

Using the One RF Technology ZigBee Demo Case with the Daintree Networks Sensor Network Analyzer

Application Note AN025



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Sensor Network Analyzer Release 2.3 (2008-07-31)

About the Sensor Network Analyzer

The Daintree Networks Sensor Network Analyzer (SNA) combines a powerful protocol analyzer with network visualization, measurements and diagnostics for IEEE 802.15.4™ and ZigBee® applications. It provides automatic display of network formation, topology changes, and router and coordinator state changes allowing rapid detection of incorrect network behavior and identification of device or network failures.

The SNA works in conjunction with Daintree's 2400E Sensor Network Adapter to provide analysis for small and large networks. With multi-node capture, analysis of large networks across wide areas (such as multiple rooms within a facility) is possible.

The SNA software is also compatible with boards from the One RF Technology ZigBee Demo Case. The Supervisor boards from this kit can be used as packet sniffing capture devices. No additional hardware is required.

This application note describes how to use the SNA software with Supervisor boards from the One RF Technology ZigBee Demo Case. You can find out more about the SNA software in general, refer to the following:

- **Quick Start Guide:** Included with the SNA application. From the SNA **Help** menu, select **Quick Start Guide**, or else from the Windows **Start** menu, select **Daintree Networks > Documentation > SNA Quick Start Guide**.
- **Online Help:** Included with the SNA application. From the SNA **Help** menu, select **User Guide**, or else from the Windows **Start** menu, select **Daintree Networks > Documentation > Online Help**.
- **FAQs and other support resources:** These are available from the Daintree Networks web site at www.daintree.net/support

Getting started

In summary, getting started involves the following steps, each of which is described in detail in the following sections:

1. Install the Sensor Network Analyzer software.
2. Install packet sniffer firmware on the One RF board.
3. Start the SNA software, and then add the One RF board as a capture device.
4. Select the One RF as the current capture device.

Once connected and configured, you can use the One RF Supervisor board as a packet sniffer/capture node with the Sensor Network Analyzer.

1. Installing the SNA software

1. Go to www.daintree.net/register to register your software and download the latest release.
2. Enter your email address together with the 15-digit alpha-numeric registration code from the software CD case. After you click Next, an activation code will be emailed to the address you supply.
3. Follow the link provided to download the latest release of the SNA software, plus the *Sensor Network Analyzer Quick Start Guide*. Daintree **strongly** recommends that you download the latest version of the software to ensure you have the latest functionality and fixes.
4. Follow the instructions in the *Quick Start Guide* to install and activate the software.

2. Installing the sniffer firmware

The One RF Supervisor board requires dedicated packet sniffer firmware to run with the Daintree Networks Sensor Network Analyzer.

The Supervisor board comes pre-loaded with this firmware. If you ever need to reload it in future, you can find it in the following places:


- On the One RF Technology **Support CD Z-One** that comes as part of the ZigBee Demo Case.
- In the `C:\Program Files\Daintree Networks\Firmware\One RF\ZDC` directory.

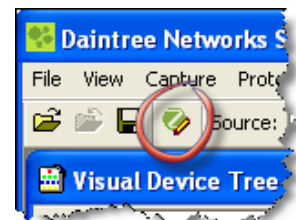
You can find instructions for updating firmware in the *One RF ZTC ZigBee Test & Configuration Technical Manual* provided with the Demo Case.

3. Adding the One RF board as an SNA capture device

1. Use a serial cable to connect the One RF Supervisor board to your PC.



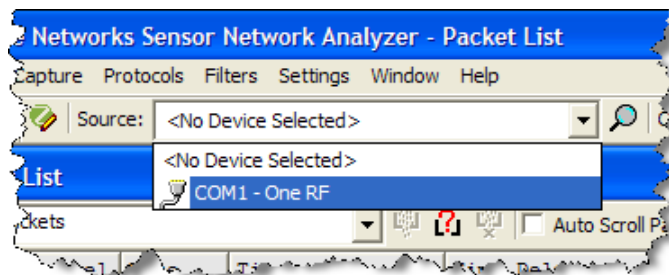
2. If you have not already done so, start the SNA software.
3. From the **Settings** menu, select **Device Manager**, or click the Device Manager icon from the main SNA toolbar.
4. On the Device Manager **Summary** tab, click  and then select **Add Serial**.





5. On the Add Serial dialog box **Serial Settings** tab, accept the default values for all fields:
 - **Type:** Generic Protocol Version 2
 - **COM Port:** Enter the serial port to which the board is connected
 - **Baud:** 115200
 - **Data Bits:** 8
 - **Parity:** None
 - **Stop Bits:** 1
 - **Flow Control:** None
 - **Timestamp:** 1
 - **15.4 Band:** 2450
 - **Mode:** Capture
6. Click the **User Settings** tab, and then enter the following values:
 - **User Label:** One RF
 - **Image:** Not required
7. Click **OK** to save the new definition. When you return to the Device Manager Summary tab, you'll notice that the One RF board has been added to your list of devices.

4. Selecting the One RF board as the current capture device

1. In the SNA main window, select the One RF Supervisor board from the **Source** list.



If the One RF board is not available from the list, click  to get the SNA software to search/scan for capture devices and refresh the Source list.

2. Select the **Channel** on which you want to capture traffic.
3. Click  to start the capture.

Known limitations

As long as the entry in the Device Manager corresponds to a valid COM port, the One RF device will be shown in the list of available devices. However, this does not reflect that the device is actively communicating with the SNA application. In order for packets to be captured, the COM port parameters must be configured correctly in the Device Manager; the sniffer firmware must be correctly downloaded and the board must be plugged in and powered on. To validate the connection to the device, select the device as the active capture source from the drop down list, select a channel, and start capture.

If the One RF board is in use by the SNA application, it cannot be used concurrently by any other application.

Where to next?

We recommend that you start exploring the SNA menus to get an understanding of the full capabilities of this product.

Detailed descriptions of all options are available in the *Sensor Network Analyzer User Guide*, which you can open from the SNA **Help** menu and the Windows **Start** menu. You can also find FAQs and other supporting information on the Daintree web site at www.daintree.net/support

The Daintree web site includes other useful information, such as

- www.daintree.net/solutions for product information including data sheets and an animated tour
- www.daintree.net/purchase to purchase Daintree products online
- www.daintree.net/contact to contact the Daintree sales or support teams