Package "nslnetdf"

Description:

The package "nslnetdf" consists of several single script files that allows the user to make use of the direction finding capability of the SignalShark and perform several tasks in the Narda Script Launcher application. The user can scan the network to obtain information on all available SignalShark devices, synchronize all devices with configuration settings of the master device, monitor spectrum reception on all devices simultaneously, and use the bearing information to perform localization on the master SignalShark device.

How it works:

The package "nslnetdf" works as follows:

1. The script "scandevices.py" detects all the connected SignalShark devices in the user's network and lists them in a table inside the dialog. The user can manually edit some of the fields of this table to add configuration details for the listed SignalShark devices. However, fixed fields e.g. the IP address, MAC address, etc., cannot be modified. When the dialog is closed, the list of the detected devices (with complete configuration details) is saved in the file "devicelist.json" for use in other scripts.

2. The user must configure the bearing settings of the master SignalShark device.

3. The script "netdfsync.py" queries the bearing settings of the master SignalShark device. It then takes the list of all available devices in the user's network stored in the file "devicelist.json" and synchronizes all the connected SignalShark devices with the bearing settings from the master device.

4. The script "netdfspecmon.py" prompts the user to select one of the active spectrum traces. It then plots the trace data side-by-side for the master device and all the connected direction-finding receivers in the network. This allows the user to see how the transmitter signal is received at each SignalShark in the network as the reception may differ at different sites where the SignalSharks are located.

5. The script "netdfloc.py" takes the bearings from several SignalShark devices, and then uses SCPI commands to initialize the map localization settings of the master SignalShark e.g. bearing error, LOS probability, DF quality, etc. The script only performs the settings on the master device. However, the master SignalShark device performs the localization task, not the script. When the localization task is complete, the master device sends the transmitter longitude and latitude information to the script, which is then displayed in a dialog box. However, since all calculations are performed on the master SignalShark, the complete localization information can be viewed on the "MAP View" of the master device.
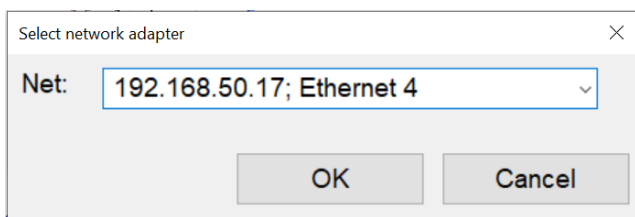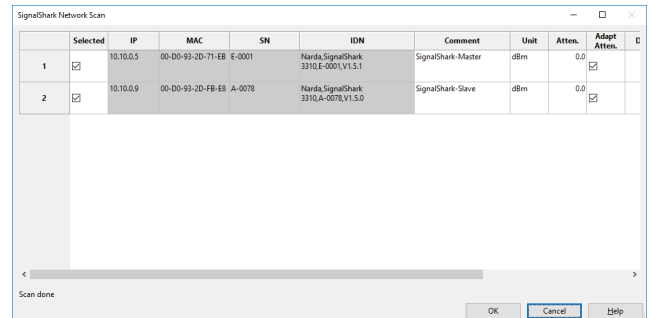
Procedure

Scan Devices

1. Open the Narda Script Launcher application and select the "nslnetdf" tab.
2. Select the script "Network devices scan".
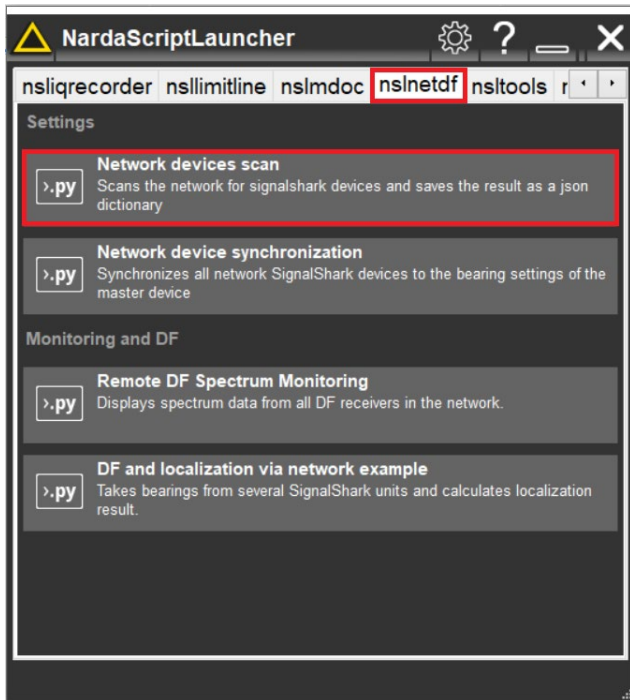
3. When the script is executed, a dialog box opens that asks the user to select the network adapter from a list of available adapters:


4. Select the NIC and click the "OK" button.
5. The scan will start and a dialog box will open which will list all the detected SignalShark units in the network along with the device details.


6. Click "OK" to save the information of all detected devices in the network in a json file "devicelist.json".

Synchronize Devices

7. Open the Narda Script Launcher application and select the "nslnetdf" tab.
8. Select the script "Network device synchronization".
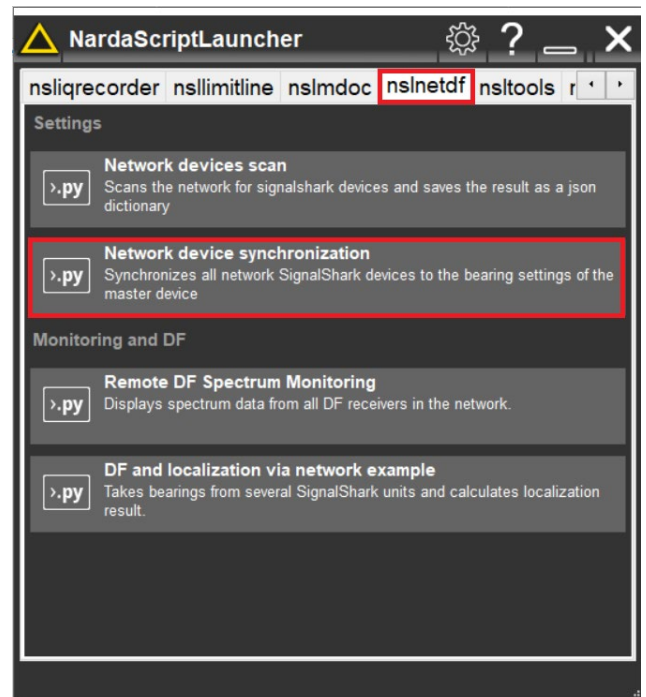
9. A dialog box will appear while the script gets the bearing settings of the master SignalShark device and applies the settings to the all the connected SignalShark devices.
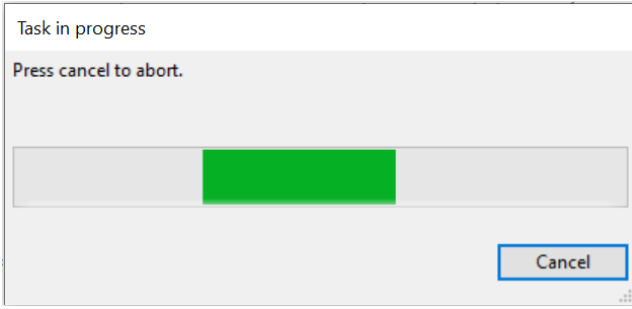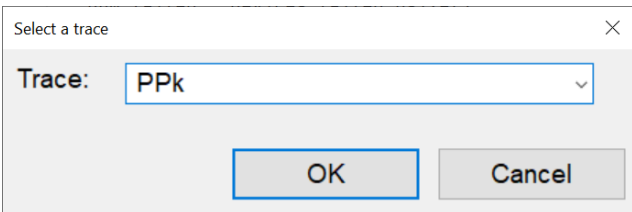
10. The script terminates when all settings from the master SignalShark device are copied to the connected SignalShark devices.
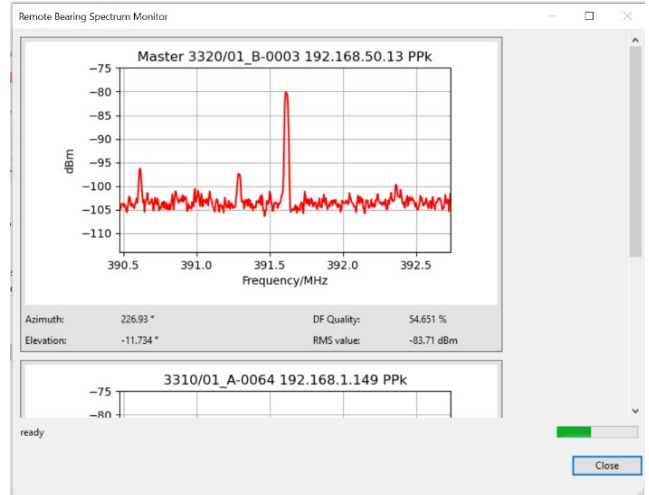
Spectrum Monitoring

11. Open the Narda Script Launcher application and select the "nslnetdf" tab.

12. Select the script "Remote DF Spectrum Monitoring".
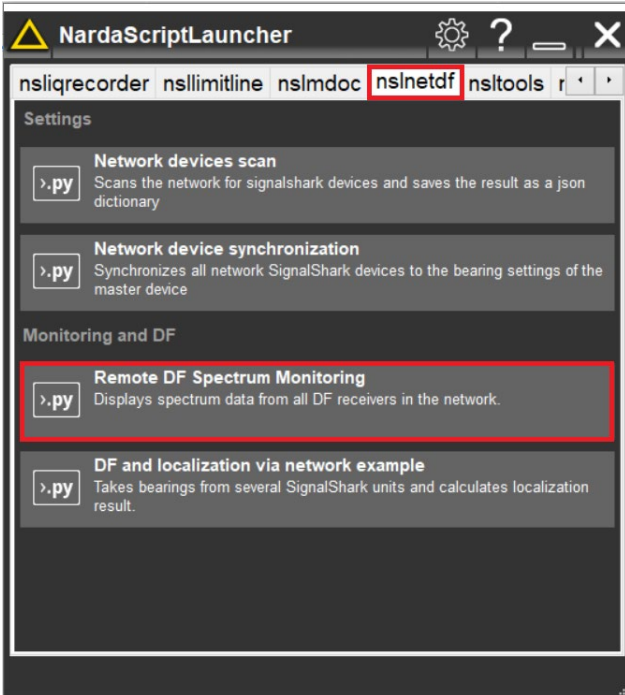

13. Select a trace from the list of all available traces:

14. Click "OK" button to show spectrum plots for the master device and all the connected SignalShark devices for the selected trace in a single dialog box:

15. Click "Close" to terminate the script at any time.

Localization Result

16. Open the Narda Script Launcher application and select the "nslnetdf" tab.

17. Select the script "DF and localization via network example".
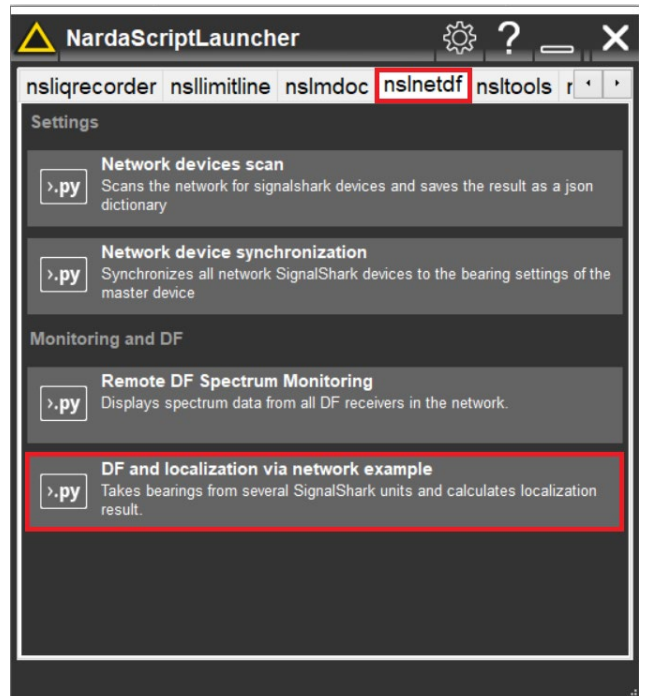
18. The script shows a progress dialog while it waits for the master SignalShark to perform the localization task:
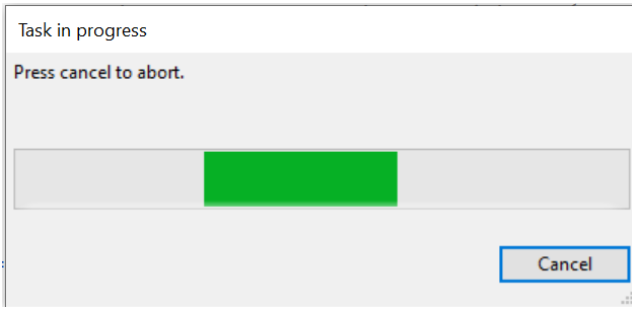
19. When the localization results are calculated, a script dialog shows the transmitter coordinates. However, the complete localization information can be viewed in the "MAP" view of the master SignalShark.
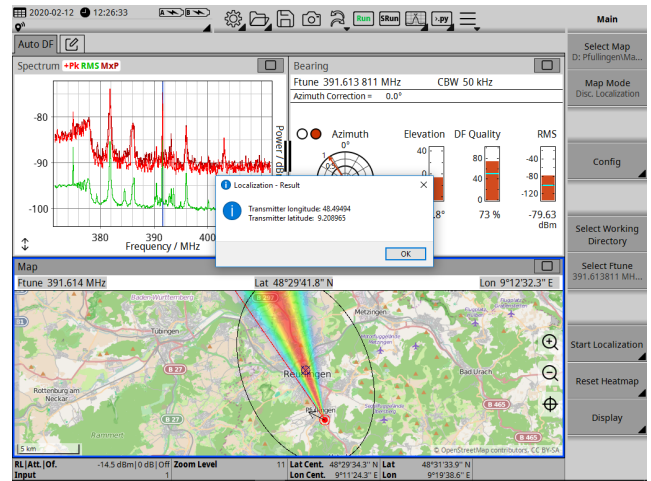
20. Click "OK" to terminate the script.