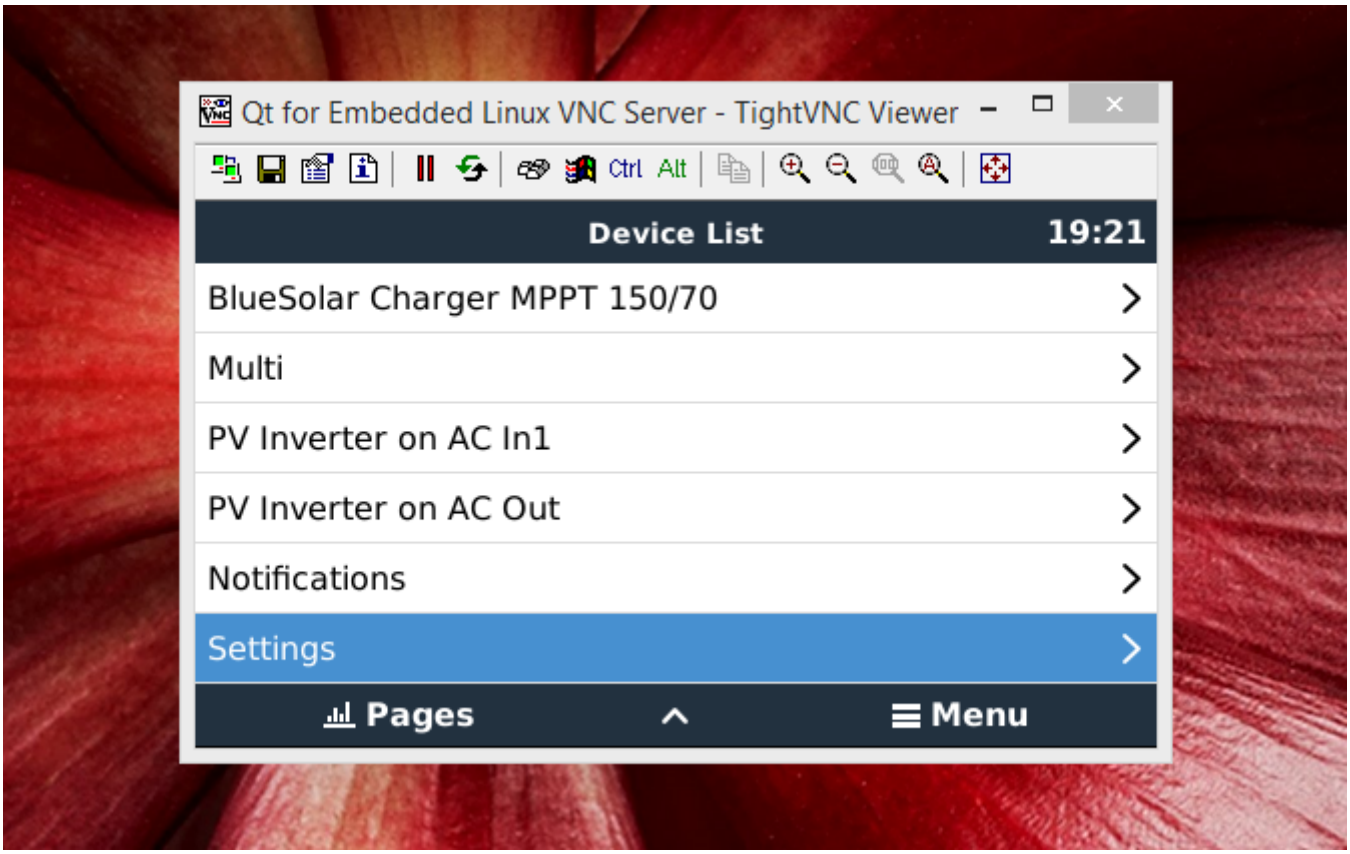
Using VNC to remotely access a CCGX

WARNING: below instructions are for advanced usage only. Victron Energy cannot give any guarantees nor take responsibility about the possibilities and solutions offered below. Only use this if you know what you are doing and are capable of setting up VNC and other networking protocols. Below example would allow anyone to remotely access a CCGX that is connected to internet without a firewall.

A typical use case where using this would make sense could be the following customer case: 'We will have seven off-grid solar systems to provide energy to remote telemetry equipment. Our client would like to monitor the battery state, as well as other parameters. For this he will make available an Ethernet port, that via a wireless interface, will connect back to base camp. There will be no internet available.' Network security is less of an issue, since there is no internet access. But still do note that all individuals with access to that local network, will be able to access the CCGX via VNC.

Introduction to VNC

VNC is a desktop sharing protocol, commonly used to remotely log into a computer. Similar to for example Microsoft Remote Desktop and Teamviewer. It can also be used to remotely view and use a CCGX, from a desktop computer, but also from a phone or tablet! See for example below screenshot.



Use the following keys:

- ESC is the top left soft button, called 'pages'

- Space is the center button
- Enter is the top right soft button, called 'menu'

Prerequisites

First, carefully read above warning, and only continue if you know what you are doing.

Then, you need to have root access to the CCGX ssh shell. Ask for us the login details at mvader@victronenergy.com.

Enable the SSH server by enabling Remote Support. The Remote support setting is in Settings → General.

Connect to the CCGX with a ssh client, for Windows we recommend putty.exe, available at http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html

Setting up the VNC server

1. Update the package repository

```
opkg update
```

2. Install the vnc server

```
opkg install qt4-embedded-plugin-gfxdriver-gfxvnc
```

3. Go to the directory containing the gui run script

```
cd /opt/color-contro/gui/service
```

4. Add “-display “Multi:: VNC::size=480×272:depth=24:0” to the script. To edit the script, run

```
nano ./run
```

A basic text editor will open. Make the changes, and use ctrl-x to save and exit the file. Note that nano can be tricky when trying to change long lines. To see if you did it right, run:

```
cat ./run
```

The contents should be:

```
#!/bin/sh
exec 2>&1
exec envdir ./env softlimit -d 2000000 -s 1000000 -a 100000000 /opt/color-
control/gui/gui -qws -nomouse -display "Multi::
VNC::size=480x272:depth=24:0"
```

4. Restart the gui

```
svc -t .
```

All done! If the gui does not start up any more, double check that you successfully made the changes to the run script. The output of the gui log is in /log/gui/current. To see it, run

```
cat /log/gui/current | tai64nlocal
```

Notes

- Above changes will disappear every time that the CCGX is updated
- A typical viewer to use on your laptop is available at https://www.realvnc.com/. On my laptop (64bit, windows 8.1) the realvnc viewer does not work. The VNC viewer available here did work: http://www.tightvnc.com/. For a mobile phone, there is an app from Real VNC, and probably many other brands as well.
- With above changes, you have opened port 5900 for anyone. There is ZERO security. Never do this on a CCGX that is publically connected to internet.
- To go back to the original situation (no VNC) restore the gui script (as well as the rest of the gui) run

  ```
  opkg install gui --force-reinstall
  ```

- The VNC functionality came 'for free' with the library we use, QT 4.7. The newest version, QT 5, no longer has the VNC option. There is no need to worry immediately: at this moment we havent started yet to migrate to QT 5, and don't expect to in the immediate future. And even when that time comes, a solution could be to keep running the latest version that still had VNC.
- To make this solution secure, it is probably possible to tunnel it via ssh. Anyone is welcome to figure out how that works exactly and add the information to this page.

To give us an idea of the value of this feature, please do let us know in the comments below.

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