Troubleshooting CCGX to VRM connectivity

This document outlines the procedure to troubleshoot connectivity between a CCGX and the VRM Portal.

Please also read the manual of the CCGX on how to setup an internet connection and the logging to the VRM Portal:

Not using a CCGX but a Victron Global Remote or Victron Ethernet Remote? See this document instead.

Trouble shooting Remote Console on VRM? See last section in this document.

On initial contact with the VRM site it may take a few minutes for data to appear, as a newly-connected or re-connected CCGX's presence requires that data to be filtered through our back-end systems, before the information becomes visible on the VRM site.

If the data backlog size continues to increase after the chosen logging interval time is met, then you have internet connectivity issues. You could try to increase the logging interval to a longer time, in order to reduce necessary bandwidth. Bandwidth requirement is quite low, so this normally only happens when using a cellular data connection. Try moving the antenna or obtain a higher gain antenna.

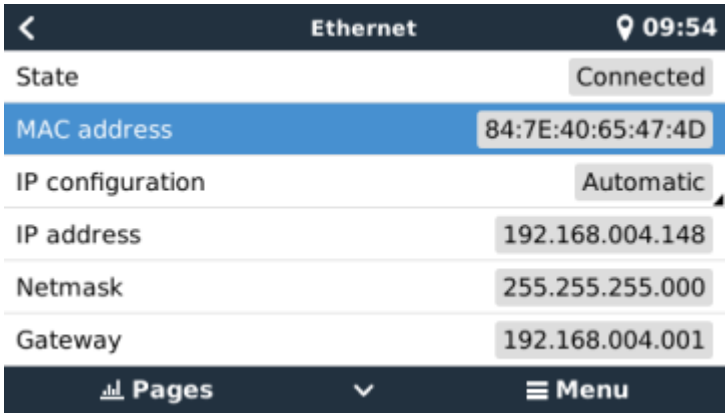
Step 1. Update the CCGX to the latest available firmware

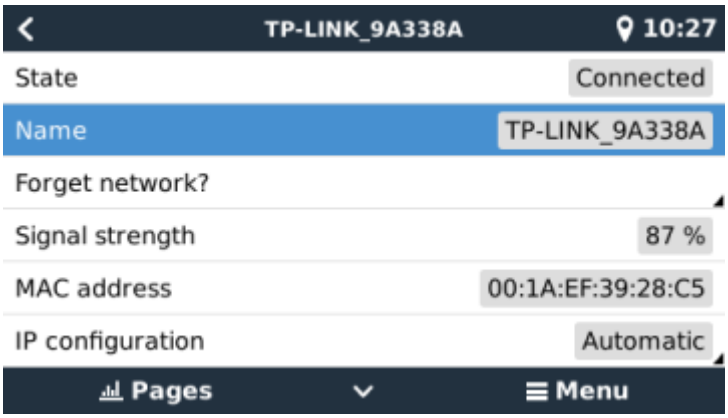
How to update a GX device

Step 2 - Verify that the CCGX has a valid IP address

In the menu Settings → Ethernet or Settings → Wi-Fi, check the following:

1. State must be 'Connected'
2. There must be an IP address, that does not start with 169.
3. There must be a gateway
4. There must be DNS servers





When using Ethernet and State shows 'Unplugged', verify that the Ethernet network cable is not faulty: try another one. The two lights at the back of the CCGX, where the Ethernet RJ45 cable plugs in, should be lit or blinking. Two dead lights indicate a connection problem.

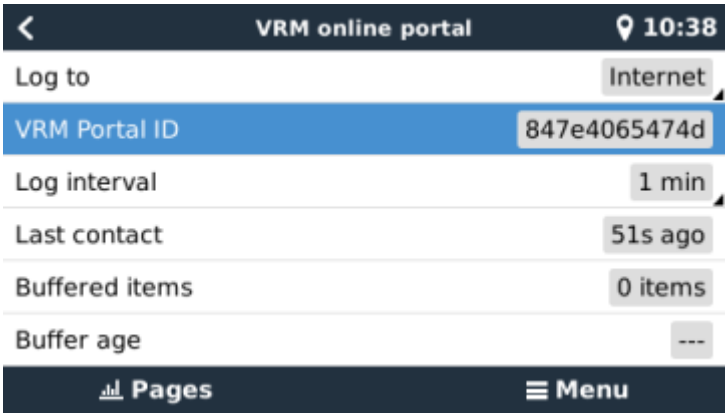
When using Wi-Fi and the menu shows 'No Wi-Fi adapter connected' check the USB connection to the Wi-Fi dongle. Try to remove the dongle and insert it again.

When using Wi-Fi and the State shows 'Failure', it might be that the Wi-Fi password is incorrect. Press 'Forget network' and try to connect again with the correct password.

In case there is an IP address that starts with 169, check whether your network has a DHCP server running. 99% of all networks have a DHCP server running and it is enabled by default on all well-known ADSL, cable and 3G routers. If there is no DHCP server running, then configure the ip address manually.

Step 3 - Check connectivity between CCGX and VRM Portal

Navigate to Settings → VRM online portal.



Check 'Last contact'. If this shows dashes or a time that is much larger than 'Log interval', the CCGX is not able to contact the VRM database.

Resolution: make sure that your network has access to the internet. Plugin a laptop and navigate to https://vrm.victronenergy.com/ for example.

If 'Buffered items' is larger than 0, it means that the CCGX can not connect to the VRM Portal. All data is sent using the First in First out principle: the VRM Portal will only show the most up to date information after all old data has been sent.

In case all above checks have been done, internet connection is sure to work, and still 'Last contact' keeps showing dashes, try re-installing the firmware with a recovery image.

The communication required to communicate to the VRM Portal is:

1. Working DNS
2. Proper IP address
3. Working internet connection
4. Outbound http(s) connection to http://ccgxlogging.victronenergy.com on port 80 and 443. Note that should never be an issue, unless on very specialized company networks.

Note that the CCGX does not support a proxy setup.

For details on the required networking, see here.

And if that also doesn't help, you can dig deeper. But that requires knowledge of Linux, working on the console, and ssh. Note that in 99.99% of all cases the root cause lies in the internet connection.

Step 4 - Add the site to your VRM account

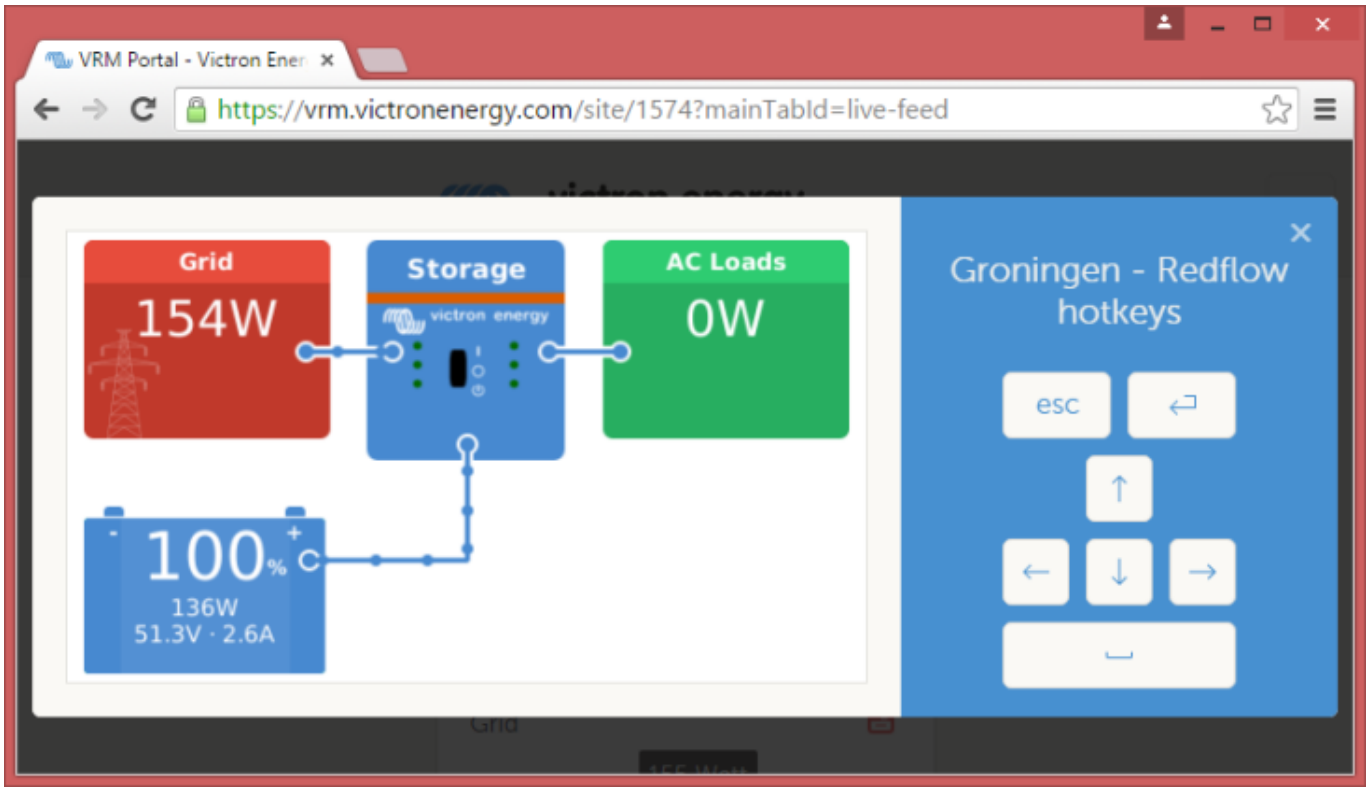
Adding a CCGX to your account is only possible after the CCGX has made its first initial contact to the VRM Portal.

As long as 'Last Contact' shows 'Never', go back to step 1 and 2.

Once the internet communication is up, and 'Last contact' shows several seconds or minutes ago, continue with ADD Site on the VRM Portal. See Getting started with VRM for further instructions.

Trouble shooting Remote Console on VRM

The Remote Console on VRM feature allows full remote control of a CCGX, over the internet:



After enabling the feature in the CCGX setting menu, setting or disabling the password, and then restarting the CCGX, a new Menu Option will show on the VRM website. Click it to open the Remote Console.



Steps to take when it does not work:

1. First make sure that basic communication with VRM works, see above steps.
2. After enabling the feature, make sure to set (or disable) the password.

3. Then restart the CCGX.
4. Make sure to update the CCGX to the latest firmware version: v2.11 or newer.
5. After the restart, check the Remote Console on VRM status shows online or a port number. In case it says offline, or port number 0, the CCGX was unable to connect to the Remote Console server. This is normally caused by a (company) firewall, blocking the connection. The solution is then to configure an exception rules in the firewall.
6. Verify that your local web browser can access the websocket port (8080 on vncrelay.victronenergy.com). If you click that link and get 'Error response, method not allowed', it means the connection between your PC and the VNC relay is working. If you get a timeout or another (browser) error, there may be a firewall blocking the connection.

Remote Console on VRM uses the same reverse SSH tunnel as is used for Remote Support: outbound connection to supporthost.victronenergy.com on port 22, 80 or 443. It is not necessary to set up port forwarding in routers to use Remote Console on VRM. It is necessary for the firewall/router to which the CCGX is connected, to allow outbound connections to supporthost.victronenergy.com on at least one of the three mentioned port numbers. Most routers will allow this by default.

IP Address verification

Remote Console on VRM checks the IP Address for security reasons.

In case all above does not help, it might be that your internet connection very frequently changes its IP-address. And/or that the internet provider routes the different data stream over different of its routers.

Both of which will make the IP verification fail and therefor makes Remote Console fail. To solve this problem, contact your internet provider and/or change to a different internet provider.

Note that it is not necessary for the CCGX to be addressable itself, and/or have a public IP address. Worded differently: traversing NAT translation is no problem.

Further debugging VRM communication (advanced)

Debugging the connection (advanced)

Data is sent to the VRM Portal using HTTP POST requests to http://ccgxlogging.victronenergy.com/log/log.php. In case all above checks have been done, internet connection is sure to work, and still 'Last contact' keeps showing dashes: try logging into the CCGX with ssh. And do:

```
wget --quiet -O- http://ccgxlogging.victronenergy.com/log/log.php
```

The output should be a line containing the text 'vrm: OK'. If it does not, or wget hangs, check your network. Apparently communication is blocked.

Using HTTPS instead of HTTP (advanced)

If your provider is blocking HTTP requests (e.g. the wget request above times out or fails), you can change the CCGX to log to the VRM portal via HTTPS:

```
root@ccgx:~# dbus -y com.victronenergy.settings /Settings/Vrmlogger/Url
SetValue https://ccgxlogging.victronenergy.com/log/log.php
```

Verify that the setting has been changed:

```
root@ccgx:~# dbus -y com.victronenergy.settings /Settings/Vrmlogger/Url
GetValue
'https://ccgxlogging.victronenergy.com/log/log.php'
```

It is then recommended to reboot the CCGX to apply the changes. (Alternatively, you could manually restart the vrmlogging services, but it's easier just to restart)

After you reboot, you should see the buffer size decrease:

```
# before rebooting
root@ccgx:~# dbus -y com.victronenergy.logger /Buffer/Count GetValue
375
# after rebooting
root@ccgx:~# dbus -y com.victronenergy.logger /Buffer/Count GetValue
362
```

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