Quiver Navigator User Guide

Xcor-QNAVUG-v.5.0.1

4/2009

This document details the functionality of the Quiver Navigator software program. It provides instruction on how to quickly get started using the tool to locate sources of CPD. This document also details how to update the Quiver Navigator with current system maps as well as how to adjust tolerance.

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Overview

The Quiver Navigator software program is a very important component of the Hunter System. The Quiver Navigator tool is used as a companion to the Quiver Passive Radar. When Quiver is connected to the coaxial portion of the HFC network, it will provide a numerical time distance to sources of common path distortion (CPD) on the leg in which it is connected. This information on time distance is then input into Quiver Navigator. The user inputs the node they are connected to, information on where Quiver is currently connected to the node, and the time distance shown on Quiver – and Quiver Navigator outputs a map with flags that indicate the location of devices that are potential candidates.

Quiver Navigator is loaded with a database containing time distances between various devices in each node, as well as node maps. When a time distance is input into the software, it looks through the database to find devices that within a tolerance, are at the same time distance as that which was entered into Quiver Navigator. These devices are termed candidate devices. Typically more than one candidate device is displayed. Simple trouble shooting techniques are then used to determine which of the displayed candidate devices is the actual device that is the source of the network impairment. There can be multiple databases for several hubs installed in a single Navigator program.

The Quiver Navigator database is also populated with information on installed i-Scout probes when connected to a hub utilizing these devices. i-Scout Probes can pinpoint regions of noise and ingress in a node, and can also significantly reduce the time required to exactly locate CPD sources.

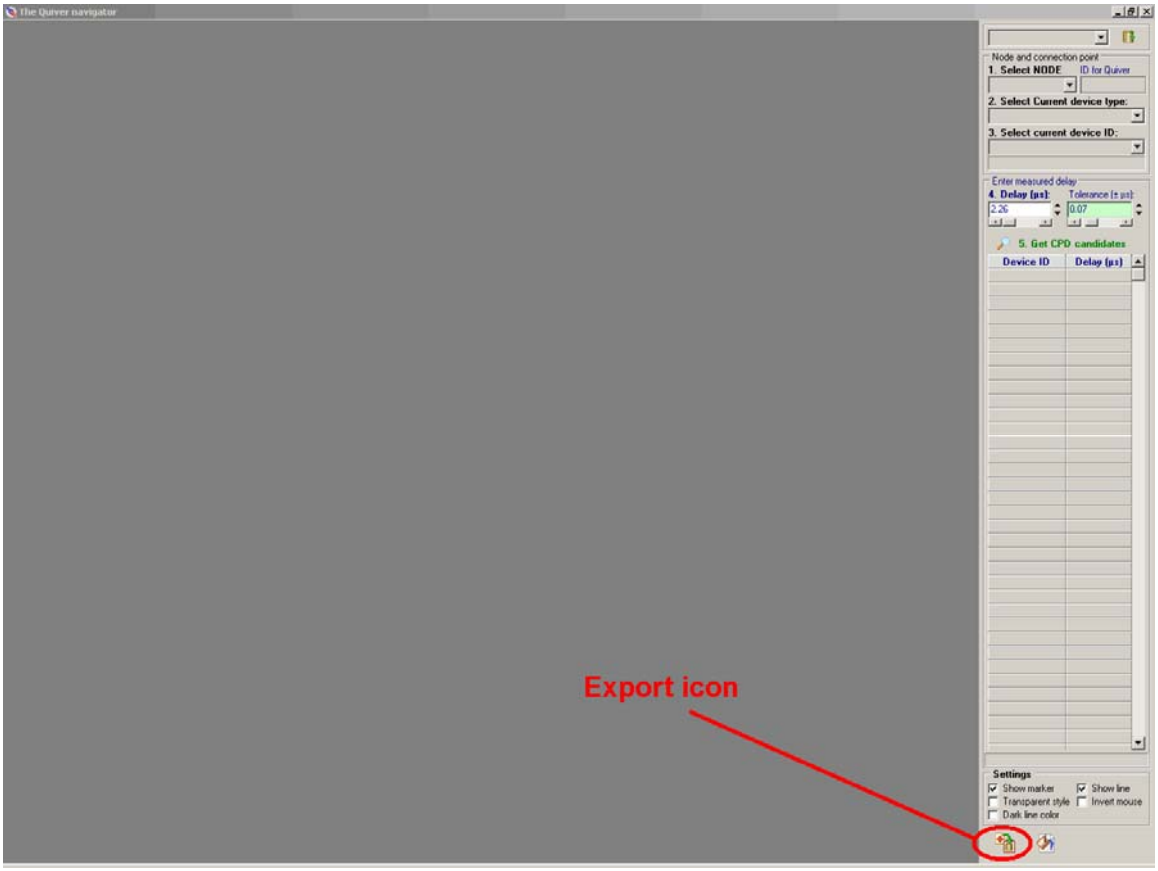
How to use Quiver Navigator

The first step after the software comes up is to download the map databases into the Navigator program.

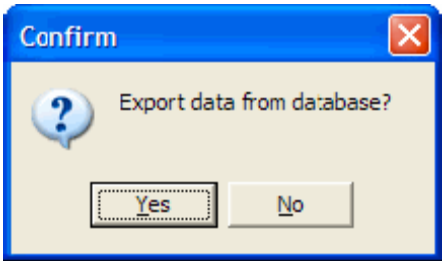
Exporting Calibrated Map Data to Quiver Navigator from the Xcor Hunter Server

Prior to starting this procedure, ensure that the PC on which the Quiver Navigator is running has a connection (internet or intranet) to the Hunter server on which the calibrations reside. This can be verified by using Xcor Client to log onto the corresponding server. Check in the server settings tab for proper path to calibrated database source file and write it down. If the Quiver Navigator resides on the server, use IP 127.0.0.1 - if on a remote PC then use IP of the remote server.

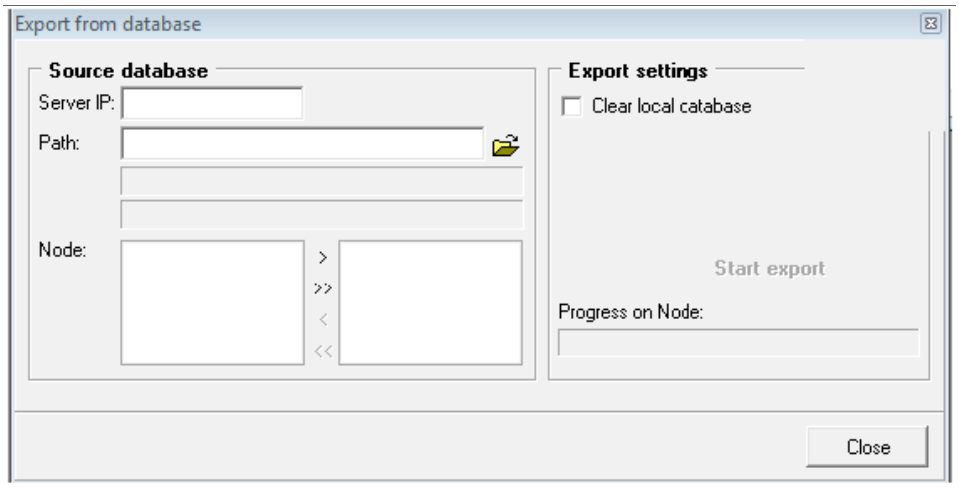
1) Open the Quiver Navigator and left click on the export icon.



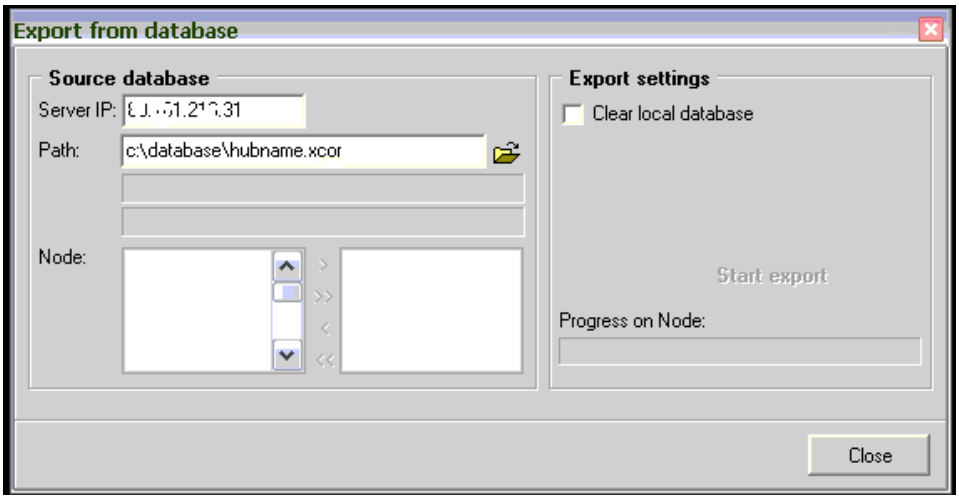
2) Left click on Yes when asked.



3) In the Server IP box, enter the IP address of the Xcor server on which the database resides.

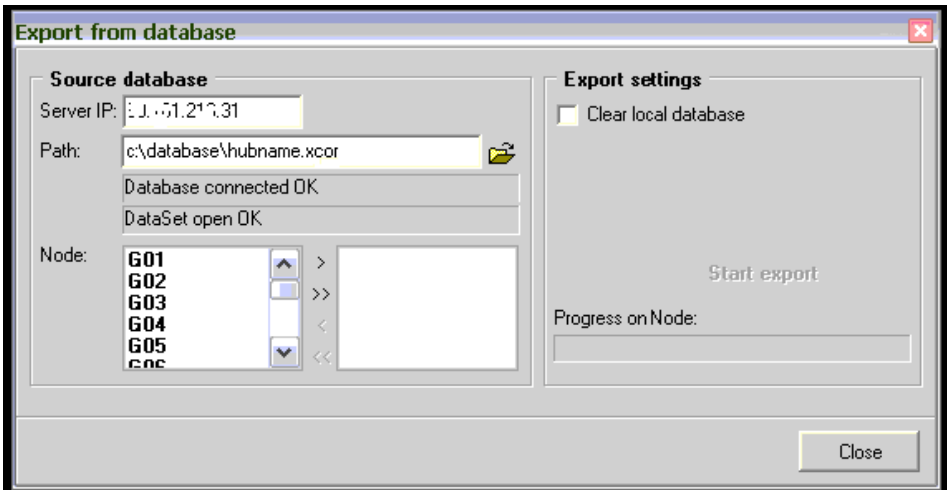


4) In the Path box, enter the path to the database on the source server. This will be consistent from server to server with the only difference being the name of the database that is consistent with hub name.

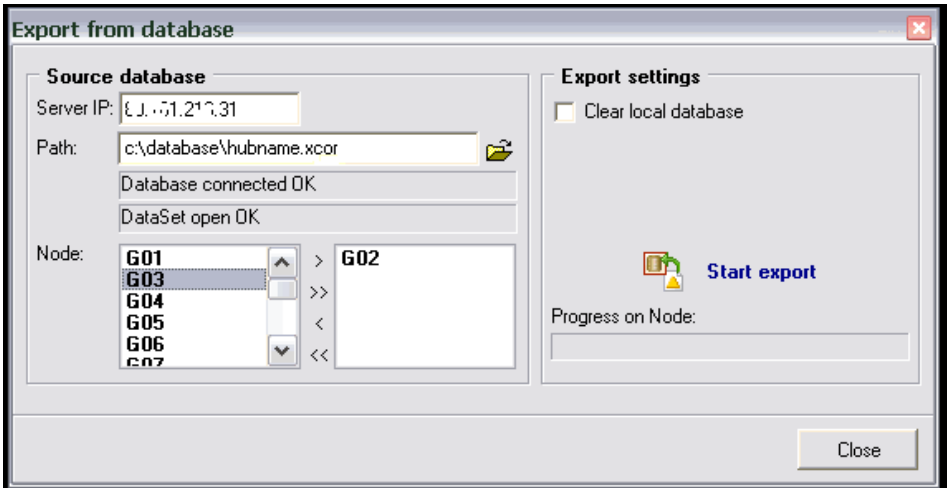


5) Uncheck the box next to the "Clear destination database" under export settings if you would like to transfer a single or a couple node maps. If you wish to copy all the maps then the "Clear local database" box must be checked.

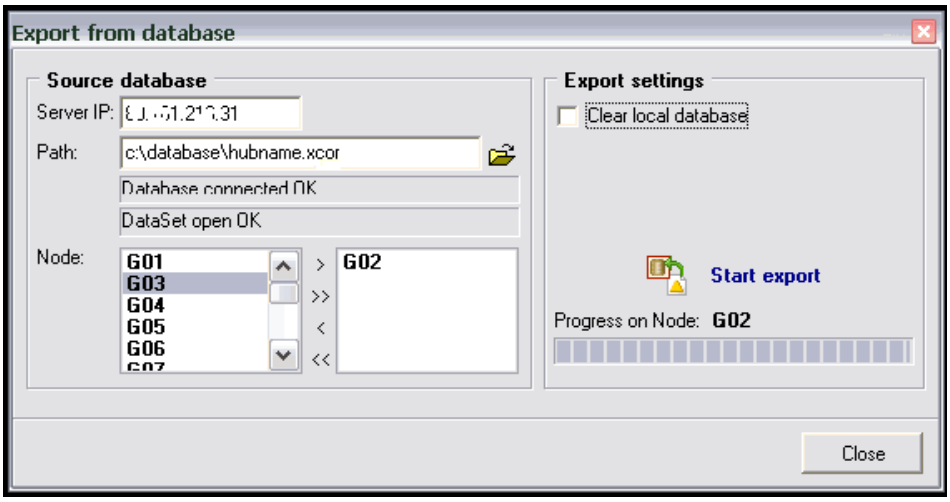
6) Left click on the folder icon next to the path box. The nodes in the database will populate in the "Node:" box. This may take a moment depending on internet connection speed.



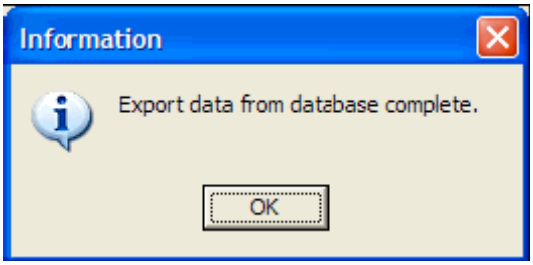
7) Select the nodes you wish to export data to by highlighting desired node and using right arrow key to move into the box to rigt of the node list box. If you have selected the incorrect node, use the left arrow to move it back to the box on the left. By using double arrows “<<” and “>>” all the nodes can be selected at once.



8) Left click on the “Start Export” button. A progress bar will appear indicating the export progress of the respective node(s).



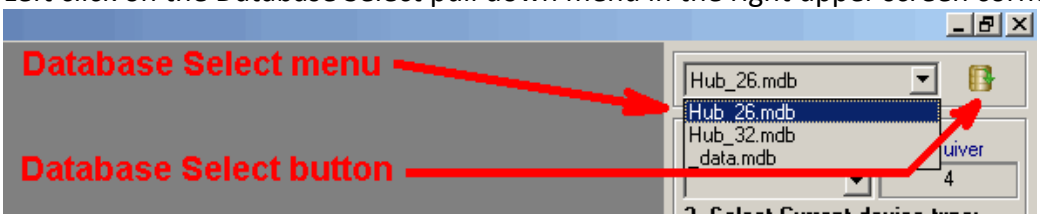
9) When the export is complete, an "export complete" box will appear. Left click "OK". The procedure is complete.



By using the above described method, more hub databases can be added. This way on a single laptop, technicians can keep the maps for various Hubs that they work with.

Select the Hub database

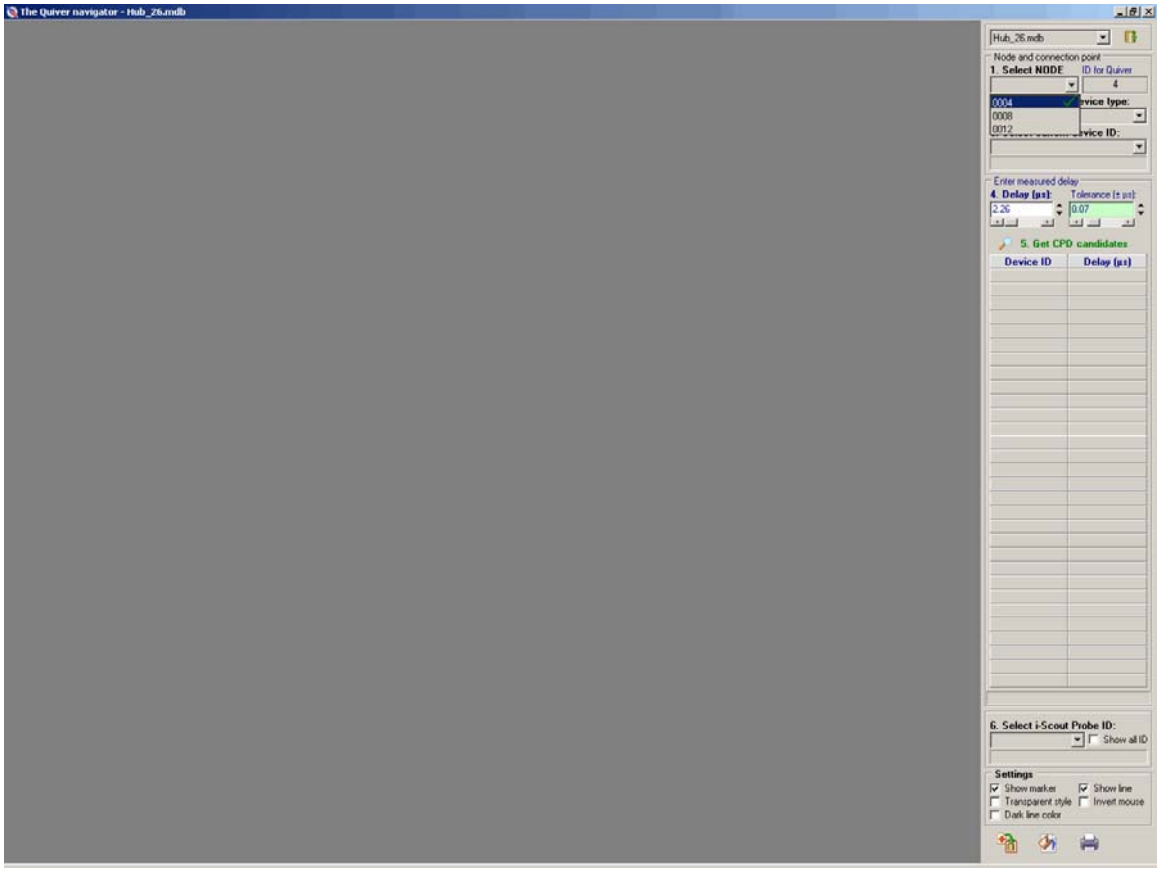
Left click on the Database Select pull down menu in the right upper screen corner



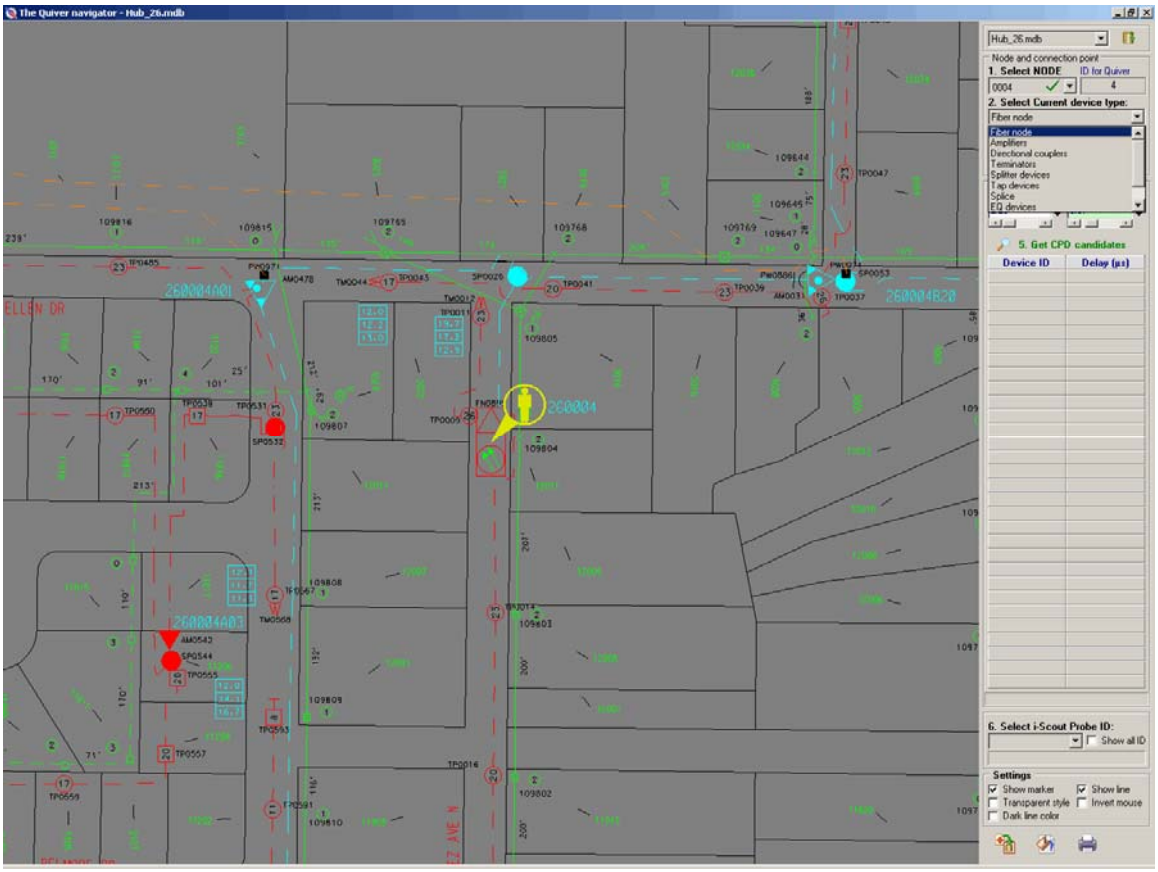
After selcting required Hub, left click Database Select button: 

Select node from the pull down menu.

This is item number 1. in the Quiver Navigator software screen as shown below.

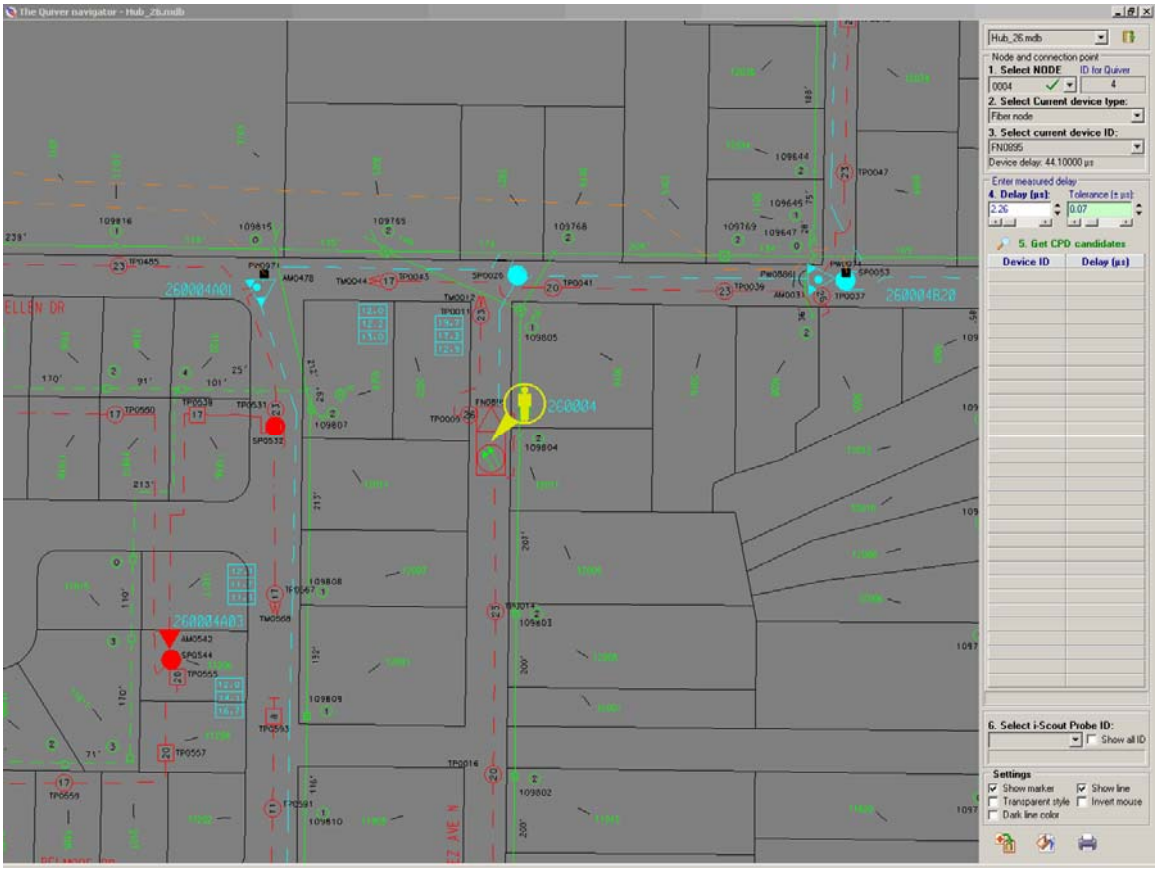


After selecting the node you have to Select Current device type (item number 2 in the software). A drop down menu will display all the possible device types.



Next, the actual device ID is selected from the menu under item number 3, Select Current device ID. The map will then display a centered “you are here” indicator in the form of a yellow circle with a man inside.

The next step is to enter the delay as measured by Quiver (consult the Quiver User Manual for instruction on this process) under item 4. Delay.

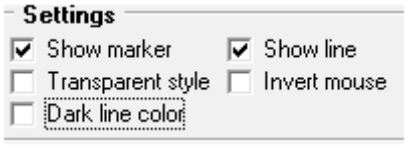


After information for these four steps is entered, press 5. Get CPD candidates for a listing of devices.

The table below the Get CPD candidates button will display a listing of candidate devices. The location of the device will be shown on the map with dotted lines connected from the “you are here” icon, and marked with red flags.

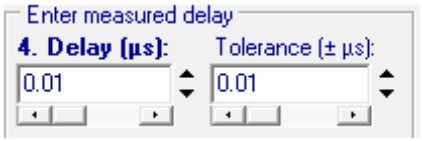
The style of the display

The style of the display can be changed by adjusting the settings at the bottom of the panel on the right.



Adjusting tolerance

The tolerance (shown next to 4. Delay) will come up initially in an automatic mode that assigns tolerances. Click on Get CPD Candidates again. This should result in multiple candidates being displayed based upon where the device is within a node. If after pressing the Get CPD Candidates button no CPD candidates are shown, increase the tolerance a little by sliding the scroll



Alternatively, if too many CPD candidates are displayed then take a look at the map and determine if there are many network splits which coul result in such an indication. If there are many candidate clusters, then this would mean the network is very dense and each device may be a legitimate candidate. The tolerance may need to be decreased if there are not only clusters, but displayed candidate devices are on the same leg located some distance from each other.

In general, suitable tolerance is tied to the accuracy of the supplied maps. The more accurate the maps are, the less tolerance is required to locate the exact device.

Note: The issue of tolerance is easy to overanalyze. In most cases, many of the candidate devices can be discarded because they are on a different leg than that which CPD was measured on using Qiver. Also, in many cases it will be required that another measurement be made at a split point deeper in the network. In such a scenario the number of devices displayed early on in the trouble shooting process is largely irrelevant.

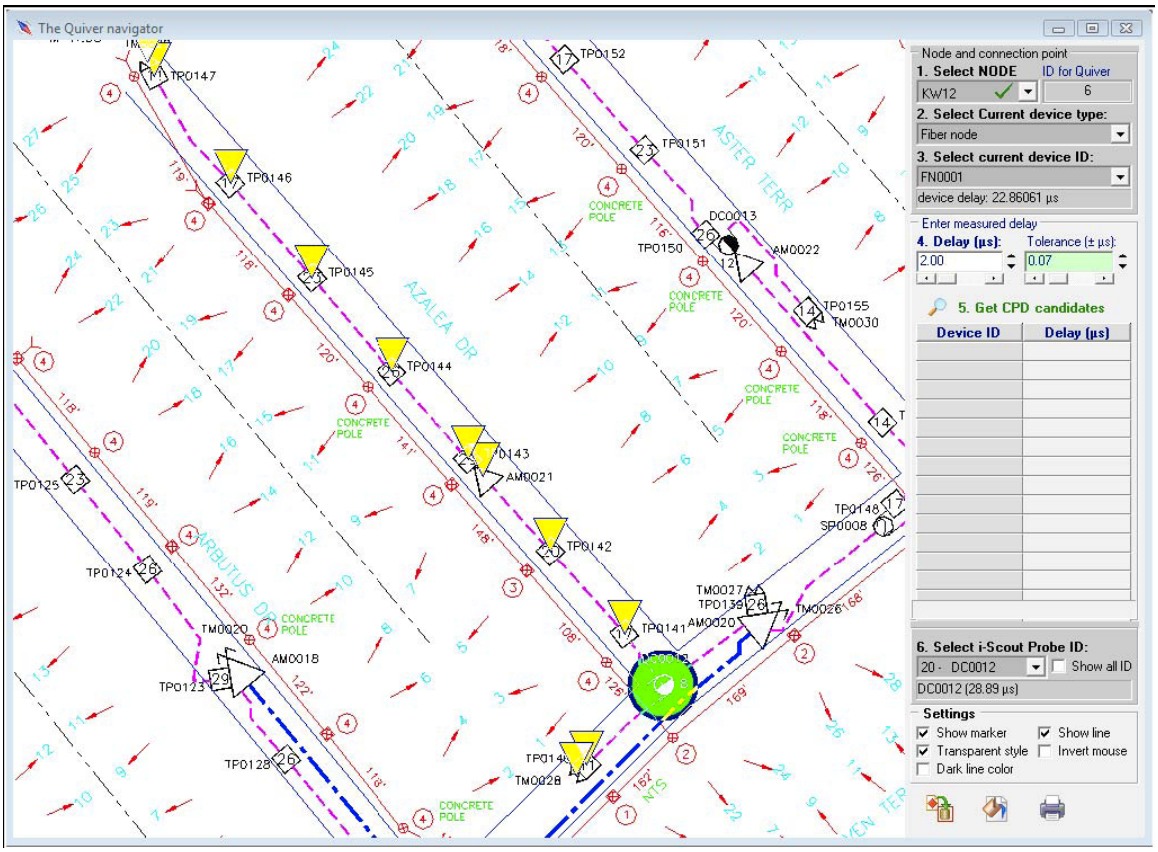
Using Quiver Navigator with i-Scout Probes

i-Scout probes are installed at various points within the network to assist in the location of sources of noise and ingress, and to more quickly find CPD sources. i-Scout probes impart a slight and imperceptible modulation on noise and CPD as these signals travel through the location at whic the probe is installed. Each probe within a node has a unique ID based upon the modulation frequency imparted by the probe. Quiver can resolve the ID code from the noise, ingress, or CPD source – and then by using Quiver Navigator can determine the location

from which the signals originated. Quiver will display the ID code, and the next step is to enter this ID code into Quiver Navigator which will display the physical location and identify the exat location where the probe is installed.

Locating Ingress using i-Scout Probes

The first step is to use Quiver in i-Scout ingress mode (please see Quiver User manual for instruction on this process) – to find the ID code. The second step is to simply 1) Select Node from the pull down list and then 6) Select the i-Scout Probe ID from the pull down list. A map is then displayed in Navigator showing the location of the installed probe.

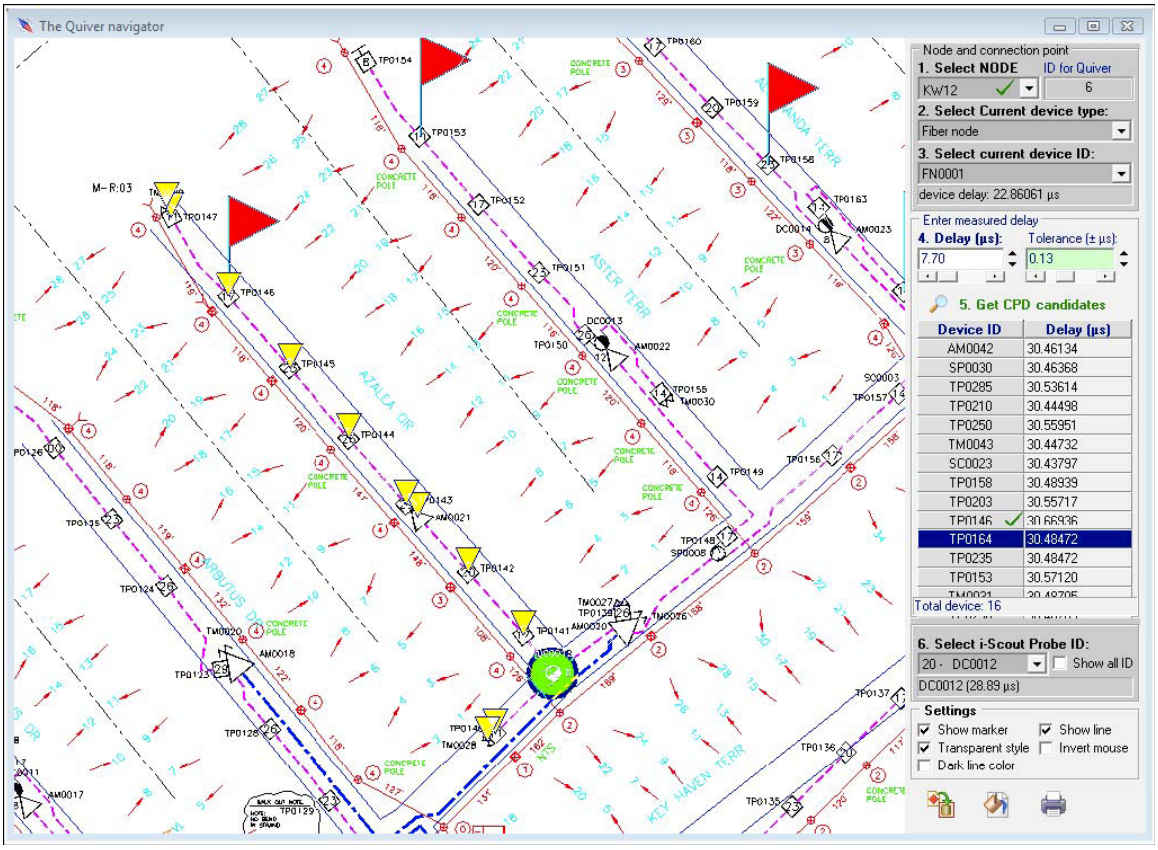


Next, simply go to this location and use ingress troubleshooting techniques in the small area of the plant highlighted with yellow triangles. The rest of the node can be eliminated as a potential location of the noise measured using Quiver.

Locating CPD using i-Scout Probes

By using i-Scout Probes, sources of CPD can be quickly resolved to one or two locations. As previously described, Quiver will provide information on both the time distance to the CPD source as well as the ID code of the i-Scout probe. By entering both of these pieces of information, the device that is the source of the CPD can quickly located, often without the necessity of stopping at split points for additional Quiver measurements. First, use Quiver in i-Scout CPD mode to resolve distance and the ID code.

The process is to then enter steps 1-5 in the Quiver Navigator as described earlier in the manual – but now additionally add the ID of the probe as determined by Quiver into window 6. Select i-Scout Probe ID. Candidate devices located after the probe location are highly likely to be the source of the impairment. These devices are marked with a green check in the CPD candidate list and are also marked with a flag on the leg with the selected probe ID.



Quiver Navigator Software, Pocket PC version

A Pocket PC version of the Quiver navigator provides an alternative method of using the navigator software. The Pocket PC version has an easy to use navigation menu where the node and current device are input, as well as an easy way to select the time delay that is displayed on the Quiver. Zoom features are available that make for easy viewing of the flags that display candidate device zones.