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Sounding Better!

Understanding Network Resources

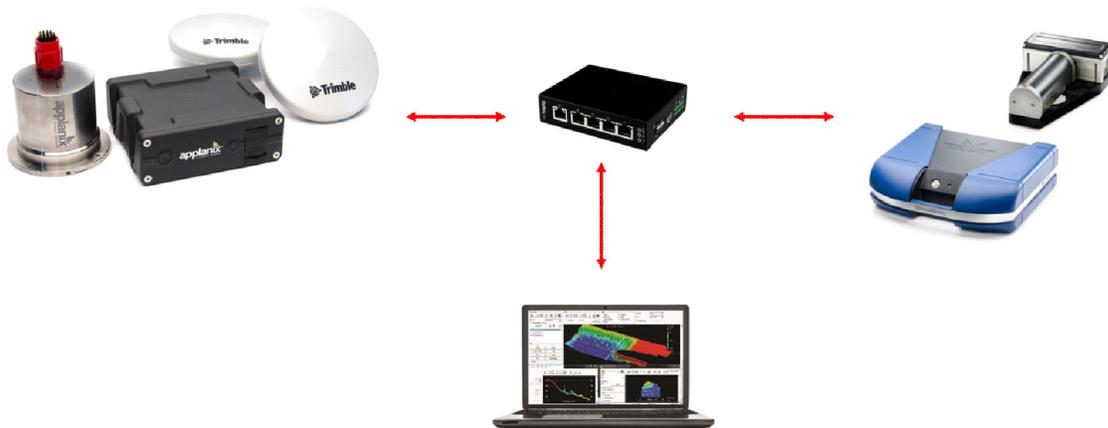
By Cristhian Bermudez

Recently I helped a user on a problem with his multibeam system. HYPACK and the echosounder controller were working fine for some time, however, some errors and warnings randomly showed up. After several tests we realized there was a problem with the network resources. In this article I will describe the problem and offer some tips to check the network interface.

PROBLEM

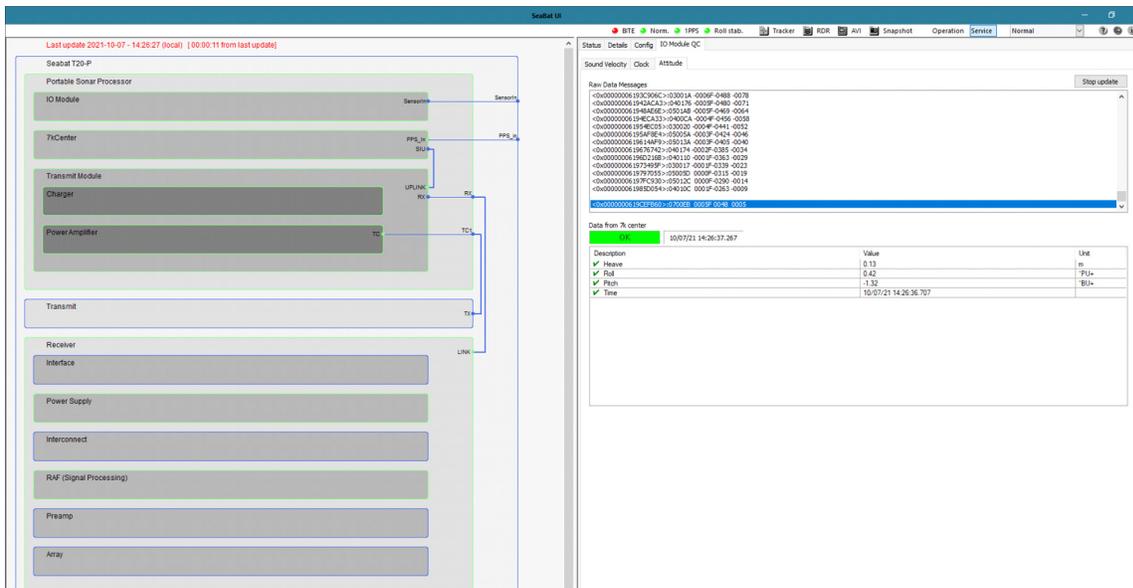
The user had a Teledyne T20-P and Applanix POS MV system. They were using a network switch to send all of the data to the computer running HYPACK:

FIGURE 1. Hardware Setup



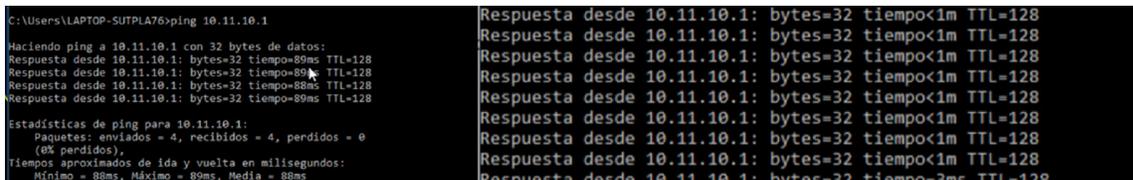
In the SeaBat UI we saw some random warnings, in some cases it wasn't receiving the clock data coming from the POS MV and we saw the BITE blinking red. On the other hand, when we opened HYPACK and we noticed Hysweep Survey wasn't receiving data from the echosounder, we restarted all of the equipment, however the problem persisted.

FIGURE 2. BITE Warning in SeaBat UI



I suspected it was a network problem or some blocking caused by the firewall or antivirus. I checked with Wireshark and basically it was receiving packets from the POS MV and the Echosounder, so I decided to run the command "ping -t", which pings the desired IP until I stop the command. When I got the reply from the SeaBat IP address I realized the ping reply was taking around 89 ms, and for a local area connection it should be close to or even less than 1 ms.

FIGURE 3. (Left) Ping Reply With Problems, (Right) Normal Ping Reply in a LAN



After that I was almost sure something was affecting the network connection so I check the Ethernet interface and voila, the network interface was working at 100 Mbps (Fast Ethernet), so I assumed it wasn't enough bandwidth to receive all of the packages from the SeaBat and POS MV.

SOLUTION

The solution was simple, as I said before the user had an old network switch that only could negotiate Fast Ethernet connections (100 Mbps). He went to the electronics store and got an inexpensive switch, but in this case with Gigabit Ethernet interfaces (1000 Mbps).

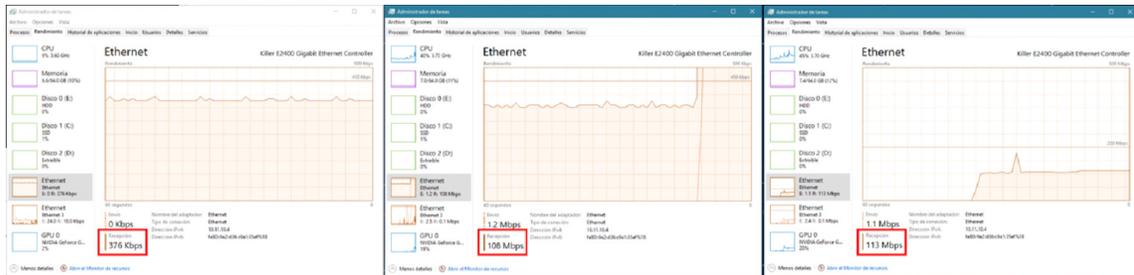
Once the user got the new switch, we tested the system. Everything worked fine with the Gigabit connection.

We started testing the POS MV data only, then we started the SeaBat UI and HYPACK. We realized SeaBat UI and POS MV needed at least 108 Mbps, which exceeds the maximum bandwidth for a Fast Ethernet connection. Then we started the POS MV (with POSView

opened, SeaBat UI, and HYPACK). It was using around 113 Mbps. That explains why some packets took more time to be received by the computer.

To check the network resources, you can open the Task Manager and go to the Performance tab. It will show a graph with the real time bandwidth used. You only have to interpret the information.

FIGURE 4. (Left) Only Packets Coming From the POS MV, (Center) POS MV and SeaBat UI Working, (Right) POS MV, SeaBat UI and HYPACK® Running



If your network interface is not working with a Gigabit connection, you should check the cable (recommended UTP CAT5e or CAT6), network switch with Gigabit ports and windows configuration. In some cases Windows does not negotiate a Gigabit connection, only a Fast Ethernet.