Part 17
-
Sharing Files

Version: 2020-04-28

Connect to Windows or NAS share automatically at start-up

As good as the Pi is, the capacity of an SD card isn't going to go far. So connecting to trusty NAS drive (e.g. shared folder) can be a neccessity and automatically mount it when the Pi starts. Samba is needed to connect to a NAS.

1. **Install/Update Samba**
   On Raspian, Samba is already installed (Note: smbfs has been depreciated in wheezy.)
   Note: on Raspbmc, Samba is already installed but `cifs-utils` need to be installed in order to mount the NAS drive.

   ```
   sudo apt-get -y install cifs-utils
   ```

2. **Make a share & directory on your NAS**
   Create a SMB share on your NAS and create a directory in it, if you need one

   ```
   //NAS/nasShare/nasDir
   ```

   Find out which version of CIFS/SMB your storage/server supports. See documentation for this. Mine supports version 2.0

3. **Make a directory to mount your NAS to**

   ```
   cd /mnt
   mkdir NAS
   cd NAS
   mkdir Share
   ```

4. **Edit fstab file**
   Edit the fstab file to mount the NAS drive at startup:

   ```
   sudo nano /etc/fstab
   ```

   Add the following line to the bottom of the file:

   ```
   //NAS/nasShare/nasDir /mnt/NAS/Share cifs
   username=your_username,password=your_password,workgroup=your_workgroup,us
   ers,auto,vers=2.0
   ```

   and saved the changes.

WARNING : this will mean your username & password is stored in plain text viewable to all on the device, if this is going to be a problem you can use a credentials file, see http://anothersysadmin.wordpress.com/2007/12/17/howto-mount-samba-shares-in-fstab-using-a-credential-file/

5. **Test**
   Test the change by mounting the NAS drive using the command:

   ```
   sudo mount -a
   ```

   Then navigate to the mount directory and retreive a directory listing from the NAS:

   ```
   cd /mnt/NAS/Share
   ls
   ```

   Create a file on your NAS in the directory of the share. Then do again a `ls` on your Pi and the newly created file must be listed.

6. **Reboot**
   To be double sure, reboot and make sure your NAS is connected:

   ```
   sudo shutdown -r now
   cd /mnt/NAS/Share
   ls
   ```

Sharing files on Your Pi

First, check and install the latest packages for the Raspberry Pi.

```
sudo apt-get update
sudo apt-get upgrade
```

After making sure that all packages are up to date, we can now install Samba using the following command:

```
sudo apt-get install samba samba-common-bin
```

If you don't want to share all folders and files in the Raspberry Pi, you can create a shared folder using the following command:

```
mkdir ~/share
```

Now, we need to configure Samba to share the Raspberry Pi directories with another computer within the network. Enter the following command:

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

The Samba configuration file is well documented. You can scroll down the file to see what you would like to enable.

```
[global]
netbios name = Pi
server string = The Pi File Center
workgroup = WORKGROUP

[HOMEPI]
path = /home/pi
comment = No comment
writeable=Yes
create mask=0777
directory mask=0777
public=no
```

Here is a short explanation of what the code above means:

- workgroup: This is the domain that the Samba server will be part of. By default, Windows has the workgroup set as WORKGROUP
- path: This is the path to the directory in the Raspberry Pi that will be shared
- writeable: If set to `yes`, it will allow the folder to be writeable
- create mask and directory mask: When set to `0777` allows the user to read, write and execute
- public: If set to `no`, it will only allow valid users to access the shared folder

After you enter the above information press and hold Ctrl then X and press Y to save the changes.

Right now, we only have the user Pi setup in the Raspberry Pi. We now need to add Pi as a Samba user. Enter the following command:

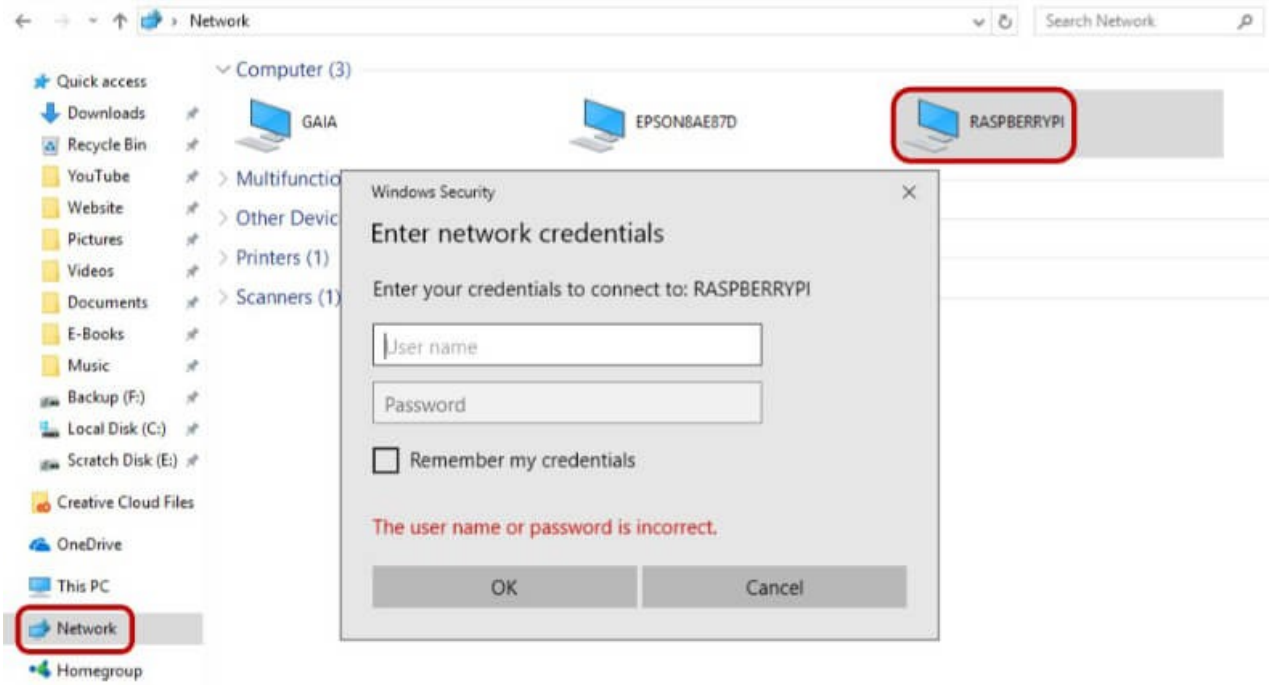
```
sudo smbpasswd -a pi
```

Enter a new password when prompted. You can use the same password as your Raspberry Pi user but for security, enter a different password.

Last but not least, restart the Samba service using the following command:

```
sudo service smbd restart
```

OK, so Samba is now configured. You can open the Windows File Explorer and click on Network to access the Raspberry Pi shared folder. When you click on the folder, you will be asked to enter your credentials. Enter the Pi's username and then the Samba password that you created for that user. After you log in, you will be able to manage the Pi's folders and files.



Matching SMB version

There are different verison of SMB depending on the Windows version as you can see in the list below.

SMB 1.0	Up to Windows XP and Windows Server 2003 R2	
SMB 2.0	Windows Vista, Windows Server 2008	
SMB 2.1	Windows 7, Windows Server 2008 R2	
SMB 3.0	Windows 8, Windows Server 2012	(also known as SMB 2.2)
SMB 3.0.2	Windows 8.1, Windows Server 2012 R2	
SMB 3.1.1	Windows 10, Windows Server 2016	

And below you see what SMB version is supported in which SAMBA version

SMB 1	Samba 1.x supported SMB and CIFS
SMB 2.0	Samba 3.6
SMB 2.1	Samba 4.0.0
SMB 3.0	Samba 4.2
SMB 3.0.2	Samba 4.3
SMB 3.1.1	Samba 4.3

Normally, what dialect of SMB will be used between devices is negociated during the connection initialization. But certain Windows version will not, by default, allow lower SMB version.

On this page of Microsoft, you find how to detect, enable and disable SMBv1, SMBv2, and SMBv3 in Windows.

https://docs.microsoft.com/en-us/windows-server/storage/file-server/troubleshoot/detect-enable-and-disable-smbv1-v2-v3?fbclid=IwAR1fZZw9z53-1fRIxhugtnrhk7Ql9Atluyivkq9L1h4L_nGUHptq5uoIeB0

Matching SMB versions might be essential in case you are unable to establise a connection between devices.