

# Using the Sensor Network Analyzer as a Remote Diagnostic Tool for MeshOperator Networks

Application Note AN030



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MeshOperator Release 1.0  
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## 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 is also compatible with Daintree's MeshOperator Management Gateways. These gateways can be used remotely as packet sniffing capture devices with the SNA software.

## About MeshOperator

Daintree's MeshOperator is a comprehensive OEM platform for the operation (including commissioning, management and maintenance) of wireless embedded networks based on ZigBee and other wireless technologies.

The MeshOperator platform allows delivery of new residential services such as smart energy, home automation, and home healthcare with high reliability and security across many thousands to millions of wireless networks and devices.

The MeshOperator platform comprises both software and a management gateway.

Key features of the software include registration and commissioning, monitoring and diagnostics, device management, HAN (or Customer Premise) management, service portal (or gateway), and extensible and easy-to-integrate components.

## About the Management Gateway

The MeshOperator Management Gateway provides gateway functions including coordinator, trust center, commissioning, firmware upgrade, and diagnostics. It includes a ZigBee RF interface (to connect to a ZigBee network) and an Ethernet interface (to connect to a WAN).

Using embedded Linux, the gateway provides connectivity between the HAN and the WAN. It contains sufficient processor and memory resources to embed the MeshOperator gateway software needed to enable reliable operation and management while offering a cost-effective gateway solution. Additional resources are available to embed application plug-ins, ensuring fast and responsive in-premise operation of application services.

The gateway contains a web server enabling on-site and remote configuration, and when used in conjunction with the MeshOperator server software, can be upgraded in the field. When combined with the MeshOperator software, the Management Gateway delivers the in-premise intelligence required to ensure reliable operation and management of wireless embedded networks.



## Remote connection and diagnosis

You can set up the SNA to connect to a Management Gateway in a remote MeshOperator network. That gateway can then be used as an SNA capture device, providing details about the remote network, and allowing diagnosis through the SNA's powerful analysis, measurement and troubleshooting tools.

This application note describes how to connect the SNA software to remote MeshOperator networks through Daintree's Management Gateway.

To find out more about the SNA software, 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**.
- **User Guide:** Included with the SNA application. From the SNA **Help** menu, select **User Guide**, or else from the Windows **Start** menu, select **Daintree Networks > Documentation > SNA User Guide**.
- **FAQs and other support resources:** These are available from the Daintree Networks web site at [www.daintree.net/support](http://www.daintree.net/support)

To find out more about the MeshOperator platform and Management Gateway, refer to the following:

- **Online Help:** Included with the MeshOperator software. From the main menu, select **Help**.

To find out more about Daintree products in general, visit [www.daintree.net](http://www.daintree.net)

## 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 (if required).
- 2 Start the SNA software, and then add the remote Management Gateway as a capture device.
- 3 Select the gateway as the current capture device.


Once connected and configured, you can use the remote gateway as a packet sniffer/capture node with the Sensor Network Analyzer. This allows you to advantage of the SNA's rich selection of analysis and troubleshooting tools.

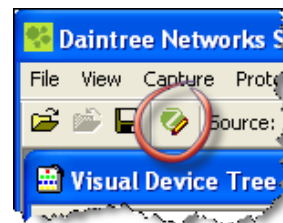
**Note** that this application note assumes that the Management Gateway is already installed at the remote location, and that the MeshOperator software is running. Refer to the MeshOperator online help (or contact Daintree Networks) if you require instructions.

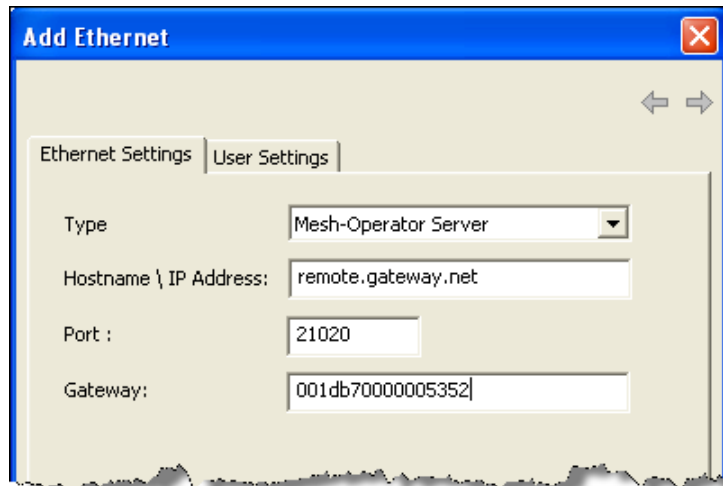
### 1. Installing the SNA software (if required)


- 1 Go to [www.daintree.net/register](http://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 (usually found on the software CD case or provided via email by Daintree Networks). 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.

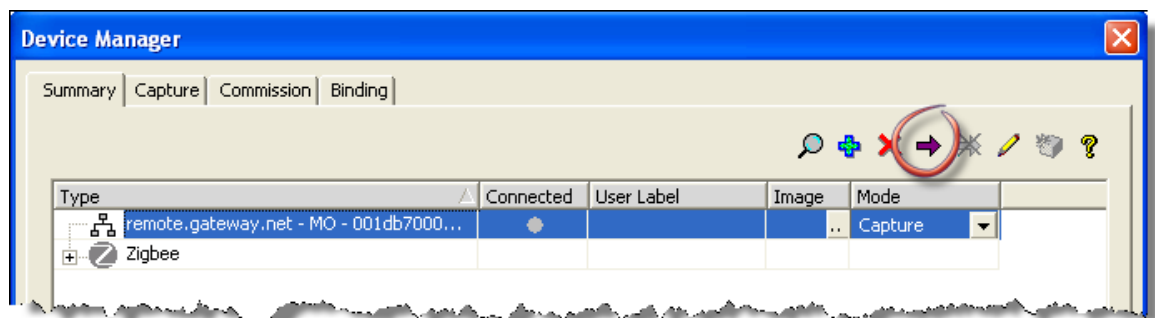
### 2. Adding the Management Gateway as an SNA capture device

- 1 If you have not already done so, start the SNA software (by double-clicking the SNA icon on your computer's desktop).
- 2 From the **Settings** menu, select **Device Manager**, or click the Device Manager icon from the main SNA toolbar.
- 3 On the Device Manager **Summary** tab, click  and then select **Add Ethernet**.
- 4 On the Add Ethernet dialog box **Ethernet Settings** tab, enter the following values:
  - o **Type:** MeshOperator Server
  - o **Hostname \ IP Address:** Enter the Hostname or IP address for the MeshOperator Server
  - o **Port:** Enter the port for the MeshOperator Server (or accept the default value of 21020)
  - o **Gateway:** Enter the identifier for the Management Gateway
- 5 If you want to assign a name and image for the SNA to use in its visual displays, you can click the **User Settings** tab and specify a **User Label** and **Image**.



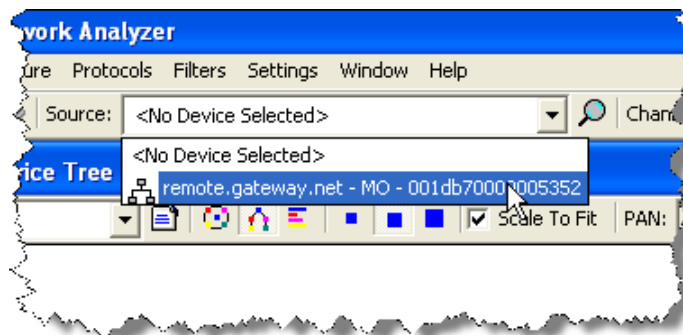



- 6 Click **OK** to save the new definition. When you return to the Device Manager Summary tab, you'll notice that the gateway has been added to your list of devices.
- 7 On the Device Manager Summary tab, click your new gateway definition, and then click  to connect to the remote gateway.



### 3. Selecting the Management Gateway as the current capture device

- 1 In the SNA main window, select the gateway from the **Source** list.



- 2 Click  to start the capture. The SNA automatically determines the channel on which to perform the capture.

## Where to next?

You can now start using the SNA as an analysis and diagnostic tool for the remote MeshOperator network.

Detailed descriptions of all SNA options are available in the *Sensor Network Analyzer Online Help*, 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](http://www.daintree.net/support)

The Daintree web site includes other useful information, such as

- [www.daintree.net/solutions](http://www.daintree.net/solutions) for product information about both the Sensor Network Analyzer and MeshOperator solutions
- [www.daintree.net/purchase](http://www.daintree.net/purchase) to purchase Daintree products online
- [www.daintree.net/contact](http://www.daintree.net/contact) to contact the Daintree sales or support teams

## Known limitations

After adding the Management Gateway as an Ethernet device through the SNA's Device Manager, it will be shown in the list of available devices. However, this does not reflect that the gateway is available to actively communicate with the SNA application. In order for packets to be captured, all settings must be configured correctly in the Device Manager; the gateway must be properly connected in its remote location, and it must be plugged in and powered on. To validate the connection, select the gateway as the capture source from the SNA's drop down list, and then start to capture.

The Management Gateway can be used as a capture device only. It does not provide any "active" analysis functionality.