

Day 4 File Sharing – adding users to a common group

After sleeping on the complexity yet elegance of permissions, think of ways – and consequences of - sharing files with a group of other people – e.g. the Engineering Dept Project's files and folders...

1 `chmod 777?`

2 `chmod 755?`

3 `chmod 775?`

4 `chmod 770?`

What else has to be set up re Users and Groups?

What other non octal chmod method is available?

Are there local and network access differences to consider – e.g. local and network passwords - Samba ?

Shared Folder/Files

777? No! = write for Others (Anyone can delete files)

755 default? Possible. Depends what access and subdir layout you want?

755 has **rwX** for User only, but **r-X** for Group and Others

It is traversable and readable by Everyone if you want – ***a good compromise of access and security.***

Other reasonable options: – what happens?

775? 755? 750? Probable? Why?

Recap: 3 permission blocks – User, Group and Others (Everyone); UGO.

- remember the dir defaults = **755 = rwxr-xr-x**
- Mint5630 Documents **# ls -ld Scripts/**
- **drwxr-xr-x 2 stevee stevee 4096 Sep 18 21:11 Scripts/**
- Dir **rwx** **r-x** **r-x**
- Read,write,exe Read,exe Read,exe
- For User for Group for Others

For a **directory**, **rx** is required for all to traverse (open and see next dir inside).

- For a binary file like a program, **x** is required for it to run.
- For a text file, **r** is required to read, **w** to append to
- remember the file defaults = **644 = rw-r--r--**

Shared Network Dirs and Files

- On the net server, as an example of one method, Admin could create a “neutral” user account called, say, “eng” that no one logs into or has the password for.
- DELLMINT stevee # `adduser eng`
- Adding user `eng' ...
- Adding new group `eng' (1001) ...
- Adding new user `eng' (1001) with group `eng' ...
- Creating home directory `/home/eng' ...
- As user “root”, create a dir named “Eng” in a pre shared dir “/Share
- `cd /Share`
- DELLMINT / # `mkdir Eng`
- Change ownership of Eng from root to user+group eng
- `chown eng:eng Eng`
- DELLMINT Share # `ls -ld Eng/`
- `drwxr-xr-x 2 eng eng 4096 Sep 26 10:19 Eng/`

Add network server users accounts

- DELLMINT / # `adduser stevee eng`
- Adding user `stevee' to group `eng' ...
- Adding user stevee to group eng
- For users with a current account on Dellmint server but no net access:
- DELLMINT Share # `adduser joe eng`
- Adding user `joe' to group `eng' ...
- Adding user joe to group eng
- DELLMINT stevee # `smbpasswd -a joe`
- New SMB password:
- Retype new SMB password:
- Added user joe.
- `smbpasswd -a` adds users to the Samba database for net access between Windows and Linux users. Samba is an App installed by default in Mint.

Dir “/Share/Eng” is network visible but not writeable to users except “eng”

The screenshot shows a Linux desktop environment. The top window is a terminal titled "share on dellmint". The terminal output shows the process of adding a user named "joe" to the system, including setting a password and adding the user to the "eng" group. The bottom window is a file manager titled "share on dellmint" showing the contents of the "/Share" directory. The "Eng" directory is selected, and its contents are displayed in a table.

Terminal Output:

```
DELLMINT Share # adduser joe
Adding user `joe' ...
Adding new group `joe' (1002) ...
Adding new user `joe' (1003) with group `joe' ...
Creating home directory `/home/joe' ...
Copying files from `/etc/skel' ...
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Changing the user information for joe
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]
DELLMINT Share # cat /etc/group | grep "100."
users:x:100:
stevee:x:1000:
eng:x:1001:stevee
joe:x:1002:
DELLMINT Share # adduser joe eng
Adding user `joe' to group `eng' ...
Adding user joe to group eng
Done.
DELLMINT Share #
```

File Manager Contents:

Name	Size	Type	Date Modified
Eng	--	Folder	Sat 26 Sep 2015 10:19:53 BST
StevesITStuff	--	Folder	Wed 05 Aug 2015 11:03:28 BST
Videos	--	Folder	Thu 06 Aug 2015 23:55:01 BST

Bottom status bar: "Eng" selected, Free space: 140.7 GB

System tray: Saturday 26 September, 10:30:59

Allowing eng Group access to write to /Eng

```
Adding new group `joe' (1002) ...
Adding new user `joe' (1003) with group `joe' ...
Creating home directory `/home/joe' ...
Copying files from `/etc/skel' ...
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Changing the user information for joe
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]
DELLMINT Share # cat /etc/group | grep "100."
users:x:100:
stevee:x:1000:
eng:x:1001:stevee
joe:x:1002:
DELLMINT Share # adduser joe eng
Adding user `joe' to group `eng' ...
Adding user joe to group eng
Done.
DELLMINT Share # ls -ld Eng/
drwxr-xr-x 2 eng eng 4096 Sep 26 10:19 Eng/
DELLMINT Share #
```

Name



Error while creating directory Untitled Folder.

There was an error creating the directory in smb://dellmint/share/Eng.

▼ Show more details

Permission denied

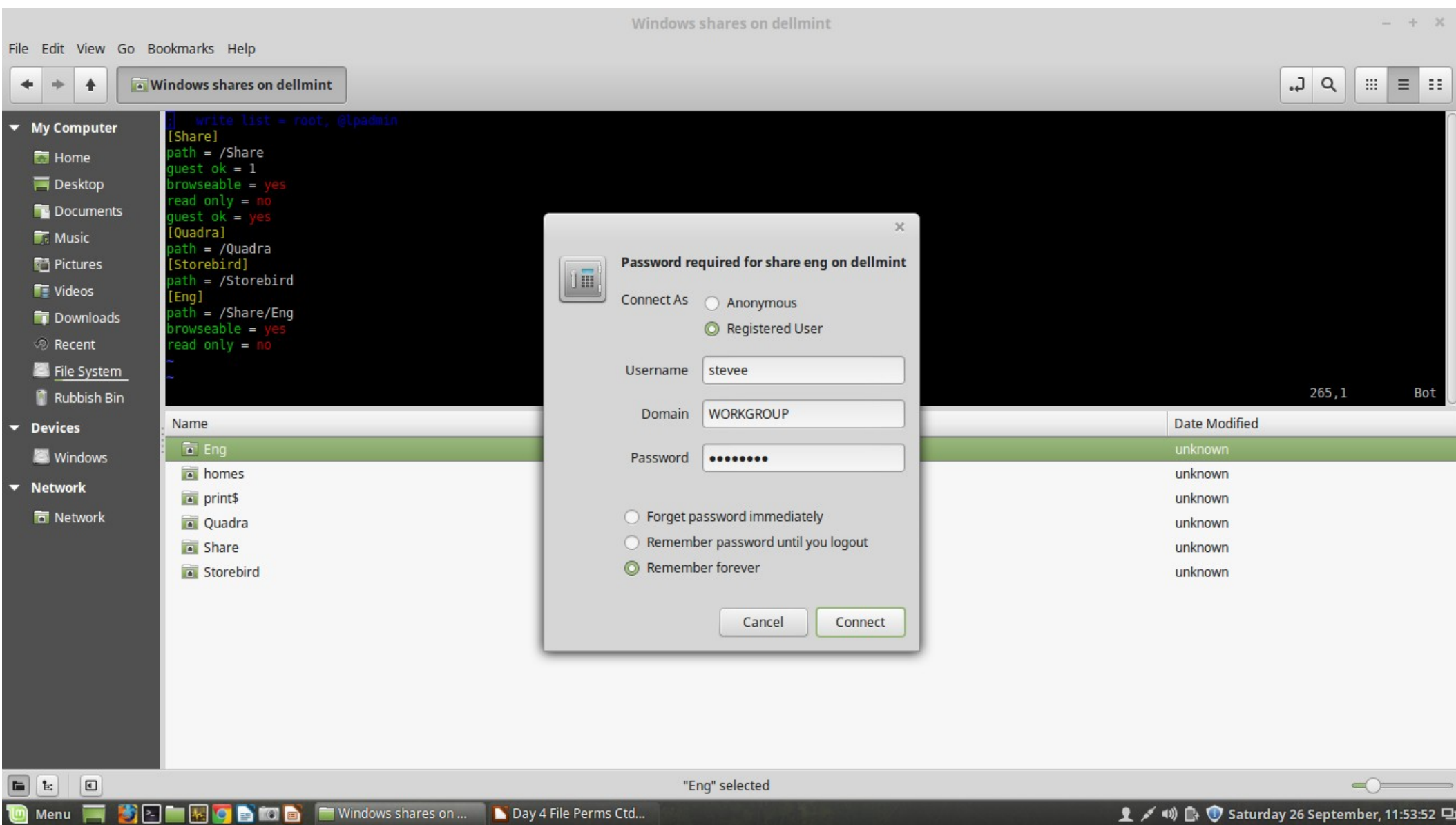
Cancel

Skip

Add group write perms to /Share/Eng

- DELLMINT Share # `ls -ld Eng/`
- `drwxr-xr-x 2 eng eng 4096 Sep 26 10:19 Eng/`
- DELLMINT Share # `chmod g+w Eng/`
- DELLMINT Share # `ls -ld Eng/`
- `drwxrwxr-x 2 eng eng 4096 Sep 26 10:19 Eng/`
- As stevee is in group “eng” he can now write to Eng as he owns the containing remote /”Share”, so can traverse it at login – other users cannot at this point, as they are not in stevee's group to be able to login to remote /Share.
- A log off maybe required to reset prior access permissions

Stevee can now re-login to remote share



Stevee can write to //Dellmint/Share/Eng over the net

The screenshot shows a Linux desktop environment with a file manager window titled "Eng" displaying a directory listing of a remote share. The terminal window shows the user "stevee" navigating to the directory and creating files.

Terminal Output:

```
stevee@AMDA8 ~ $ cd '/run/user/1000/gvfs/smb-share:server=dellmint,share=share'
stevee@AMDA8 /run/user/1000/gvfs/smb-share:server=dellmint,share=share $ cd '/run/user/1000/gvfs/smb-share:server=dellmint,share=share/Eng'
stevee@AMDA8 /run/user/1000/gvfs/smb-share:server=dellmint,share=share/Eng $ cd '/run/user/1000/gvfs/smb-share:server=dellmint,share=share'
stevee@AMDA8 /run/user/1000/gvfs/smb-share:server=dellmint,share=share $ cd '/run/user/1000/gvfs/smb-share:server=dellmint,share=share/Eng'
stevee@AMDA8 /run/user/1000/gvfs/smb-share:server=dellmint,share=share/Eng $
```

File Manager View:

Name	Size	Type	Date Modified
Stevee	--	Folder	Sat 26 Sep 2015 11:15:36 BST
stevesdoc.txt	0 bytes	Text	Sat 26 Sep 2015 11:11:36 BST
test.txt	12 bytes	Text	Sat 26 Sep 2015 11:11:25 BST

The desktop environment includes a sidebar with "My Computer" (Home, Desktop, Documents, Music, Pictures, Videos, Downloads, Recent, File System, Rubbish Bin), "Devices" (Windows), and "Network" (share on d..., Network). The bottom status bar shows "Untitled Folder" selected, Free space: 140.7 GB, and the date/time: Saturday 26 September, 11:15:54.

Windows/Linux shares via Samba

Dir /Eng can be netshared directly via Samba – edit /etc/samba/smb.conf

- `vi /etc/samba/smb.conf`

- `[Share]`

- `path = /Share`

- `guest ok = 1`

- `browseable = yes`

- `read only = no`

- `guest ok = yes`

- `[Quadra]`

- `path = /Quadra`

- `[Storebird]`

- `path = /Storebird`

- `[Eng]`

- `path = /Share/Eng`

Example Shares in Samba's smb.conf

Windows shares on dellmint

File Edit View Go Bookmarks Help

Windows shares on dellmint

My Computer

- Home
- Desktop
- Documents
- Music
- Pictures
- Videos
- Downloads
- Recent
- File System
- Rubbish Bin

Devices

- Windows

Network

- Network

```
write list = root, @lpadmin
[Share]
path = /Share
guest ok = 1
browseable = yes
read only = no
guest ok = yes
[Quadra]
path = /Quadra
[Storebird]
path = /Storebird
[Eng]
path = /Share/Eng
browseable = yes
read only = no
```

265,1 Bot

Name	Size	Type	Date Modified
Eng		-- Folder	unknown
homes		-- Folder	unknown
print\$		-- Folder	unknown
Quadra		-- Folder	unknown
Share		-- Folder	unknown
Storebird		-- Folder	unknown

6 items

Menu

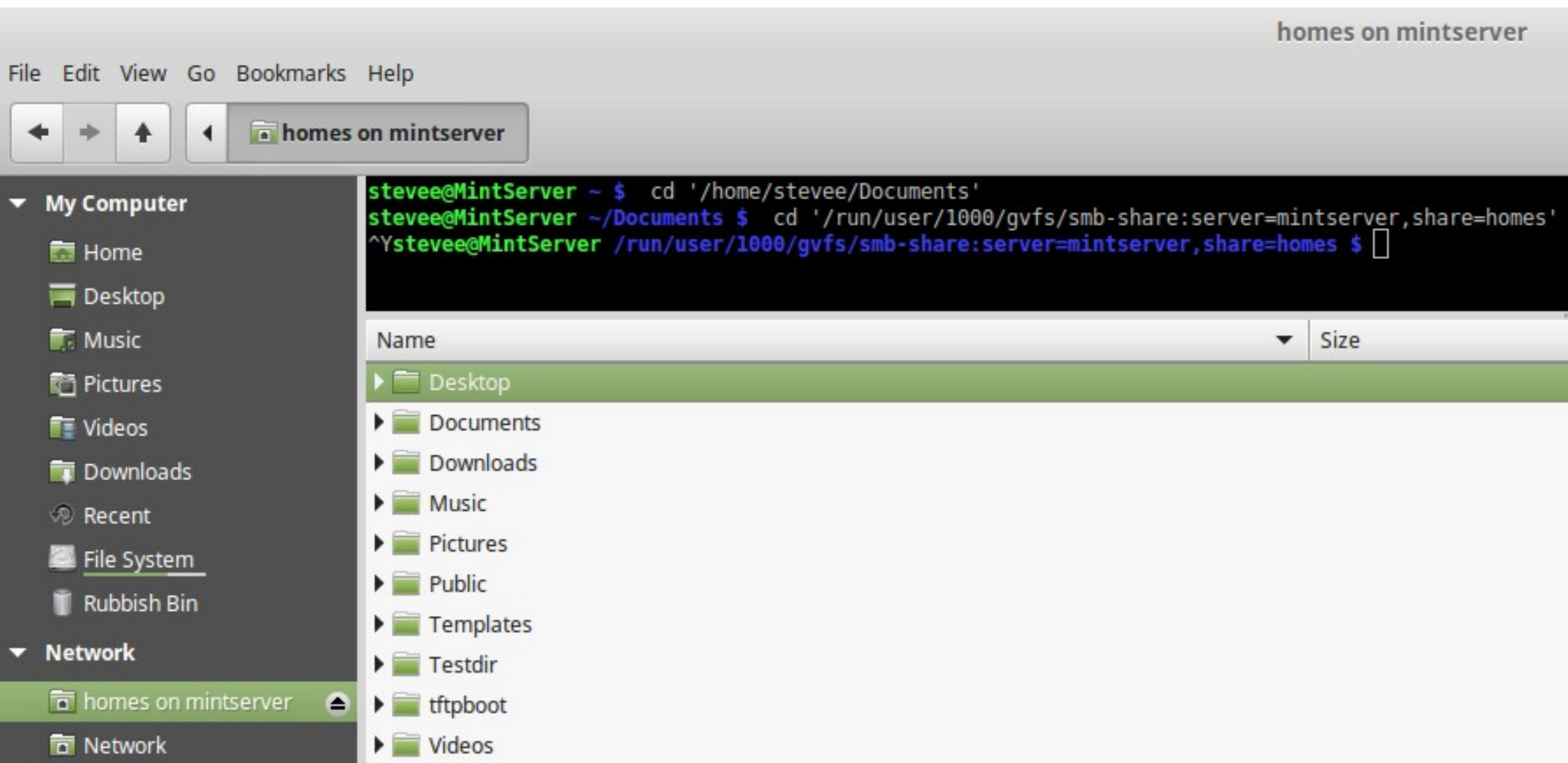
Windows shares on ...

Day 4 File Perms Ctd...

Saturday 26 September, 11:50:28

Samba Homes Directory

- Samba has a default homes section in `/etc/samba/smb.conf` you can **#uncomment**
- This allows net access to a user's home dir's, *if the account has been logged into locally to create their Desktop initially - the folders will not exist else!*



Login as user joe on another net PC, and create a folder in Eng

The screenshot shows a Linux desktop environment with a file manager window titled "eng on dellmint". The window displays a directory listing for the path "/eng on dellmint". The left sidebar shows the "Network" section with "eng on dell..." selected. The main pane shows a directory listing with columns: Name, Size, Type, and Date Modified. The listing includes folders "Joe" and "Stevee", and files "stevesdoc.txt" and "test.txt".

File Edit View Go Bookmarks Help

eng on dellmint

eng on dellmint

```
|| write list = root, @lpadmin
[Share]
path = /Share
guest ok = 1
browseable = yes
read only = no
guest ok = yes
[Quadra]
path = /Quadra
[Storebird]
path = /Storebird
[Eng]
path = /Share/Eng
browseable = yes
read only = no
```

Name	Size	Type	Date Modified
Joe	--	Folder	Sat 26 Sep 2015 11:45:32 BST
Stevee	--	Folder	Sat 26 Sep 2015 11:15:36 BST
stevesdoc.txt	0 bytes	Text	Sat 26 Sep 2015 11:11:36 BST
test.txt	12 bytes	Text	Sat 26 Sep 2015 11:11:25 BST

4 items, Free space: 140.7 GB

Menu eng on dellmint Day 4 File Perms Ctd... Saturday 26 September, 11:54:17

Understand why stevee and joe can log in and write to Eng remotely, when user+group “eng” owns /Eng

- DELLMINT Share # `ls -ld Eng/`
- `drwxrwxr-x 4 eng eng 4096 Sep 26 11:45 Eng/`
- DELLMINT stevee # `cat /etc/group | grep eng`

`eng:x:1001:stevee,joe`

SUMMARY:

Both have user accounts on remote server

Both are members of group eng

Dir /Eng has `rwX (775)` perms for eng group added

Both users have Samba passwords for net access

Summary: Important Access Requirements

- Default creation: **755** for Dirs; **644** for files
- R+X is required for directory traversal, and/or to read/execute a file e.g. text or binary program
- The ***directory owner has default deletion (w) perms to what is contained within*** using **rm** command, because a file name is defined by the container
- Users may be added to a common group to share a common dir/file, possibly owned by a “neutral” user (user “eng” not used to login on any PC); eng account password could be given to group leader etc. to save Admin requests
- Remote users need an account on a linux network server running Samba, and have an **smbpasswd**
- A shared dir needs **chmod g+w** (**775** or **770**) perms for group write access to create their own folders and files
- The “homes” section can be uncommented for net user access to their own account folders

Final Thoughts

- Correct security settings on any system is crucial, so requires practise with testing to be sure what really happens. Mistakes are easy here!
- Test from both Win and Lin PCs and user accounts so you KNOW what happens for all cases before assuming relevant security is set.
- Once all required users have their own directory in /Share/Eng, then it may be desirable to lock down further write permissions to the Eng dir space itself, so remove the grp write perm:
- `chmod g-w /Share/Eng`
- There are many more perm possibilities that require study to understand how perms affect behaviour of Dirs and Files.
- Experiment on a network with test PCs to really know
- Try 700 (default is 755) to make a dir's file contents invisible to Group and Others