dsdb-modules samba-vfs-modules system-config-samba tdb-tools 0 upgraded, 30 newly installed, 0 to remove and 14 not upgraded. Need to get 10.7 MB of archives. After this operation, 62.3 MB of additional disk space will be used. Do you want to continue? [Y/n] y </pre>
	Check if the Samba installation was successful.
	<b>\$whereis samba</b>
	The output should like below:
	<pre> Enter Your Command:\$ whereis samba samba: /usr/sbin/samba /usr/lib/x86_64-linux-gnu/samba /etc/samba /usr/share/samba /us r/share/man/man8/samba.8.gz /usr/share/man/man7/samba.7.gz Enter Your Command:\$ </pre>
<b>Step-5</b>	<b>Setup Public Shared Folder on Ubuntu</b>
	Create a public directory on Ubuntu for sharing.
	<b>\$sudo mkdir -p /home/hendadel/sambashare</b>
	Set the directory permissions so that anyone can read/write to it.
	<b>\$sudo chown -R nobody:nogroup</b> <b>/home/hendadel/sambashare/</b> <b>\$sudo chmod -R 0775 /home/hendadel/sambashare/</b>
	<pre> Enter Your Command:\$ sudo mkdir -p /home/hendadel/sambashare/ Enter Your Command:\$ sudo chmod -R 0775 /home/hendadel/sambashare/ Enter Your Command:\$ sudo chown -R nobody:nogroup /home/hendadel/sambashare/ </pre>
<b>Step-6</b>	<b>Copy and setup Config file</b>
	Copy Samba default configuration file to be a backup file in case any error happens in the future
	<b>\$sudo cp /etc/samba/smb.conf /etc/samba/smb.conf.backup</b>
	Edit Samba configuration file
	<b>\$sudo vi /etc/samba/smb.conf</b>
	Add the next lines to Samba configuration file:
	<b>[global]</b> <b>workgroup = WORKGROUP</b>

	<b>server string = Samba Server %v</b> <b>netbios name = hendadel-VBox</b> <b>security = user</b>  <b>[SambaShare]</b> <b>Comment = Samba Shared Directory</b> <b>path = /home/hendadel/sambashare</b> <b>writable = yes</b> <b>guest ok = yes</b> <b>read only = no</b> <b>force user = nobody</b>
	<pre> workgroup = WORKGROUP netbios name = hendadel-VBox security = user [SambaShare] comment = Samba Shared Directory path = /home/hendadel/sambashare browsable = yes writable = yes guest ok = yes read only = no force user = nobody </pre>
	Check the Samba configuration file using the next command.
	\$testparm
	The output should be like this:

	<pre> Press enter to see a dump of your service definitions  # Global parameters [global]     dns proxy = No     security = USER     server string = %h server (Samba, Ubuntu)     idmap config * : backend = tdb  [SambaShare]     comment = Samba Shared Directory     force user = nobody     guest ok = Yes     path = /home/hendadel/sambashare     read only = No  [printers]     browseable = No     comment = All Printers     create mask = 0700     path = /var/spool/samba     printable = Yes  [print\$]     comment = Printer Drivers     path = /var/lib/samba/printers </pre>	
<b>Step-7</b>	<b>Restart Samba Service.</b>	
	<b>\$sudo service smbd restart</b>	
	<pre> Enter Your Command:\$ sudo service smbd restart Enter Your Command:\$ █ </pre>	
<b>Step-8</b>	<b>Access Samba Share on Windows</b>	
	Now from your Windows machine, open run and use the following command to open Ubuntu shared folder.	
	<b>\2.168.1.8\sambashare</b>	



	
	The shared folder should like this:
	
	You can now create folders or files inside the shared directory from your Windows machine and check if they created in Ubuntu too.
	First, create a test folder from Windows:
	
	Check the created folder from Ubuntu:
	
<b>Step-9</b>	<b>Set Private Shared Directory</b>
	Previously, we had a public folder for all network members. What if you need to share a folder with some specific users, or in other words users who have username and password only can access the shared directory.
	First, we need to create a group, add users and members to this group and only members of this group should have access to the shared directory.
<b>1.</b>	<b>Create a group</b>



	<b>\$sudo addgroup smbgroup</b>
	<pre>Enter Your Command:\$ sudo addgroup smbgroup Adding group `smbgroup' (GID 1001) ... Done.</pre> 
2.	Add your Ubuntu user to the smbgroup.
	<b>\$sudo usermod -aG smbgroup hendadel</b>
3.	Give a password for the samba user.
	<b>\$sudo smbpasswd -a hendadel</b>
	<pre>Enter Your Command:\$ sudo usermod -aG smbgroup hendadel Enter Your Command:\$ sudo smbpasswd -a hendadel New SMB password: Retype new SMB password: Enter Your Command:\$ █</pre> 
4.	Now, create a directory to share in private.
	<b>\$sudo mkdir -p /home/hendadel/sambaprivate/</b>
5.	Set permissions to the previous directory, so that only root and members of smbgroup access the shared directory.
	<b>\$sudo chown -R root:smbgroup</b> <b>/home/hendadel/sambaprivate/</b> <b>\$sudo chmod -R 0770 /home/hendadel/sambaprivate/</b>
	<pre>Enter Your Command:\$ sudo mkdir -p /home/hendadel/sambaprivate/ Enter Your Command:\$ sudo chown -R root:smbgroup /home/hendadel/sambaprivate/ Enter Your Command:\$ sudo chmod -R 0770 /home/hendadel/sambaprivate/ Enter Your Command:\$ █</pre> 
6.	Edit Samba configuration file to add the new created directory
	<b>\$sudo vi /etc/samba/smb.conf</b>
7.	Add the below:
	<b>[SambaPrivate]</b> <b>path = /home/hendadel/sambaprivate</b> <b>valid users = @smbgroup</b> <b>guest ok = no</b> <b>writable = yes</b> <b>browsable = yes</b> The configuration file should be as follows:



	<pre> workgroup = WORKGROUP netbios name = hendadel-VBox security = user [SambaShare] comment = Samba Shared Directory path = /home/hendadel/sambashare browsable = yes writable = yes guest ok = yes read only = no force user = nobody  [SambaPrivate] path = /home/hendadel/sambaprivate valid users = @smbgroup guest ok = no writable = yes browsable = yes </pre>	
8.	Restart Samba service.	
	<b>\$sudo service smbd restart</b>	
9.	Check the Samba configuration file:	
	<b>\$testparm</b>	
	<pre> Enter Your Command:\$ sudo service smbd restart Enter Your Command:\$ testparm Load smb config files from /etc/samba/smb.conf rlimit_max: increasing rlimit_max (1024) to minimum Windows limit (16384) ) Processing section "[SambaShare]" Processing section "[SambaPrivate]" Global parameter log file found in service section! Global parameter max log size found in service section! WARNING: The "syslog" option is deprecated Global parameter syslog found in service section! Global parameter panic action found in service section! Global parameter server role found in service section! Global parameter passdb backend found in service section! Global parameter obey pam restrictions found in service section! Global parameter unix password sync found in service section! Global parameter passwd program found in service section! Global parameter passwd chat found in service section! Global parameter pam password change found in service section! Global parameter map to guest found in service section! Global parameter usershare allow guests found in service section! Processing section "[printers]" Processing section "[print\$]" Loaded services file OK. </pre>	
10.	Check the two created folders from Windows machine.	
	<b>\$\2.168.1.8\sambashare</b>	
11.	Windows should ask you for username and password like the below screenshot.	

	
12.	After entering your credentials, you should see the shared directories as below.
	
<b>Conclusion</b>	<p>This Samba server experiment has successfully demonstrated the process of setting up and configuring a Samba file sharing server in a Linux (Ubuntu) environment to share resources with Windows clients.</p> <p>Through the successful completion of this experiment, the I have gained practical experience in setting up and configuring a Samba server in a Linux environment, enabling seamless file sharing between Linux and Windows systems. This knowledge can be applied in real-world scenarios where cross-platform file sharing and collaboration are required, such as in small-to-medium-sized business environments or home networks.</p> <p>Overall, this Samba server experiment has provided valuable hands-on experience in the setup and management of a widely-used file sharing solution, equipping the participants with the necessary skills to implement and troubleshoot similar Samba deployments in the future.</p>

<b>Signature</b>	
<b>Date</b>	
<b>Grade</b>	