

A VRS, Virtual Reference Station, is one option for providing real-time differential correction to a GNSS receiver. VRS corrections are available from a variety of public and commercial services. VRS networks and subscription services provide dual-frequency (L1/L2) real-time differential GPS (DGPS) and in many cases DGNSS (GPS and GLONASS) corrections to improve accuracy as data is collected. A VRS service uses data from several (permanent) reference stations to compute corrections that are generally more accurate than corrections from a single reference station. These corrections are then broadcast over the Internet.

A VRS or Single Base solution may be free or have a fee imposed, depending on the managerial policies of that particular system. Continuous use of this option depends on being able to maintain a good cell phone signal. The base station manager will supply you with the credential information to connect to the VRS or single base.

In preparation for using a VRS or Single Base solution, you need to obtain the right equipment. Any member of the Trimble GeoExplorer® family, ProXT/XH/XRT, Pro 6T/H, R1/R2, or Juno 5 series will work fine providing you are using TerraSync™, Trimble Positions Software Suite, TerraFlex, or ESRI Collector for ArcGIS. This requires a Windows® Mobile Device or PC platform.

There are many options available for getting an Internet connection in the field. If your device supports a SIM card or integrated cellular modem, please see the user guide for that device to get it configured. A phone with a hotspot or a portal hotspot device can also be used. We recommend that you purchase a “data plan” with your hotspot. This will typically provide you with unlimited data streaming. Please visit your local cellular distributor for pricing. You can connect to the Internet without an unlimited data plan, but that could result in very large cellular phone bills.

**Note**– Delivery speed of the VRS or Single Base corrections are not as critical as maintaining strong signal connection with a cell tower.

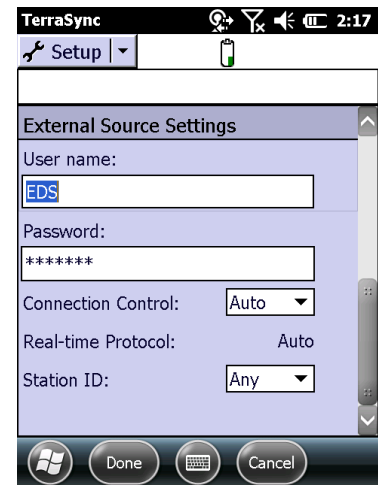
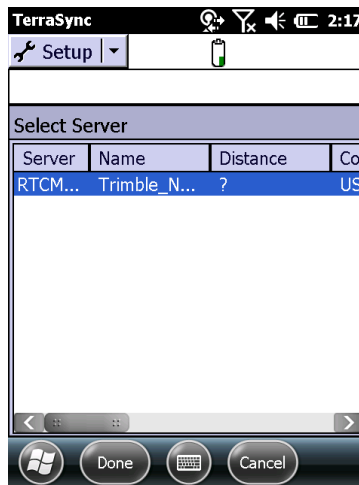
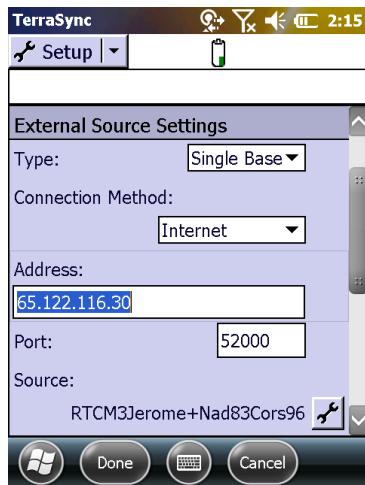
### Connecting to WiFi Hotspot

1. On your device go to Start> Settings> Connections> WiFi.
2. Your hotspot should show up in the list of available WiFi's. Tap on it to go to the Configuration Settings.
3. Enter in the configuration information for your WiFi network.
4. Once finished, it should connect.
5. You can browse on Internet Explorer to make sure that the WiFi is working.



## Configuring Settings in TerraSync or Positions ArcPad Extension

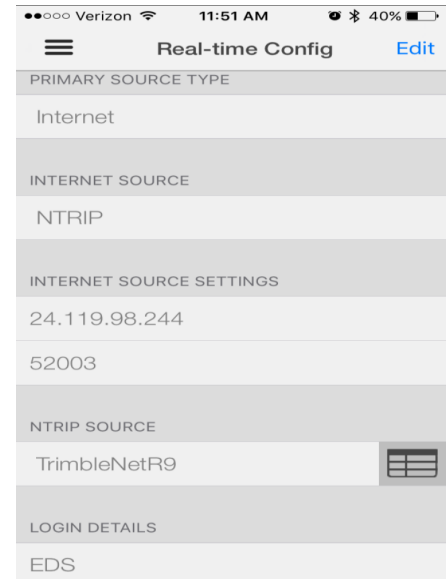
1. Open your data collection software.
2. Change the dropdown to Setup and select Real Time Settings.
3. In the Choice 1 pull down menu, select External Source then tap the wrench tool to the right of that field to go to the settings.
4. Choose the Correction Datum that your base station or VRS is using.
5. The next pull down is Type. Select either Single Base or VRS.
6. Under Connection Method, select Internet.
7. Type in the IP Address and the Port number you have been given by your provider.
8. Tap the wrench to the right of Source.
9. A list of possible base stations to connect with will populate. Be sure to choose a base station that is broadcasting a protocol that can be used by your receiver or assigned to you by your provider.
10. Enter your User Name and Password.
11. Select Auto for Connection Control.
12. Select Any for Station ID.
13. Tap Done to save the External Source settings.



14. In the Choice 2 dropdown, you can select the choice that best fits your workflow.
  - Use Uncorrected GNSS– logs autonomous GNSS positions if the external source can't connect. Can be used when Internet connection coverage is limited or not available.
  - Integrated SBAS– uses Satellite Based Augmentation System (SBAS) corrections if the external source can't connect. Can be used when Internet connection coverage is limited or not available.
  - Wait for Real-time– logging is suspended until a real-time correction source becomes available. Can be used if Internet coverage is always available and high accuracy is required.
15. Click Done. You are now back at the main Setup menu.
16. Go to the Status menu and wait until the radio icon stops flashing. You will see a number to the right of the satellite icon representing your CEA (Current Estimated Accuracy). Be sure to wait until your CEA reaches an acceptable accuracy level before beginning your data collection.

## Configuring Settings in GNSS Status

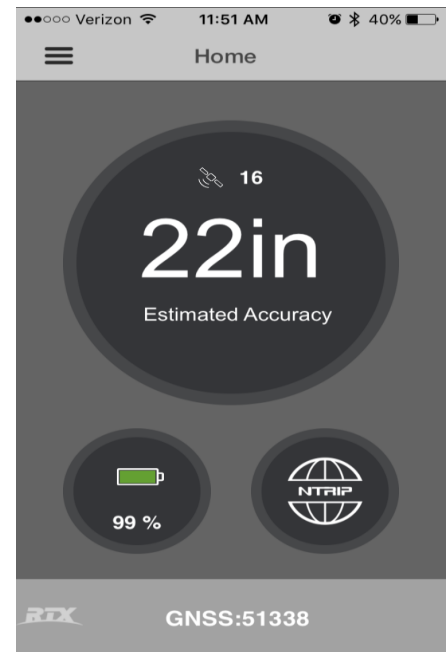
1. Open GNSS Status on your device and connect to your receiver.
2. Tap the menu button and go to Real-time Config.
3. Tap the Edit button.
4. Change the Primary Source Type to Internet then press the back arrow.
5. Choose NTRIP under the Internet Source option.
6. Type in the IP Address and the Port number you have been given by your provider to the Internet Source Settings.
7. Tap on the table to the right of the NTRIP Source.
8. A list of possible base station to connect with will populate. Be sure to choose a base station that is broadcasting a protocol that can be used by your receiver or assigned to you by your provider.
9. Enter in your username and password to the Login Details.
10. For the Secondary Source Type, select SBAS.
11. Click Save to Save your settings.
12. Tap the menu button and go to Home.
13. Wait for the real time connection to show NTRIP.



## Configuring Settings in TerraFlex

*This configuration will need to be created on the TerraFlex webpage before going out into the field.*

1. Click on your organization tab then the Real-Time Configurations tab.
2. Click on the Add Configuration button.
3. Give the configuration a name in the Details field.
4. In the Primary Source dropdown, select Internet. The Internet configuration page will open automatically.
5. Choose NTRIP under the Internet Source option.
6. Type in the IP Address and the Port number you have been given by your provider to the Internet Source Settings.
7. Click on the lock icon to the right of the NTRIP Source.
8. A list of possible base station to connect with will populate. Be sure to choose a base station that is broadcasting a protocol that can be used by your receiver or assigned to you by your provider.
9. Enter in your username and password to the Login Details.
10. Choose the Correction Datum that your base station or VRS is using.
11. Click on Save to save the changes.
12. Select the configuration from the list of configurations.
13. Click on the Link to Project button and choose all the projects that you want to use this configuration with.
14. Click on the check button to save the newly linked projects.
15. In the Secondary Source, select SBAS.





# How To Set Up a VRSTM or Single Base Connection With a Trimble® GPS receiver

November 16, 2016

Configuration 4 Cancel Save

Server	Details	Format	System	Country	Network	Carrier	Generator	Solution	Fee	BitRate	NMEA	Authen
TrimbleNetRS	0(1),5(1)	CMR+	GPS+GLONASS	USA	Single Base	2	Trimble NetR9	0	N	9600	0	B

**SOURCE TYPE**  
Internet

**INTERNET SOURCE**  
NTRIP  
http://24.119.98.244  
52003

**NTRIP SOURCE**  
JeromeCMR

NTRIP source requires authentication

**LOGIN DETAILS**  
Username  
Password  
If the Username and Password are left blank, then the field worker will be prompted to enter them

**DATUM**  
Select datum from list

The real-time configuration is now setup and linked to your project, however, you will still need to select the configuration in the TerraFlex mobile software. This can be accomplished by selecting your project then going to Menu> Settings> Real-time Configuration and selecting the configuration from the list.