Viper/Phantom RF Link Quality (Ping Test)

The Ping Test should be performed for each RF link in the radio network. The master radio should be installed and then as each remote is installed the results of the ping test should be recorded. If a RF Link is not at 97% or better then it should be investigated before put in to service.

If a radio network is having issues the Ping Test should be the first test that is ran to determine if there is a RF path issue on any of the RF links. **This is extremely important.** The RF Link Quality needs to be determined first before looking at any data or configuration issue. The Ping Test if ran correctly will accurately determine if there is a RF path issue.

The RF path consists of the radio hardware, antennas, feedline cables, RF path, and even power supplies. All of the above can affect the RF path.

If the ping test totally fails then it might be a configuration or a RF path issue. Determine if the remote radio has a Received Signal Strength Indication (RSSI). If a poor RSSI then correct the RF path.

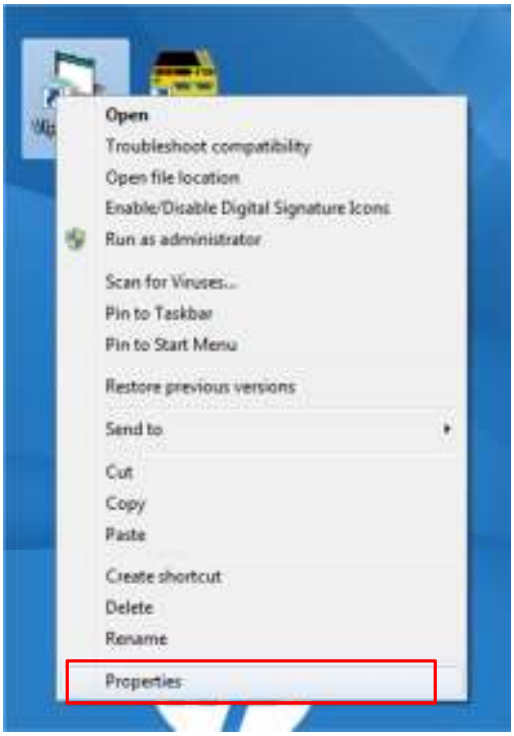
Viper/Phantom RF Link Quality (Ping Test)

The Ping Test procedure outlined below should be the used when installing or testing a Viper/Phantom radio network. The Ping Test procedure will determine the RF Link quality of a pair of radio ***at the time*** it is ran. Keep in mind there can be issues that are not present when the Ping Test is being performed, such as intermittent interference or a bad connection. The Ping Test sends out an IP ICMP ping unicast packet (payload size can varied) to a selected remote Viper/Phantom unit. The receiving remote radio will reply with the same packet. The Ping Test will determine the percentage of successful packets sent and received in the RF Link. There does not have to be any external device connected at the remote.

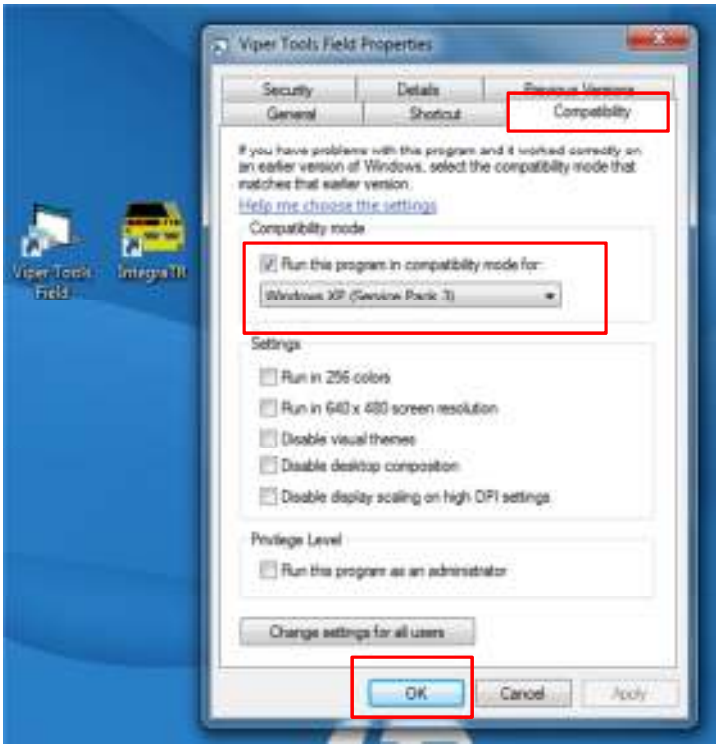
The Ping Test is a utility that is included in both the CalAmp Viper Field Tool and the Integra TR Field Programming Software. Contact CalAmp technical support to download one of these apps. Both apps run on all versions of Windows including Windows 8.

Install Either the Viper Filed Tool or the IntegraTR App

After installing one of the apps, right click on the Icon and select Properties to set the XP compatibility mode service pack 3 for operating systems older than Windows XP.

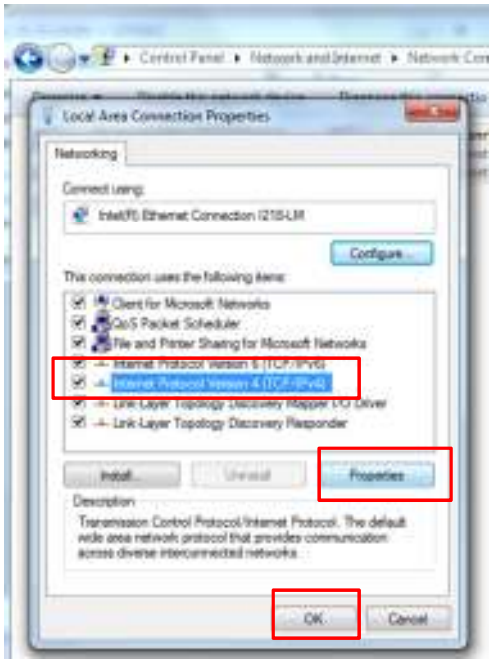


Right Click on Icon then selected Properties

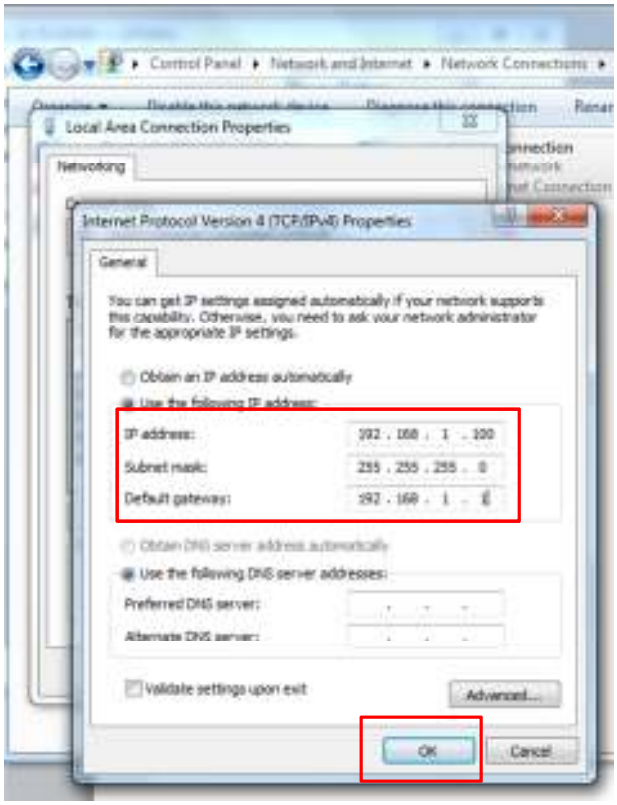


Select Windows XP Service Pack 3 Compatibility for Windows older than XP

Before starting one of the apps ensure your PC network interface connection has the correct IP properties. The PC running the Ping Test must be set IT wise to connect to a radio. If the PC is connected directly to the radio then it must be on the same subnet and a Default Gateway is not required. However if the PC is located remotely and must pass through a router (or router mode) to send packets to the radio network then a Default Gateway is required. In the Control panel select the LAN interface.



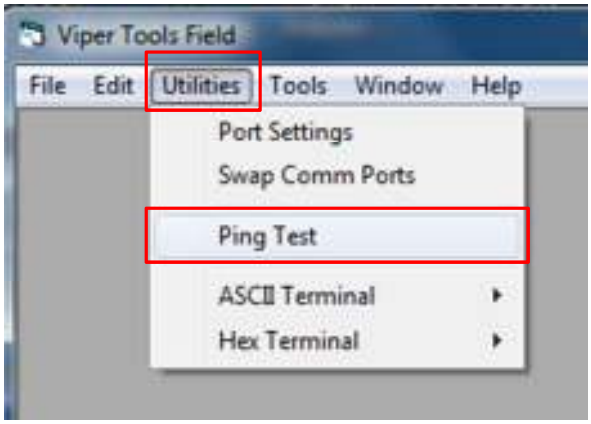
Select the version 4 TCP properties, and then click the Properties button.



Ensure you have the correct IP Addressing and Default Gateway set

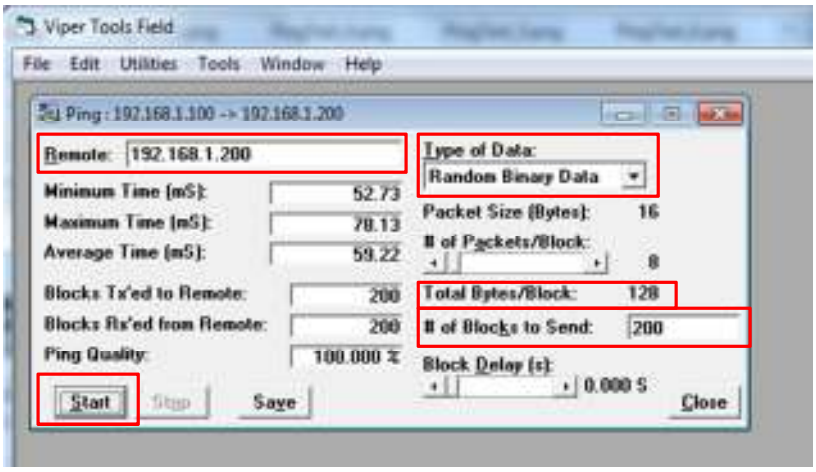
If you are connected directly to the Viper/Phantom radios ensure you are on the same subnet. If the radio system is configured for router mode the Default Gateway must be set to the first router or if connected directly to the radio then the IP Address of that radio. In this example the radio connected directly to the PC is 192.168.1.1. Then click OK the button and start up the app.

Select Ping Test under the Utilities.



Select Ping Test

A pop up window will display the Ping Test. The Ping Test can be set to send a particular packet size (Data payload) to simulate an actual SCADA packet. Typically **128 Total Bytes/ Block** are used for most networks. The payload size should be used for 25/12.5/6.25 kHz bandwidth, use 256 for 50/100 kHz bandwidth. **Random Binary Data** needs to be selected to ensure that random data is being sent. This ensure that the data is not compressible, any other setting will send compressible data and the Average Tine will be skewed (A lot shorter). The **# of Blocks to Send** for a simple test is generally set to 200 blocks. The test will send 200 standard ICMP packets with a 128 byte payload of non-compressible data to the remote IP address set in the Remote:.



Set as shown above

If the **# of Blocks to Send** is set to **0** then it will run continuously until the Stop button is clicked.

It is extremely important to ensure all data traffic has been stopped through the radio network while the ping test is being run. If any data traffic is allowed to pass through the system it will create contention and the packets might fail and skew the results.

The Ping Test will determine the RF Link Quality of a pair of radio. The Ping Quality indicates the percentage of successful packets sent and received. If the percentage is not around 97% (not lower than 95%) then there is a RF path issue that needs to be investigated.

The Average Time will indicate the Round Trip Time (RTT) to send and receive a packet. It can be used in determining the data rate of the radio. It also can be used to determine the packet latency of the network. The Ping Test will be forward all packets through a routed system as well for multiple hop networks.

Note:

If a ping packet fails, the Ping Test waits 6 seconds before sending another packet. It waits the 6 seconds so that the remote has plenty of time to reply. This cannot be changed. If you have a bad link then it might take a very long time to complete 200 blocks. If a bad link is determined early in the test, the test should be halted and the RF path corrected.