

Configuring HYPACK[®] Survey for Multiple Boat Operations

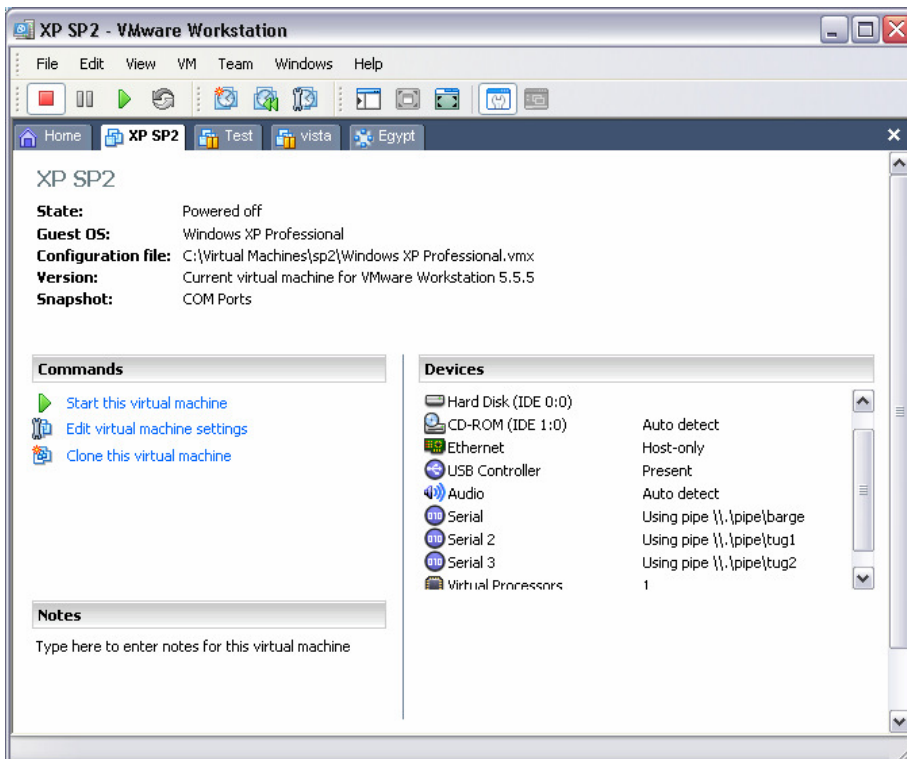
by Mircea Neacsu

Last month we had a request from a customer to demonstrate how HYPACK[®] can be used in an operation involving a barge and a number of tugs. Each vessel would be equipped with a GPS and they would be interconnected through a WiFi network. The requirement was for each vessel to be able to display the position of all the other vessels.

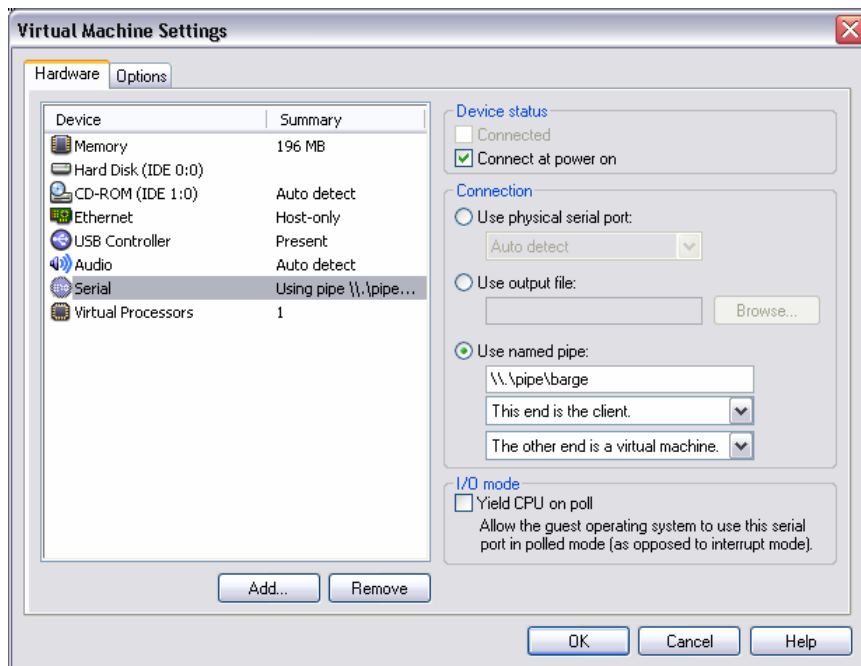
Another interesting point was how to showcase these configurations because we were freshly out of tugs and barges in the office. For this we used VMware Workstation, a nice program that allows you to create any number of virtual computers and can connect them over a (virtual) network.

The Testbed

I created three virtual machines called “Barge”, “Tug1” and “Tug2” all connected to the same network and each one with a serial port for the GPS input. A fourth machine had 3 serial ports and would be running NMEA simulators sending out data for each of the vessels. VMware Workstation allows each virtual computer to have up to 4 serial ports and those serial ports can be connected either to the physical ports or to “pipes”. Pipes function very much like virtual serial cables passing the data between the two ends of the pipe. Here is how the computer that generated data was configured:

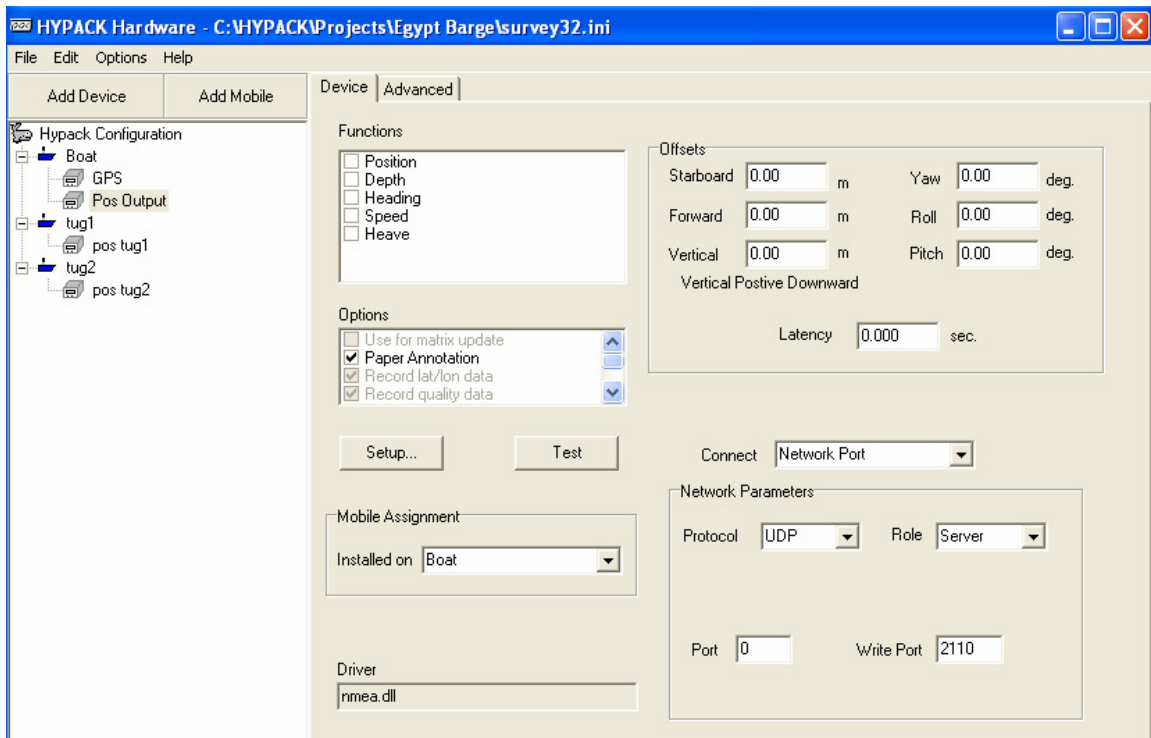


And the configuration for the barge computer:

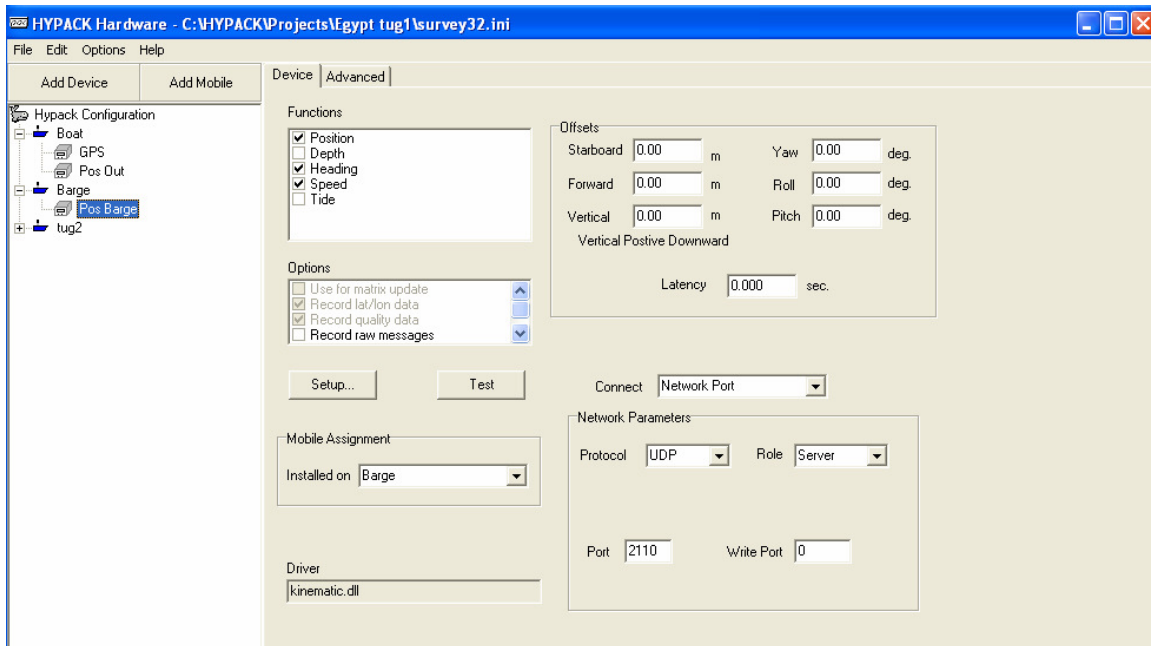


HYPACK® Hardware Configuration

The vessel receives its own position from the GPS (GPS.DLL) and then transmits it out over the network (NMEA.DLL) for the other vessels to view. The other vessels are represented by separate mobiles and each receives its position over the network, using the GPS.DLL. This is the configuration for the device that transmits the barge position:



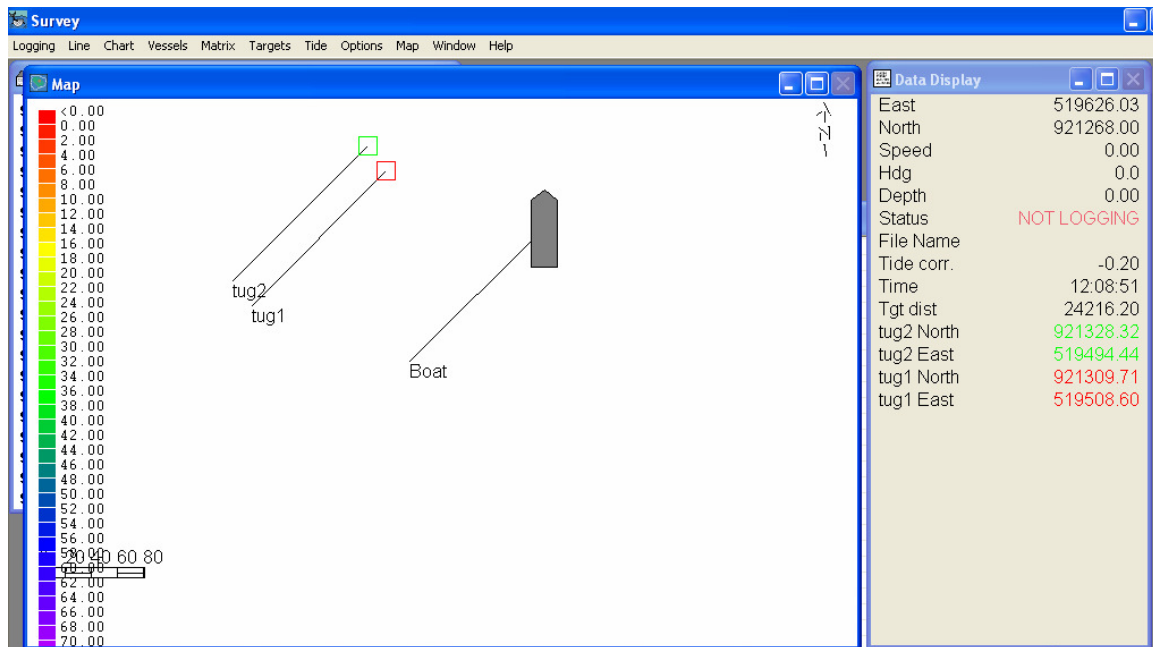
And the corresponding receiver on tug1:



Notice how the write port of the transmitting device matches the read port of the receiver. That is the whole “secret” of this configuration. The values used for port numbers don’t have anything special and can be chosen at will as long as they match on the transmit and receive side.

Running SURVEY or DREDGEPACK®

After all this configuration you should get a screen similar to the following image when running either SURVEY or DREDGEPACK®:



As in all multiple boat configurations, it is a good idea to turn on the option to label the mobiles and/or to use different colors for each mobile. This makes it easier for the operator to make sense of all the information on the screen.

Conclusions

HYPACK® is well equipped to handle multiple mobile configurations and the network connections. The fact that every device driver can be connected to either a regular serial port or a network port allows many interesting applications. Not so many years ago, a configuration like the one presented above would have been a nightmare of radio-modems, multiple serial cards and cables. Today it can be solved easily with a WiFi router or access point that has adequate coverage.