Tweaking the Solo

Given the Solo has a Linux computer inside, it can be worth accessing it to perform changes or adjustments. I'll collect here a list of possibly useful tasks.

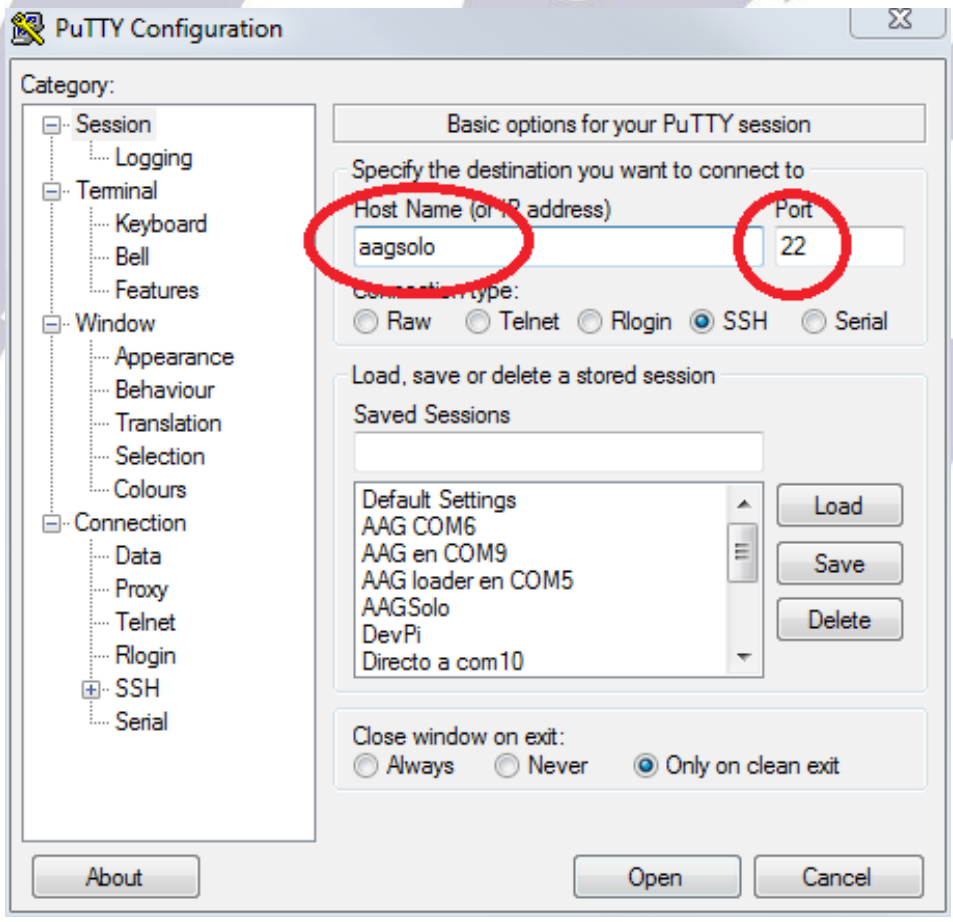
Most useful features are already supported via web, either at the "standard" configuration page (https://aagsolo/config) or the"advanced one" (https://aagsolo/ExtraConf.html)

Getting Started

Using Putty

For all this you'll need a means to access the Solo via *ssh* (secure terminal). A popular and free program is "Putty". It can be downloaded from http://www.putty.org/

Once installed, start it, and connect to the Solo:



Just type “aagsolo” in the Host Name field (unless you have changed it!) and leave the rest as it is, then press <enter>.

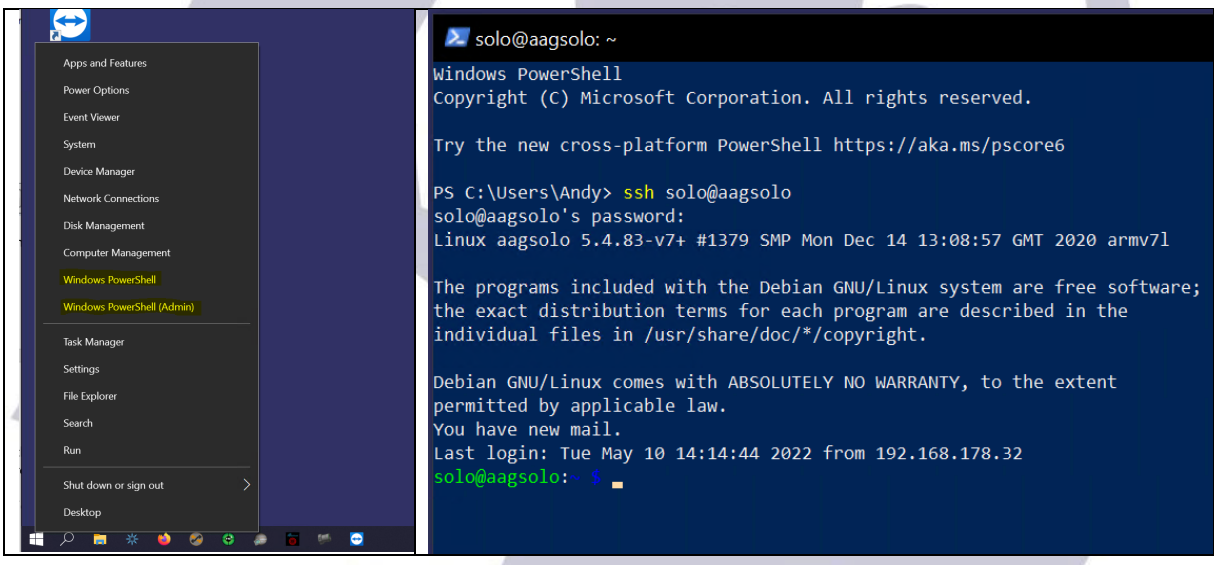
You’ll be asked if the signature is valid, select yes, otherwise you won't connect. When prompted, enter:

- User: solo
- Password: cloudwatcher

Note: The user ‘solo’ was added with the Solo software version 3.x. If you are still using software version 2.x, you should login using the username ‘*pi*’.

Using Windows PowerShell

Another option for Windows 10 users is to use the built in Powershell which includes a ssh client. To open PowerShell, right-click on the Windows icon on the taskbar and select the appropriate version from the menu.



1. Copying the Single Line Data files to a NAS

Note: this will only work with Solo software version 3.x. or later.

In some cases, it is convenient to have the “Single Line Data” files available at some network server, other than the Solo.

The Solo already has support for this, but making the remote folder accessible from the Solo has to be done manually, let's see how:

Login, as instructed above, and once logged in, type:

```
solo@aagsolo:~ $ rootrw
```

(This will enable writing in the SD-card.)

… first let's remove the script that will try to copy the files, to avoid it writing to an empty folder. The script will be created again after a reboot.

```
solo@aagsolo:~ $ sudo rm /home/aagsolo/cpToNas.sh
```

… now create a suitable folder.

```
solo@aagsolo:~ $ sudo mkdir /mnt/nas
```

(This is the folder the Solo will expect – do not use any other name!)

At this point, you can check that you NAS is correctly configured by using the command:

```
solo@aagsolo:~ $ showmount 192.168.178.20 -e
```

(Replacing 192.168.178.20 with the IP address of your NAS)

If the NAS is available, you should get a return like this:

```
Export list for 192.168.178.20:
/volume1/CloudWatcher 192.168.178.53
solo@aagsolo:~ $
```

(Where 192.168.178.53 is the address of your Solo.)

You should now be able to mount the NAS manually with the command:

```
solo@aagsolo:~ $ sudo mount 192.168.178.20:/volume1/CloudWatcher /mnt/nas
```

If successful you should be able to see the contents of the drive using:

```
solo@aagsolo:~ $ ls -l /mnt/nas
```

If not already there, the files: aag_sld.dat and aag_sldc.dat, should be written to the file within approximately two minutes.

```
total 12
-rw-r--r-- 1 solo solo  104 May 10 13:24  aag_sldc.dat
-rw-r--r-- 1 solo solo  105 May 10 13:24  aag_sld.dat
d--------- 2 root root 4096 May  5 10:54 '#recycle'
solo@aagsolo:/mnt/nas $
```

To have the drive mounted automatically whenever the Solo (re)starts, edit */etc/fstab* and include a line for this mount. (Please refer to the documentation for your NAS to find the correct fstab settings to use. An example of the /etc/fstab entry for a Synology NAS mounted using the NFS format is included as an example.)

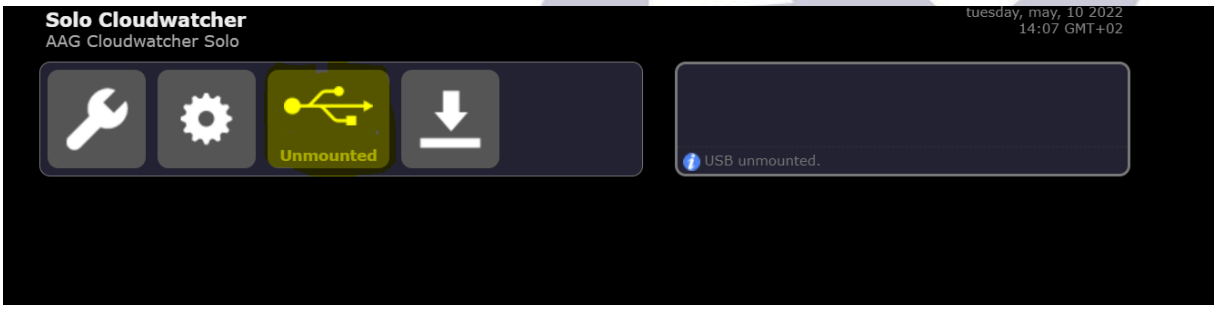
```
tmpfs   /var/log        tmpfs   nosuid,nodev    0       0
tmpfs   /var/tmp        tmpfs   nosuid,nodev    0       0
tmpfs   /var/cache      tmpfs   nosuid,nodev    0       0
192.168.178.20:/volume1/CloudWatcher /mnt/nas nfs rw,nfsvers=3 0 0
solo@aagsolo:/mnt/nas $
```

2. Writing the userdata.csv file to a NAS instead of USB

Note: this will only work with Solo software 3.x. or later.

The Solo is able to write the file userdata.csv to a USB storage device in order to allow long-term weather data to be collected. If you would like to store this data to a NAS instead, please follow these steps.

Important: If you already have a storage device in place, please unmount this, using the Solo config pages, before removing the physical device.



To enable the userdata.csv file to be written to the NAS, ensure that you first complete the steps in '*Copying the Single Line Data files to a NAS'*, above.

Two additional steps are required. In /etc/fstab, create a second entry that mounts the NAS to /mnt/pen.

```
tmpfs   /var/tmp        tmpfs   nosuid,nodev    0       0
tmpfs   /var/cache      tmpfs   nosuid,nodev    0       0
192.168.178.20:/volume1/CloudWatcher /mnt/nas nfs rw,nfsvers=3 0 0
192.168.178.20:/volume1/CloudWatcher /mnt/pen nfs rw,nfsvers=3 0 0
solo@aagsolo:~ $
```

Restart the Solo using:

```
solo@aagsolo:~ $ sudo reboot
```

Once the Solo has restarted, log in again and enter the following command to create the userdata.csv file.

```
solo@aagsolo:~ $ touch /mnt/pen/userdata.csv
```

You should now be able to see the contents of the userdata.csv file being created.

```
solo@aagsolo:~ $ cat /mnt/pen/userdata.csv
"Date","Time","Cloud Condition","Rain Condition","Brightness Condition","Cloud V
alue","Cloud Sensor Temperature","Rain Value","Brightness Value","Ambient Temper
ature","Rain Heating Percentage","Rain Sensor Temperature","Heating Status","Swi
tch Status","Read Cycle","Timeout Errors","Safe Status","Wind Condition","Wind V
alue","Rel hum Condition","RH Value","Raw IR reading","Rel. pressure","Abs press
ure"
"2022-05-10","14:19:54","Overcast","Rain","Very light","14.8","25.1","3456","1",
"25.1","10%","34.0","","Closed","5","0","Unsafe","Calm","-1.0","Normal","48%","2
2.9","1000.6","956.0"
solo@aagsolo:~ $
```

Remember to backup and recreate the userdata.csv file from time to time as, left alone, the file will grow indefinitely.

3. Changing the Solo web server port

It seems there are some routers with very restricted port mapping capabilities, so it may be convenient to be able to set a non-standard port for the Solo's web server. To do this, log into the Solo as described in 'Getting Started', above.

First, we need to stop the webserver:

```
solo@aagsolo:~ $ sudo service lighttpd stop
```

Then we make the file system writable:

```
solo@aagsolo:~ $ sudo mount / -o remount,rw
```

Next, we need to edit the webserver configuration file:

```
solo@aagsolo:~ $ sudo nano /etc/lighttpd/lighttpd.conf
```

You can now edit the server port and save you changes with CTRL+O, before exiting nano with CTRL+X.

```
#server.document-root        = "/var/www/html"
server.document-root        = "/home/aagsolo/www"
server.upload-dirs          = ( "/var/cache/lighttpd/uploads" )
server.errorlog             = "/var/log/lighttpd/error.log"
server.pid-file             = "/var/run/lighttpd.pid"
server.username             = "www-data"
server.groupname            = "www-data"
server.port                 = 80
```

Finally, reboot the Solo:

```
solo@aagsolo:~ $ sudo shutdown -r now
```

For further information, or if you have some tips of your own to share on getting the most out of the Solo, please visit the forum at: https://lunaticoastro.com/lunabbs.