Configuring APIS on a i80 Base / Rover Pair

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APIS is a built-in CHC service that allows you to automatically broadcast corrections from a base to one or more rovers via GSM (Cellular) data. The service is free.

Using APIS requires provisioning GSM SIM cards in both the base and rover receivers.

Here is how APIS works:

| BASE | transmits to | APIS SERVER | re-transmits to | 1 or more ROVERS |
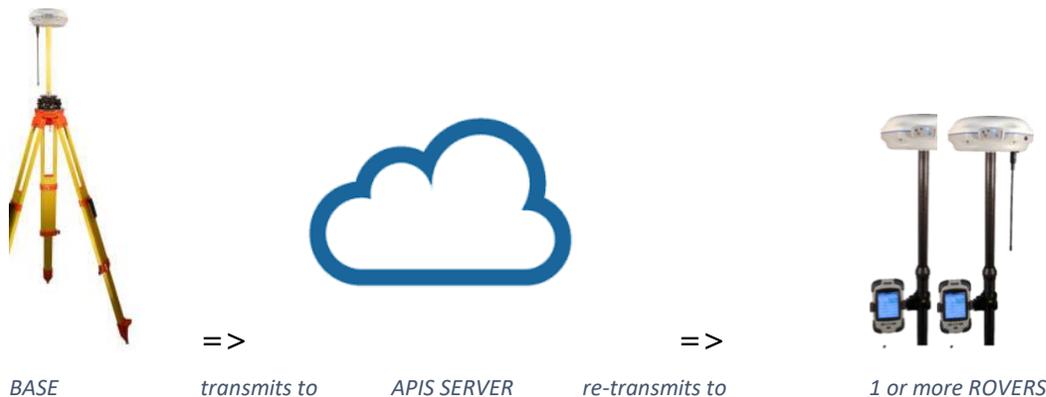
The base transmits corrections to an APIS server (in the cloud) which then distributes the message to one or more rovers.

The base can be configured to automatically do a 'Read GPS' for the broadcast position and then connect to the APIS Server automatically every time it is turned on.

The rover can be configured to automatically connect to the APIS server and get corrections when it is turned on. (So once you configure a head, if power is cycled, it should return to the same condition.)

The serial number of the Base Receiver is used to tie the rover to the correct base.

There are many ways to configure APIS on the i80:

      You can do it completely from the front panel

      You can use the Web interface

You can use HcConfig on a PC or data collector

The easiest way is to

a. Use the web interface to get the SIM cards registered in the i80
b. Verify that the heads are conneted to the cellular network
c. Then use SurvCE to configure the base.
d. Then use the Base front panel to switch the base to APIS mode
e. Next use SurvCE to connect to the rover.
f. Then use the Rover front panel to switch the rover to APIS mode

The only trick is on the rover, you need to not allow SurvCE to disconnect the APIS connection.

Let's get started!

0. Write down the FULL serial number of your base. Double check it, you will need it mid setup.

1. Put SIM cards in the Base and Rover.

2. Use the Web interface to configure both base and rover's GSM function:

Connect your PC to the i80 receiver via Wi-Fi. The SID is "GNSS-serialnumber" where serialnumber is the serial number of the i80. The password is '12345678'.

Now open a browser window and navigate to 192.168.1.1:
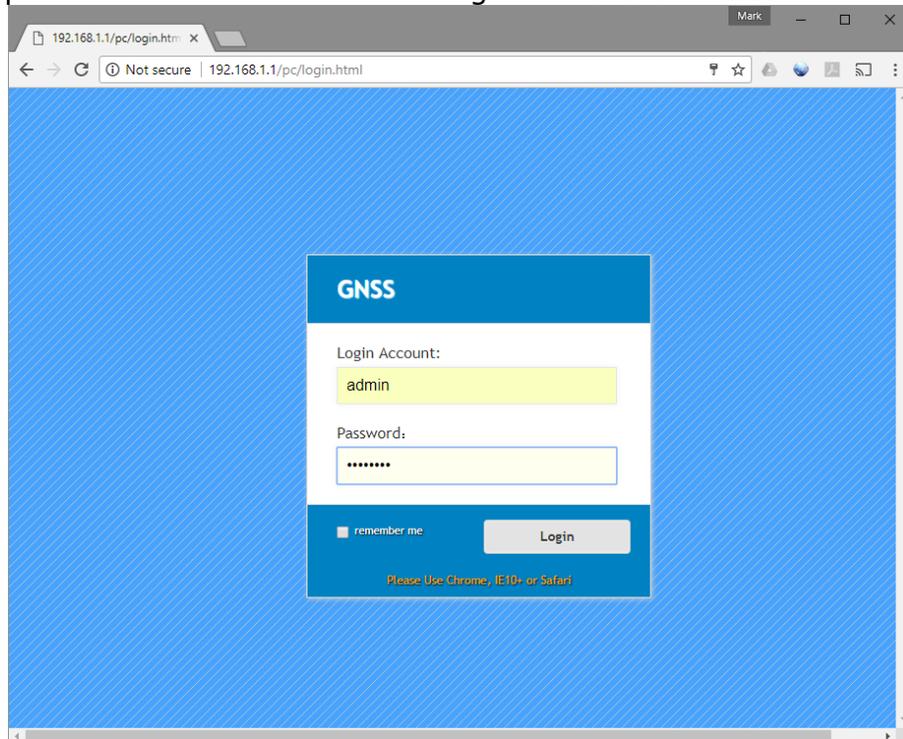
The account is 'admin' the Password is 'password'.

On the left panel, click on 'Network Settings', 'Mobile Network Setting':
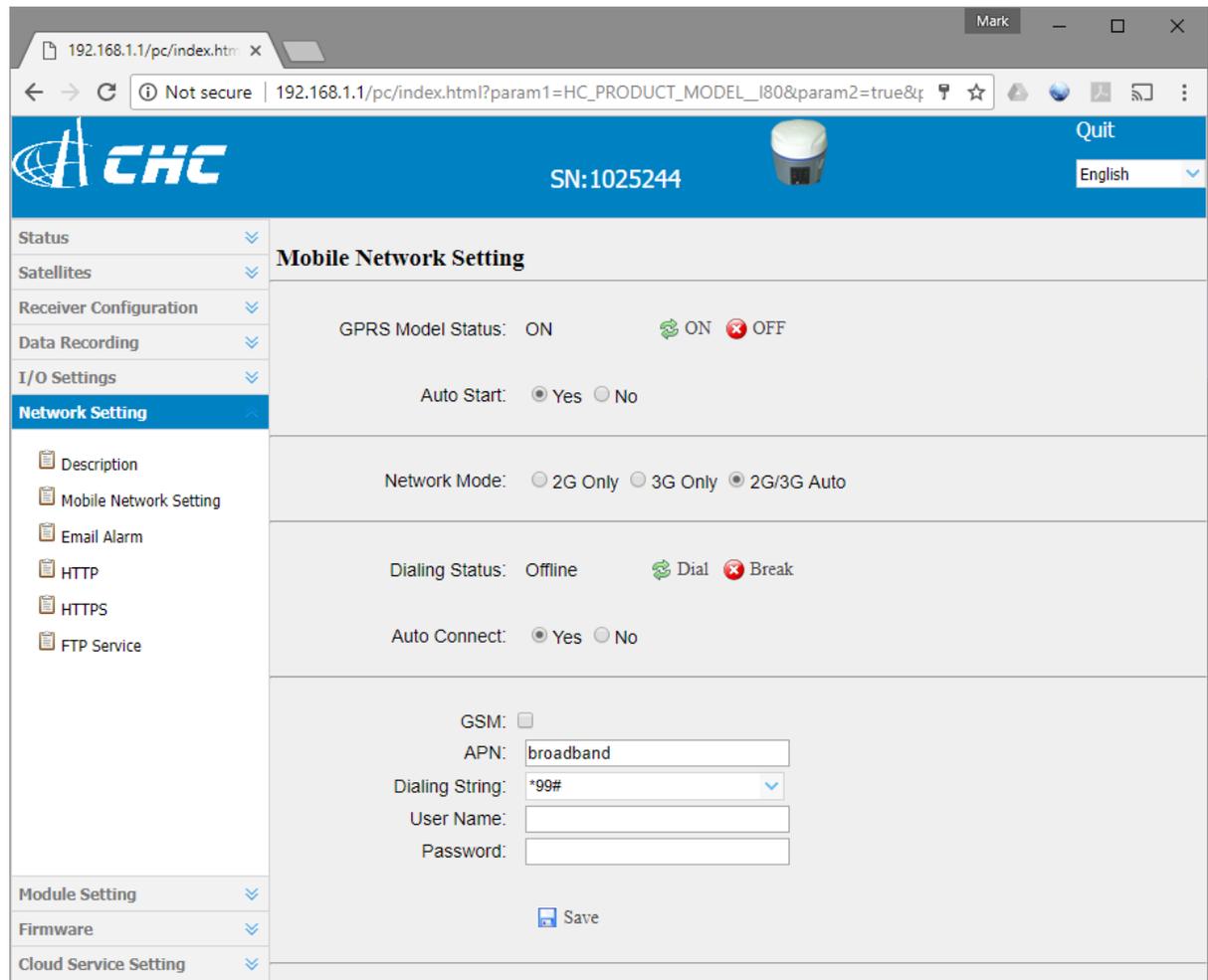
In the USA, setting the APN to 'broadband' with a dial string of '*99#' and a blank user name and password typically works. Then set 'Auto Start' to 'Yes' and 'Auto Connect' to 'Yes'. Click on the 'Save' button after changing.

Finally click on the 'Dial' button and make sure that the dialing status updates to 'Connected':
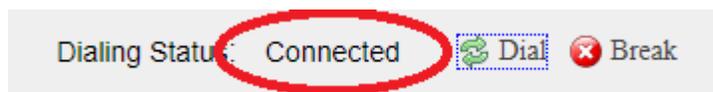
3. Configure the base normally in SurvCE as a UHF Base. (Equip: GPS Base: …)

4. Configure the rover normally in SurvCE as a UHF Rover (Equip: GPS Rover: …)

The rover should get a fixed solution, if you are watching in 'Monitor Skyplot'.

5. SWTICH BASE TO APIS MODE:

Now let's switch the base from the internal UHF radio transmitter to pushing the corrections into the APIS Server in the cloud:

From the front panel of the base, move down to second line with Fn button.

Click O to select the 'Mode'

Use the Fn button to move selection to 'Base APIS'

Click O to select,

Fn down and select sCMRx for format,

Use the Fn button to move down to the IP address.

Use the O to select the 101.251.112.206 address. (Any address other than the first one should be fine.)

Use the Fn button to move down to Port, select 9901.

Use the Fn button to move down to OK and click on O button to save these settings.

The head will attempt to connect to the APIS server, the GREEN LED will flash once per second as corrections are sent to the server.

If you are connected to the head by WiFi the IO screen will look like this:
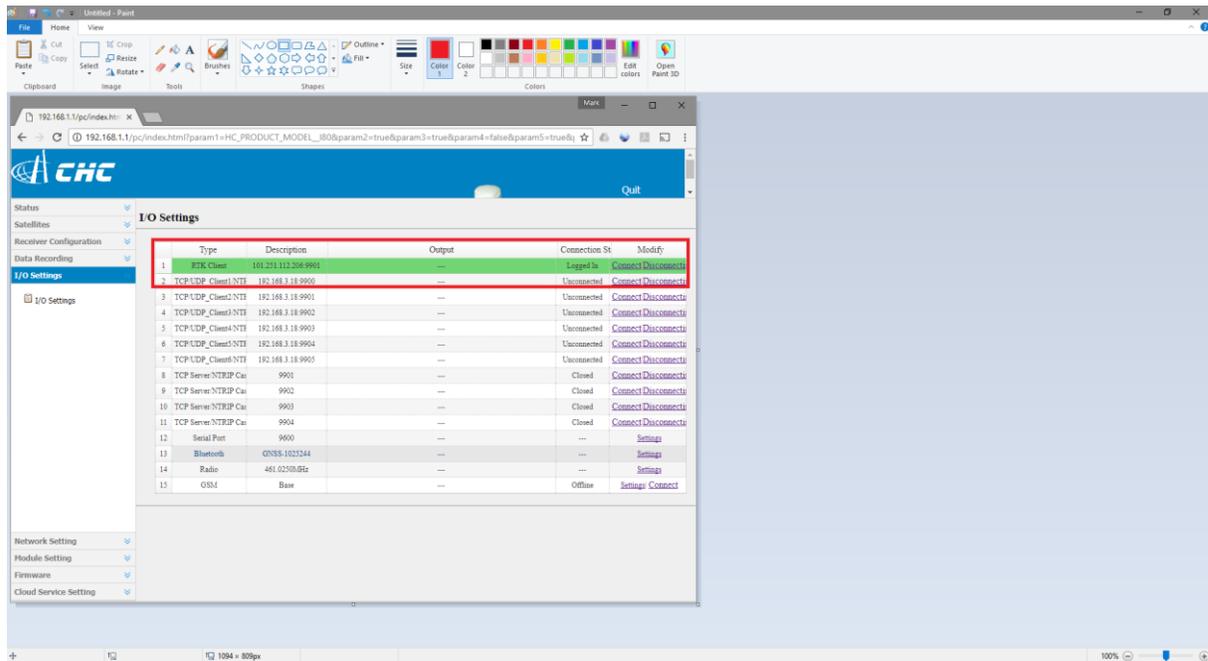
With the top line in GREEN indicating that data is flowing to server.

5. SWITCH ROVER TO APIS MODE:

When the base changes from the internal UHF radio to APIS, the green correction LED on the rover will stop blinking. Now we need to switch the rover to APIS.

From the front panel, click the Fn button to select the second line 'Mode'.

Click O button to enter the mode menu.

Use Fn button to select 'Rover APIS'

Click O button to enter 'Rover APIS' menu.

Use Fn button to select 'Current Base SN', then click O button to set the serial number (which you wrote down in step 0). Double check that it is correct.

When complete, use Fn button to select OK and then click O to return to previous menu.

Set the IP address to match the one you selected in the base. 101.251.112.206 is a good one.

Set the Port to match. 9901 is a good one.

Move to OK and press O to select.

The head will now attempt to connect to the APIS server and get corrections from the base. If it works, the Greed LED will flash again.

TRICKING SurvCE into not DISCONNECTING FROM APIS

After completing the steps above, your Rover is connected to APIS with GSM cellular data and to your data collector by Bluetooth.

If you exit SurvCE and come back in, SurvCE will ask if you want to connect to the last device:
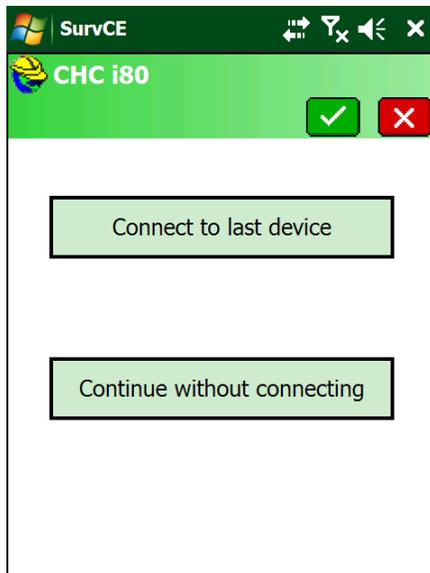
Say no, because if you connect, SurvCE will switch the i80 back to UHF mode.

(No big deal if this happens because all your APIS settings are remembered and you can quickly reconnect with Fn, O, O, Fn, Fn, Fn, Fn, O from the front panel.)

But it is just as simple to answer 'Continue without connecting' then go to Equip, click on 'GPS Rover':
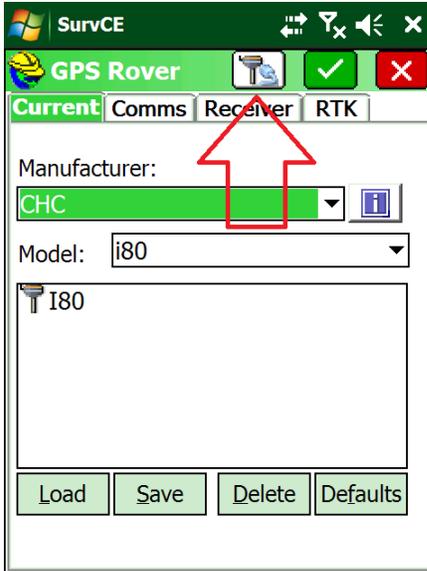
Click on the Bluetooth connect button (Carlson will say 'Successful Connection') then click on the red X at the top. You can then click on Monitor Skyplot or Store and the head will continue to use the APIS configuration.

If you turn the head (base or rover) off, you should be able to turn it back on again and if the base is in the same position, it will automatically resume operation and reconnect to the APIS server. Same for the Rover.

Good Luck!