MESHdesk Node Config Utility

- As of October 2016 we have released a fresh version of the **MESHdesk Node Config Utility** to include new features not supported yet in the industry.
- This page will discuss the new **MESHdesk Node Config Utility**. We will divide the discussion into segments similar to the tabs of the **MESHdesk Node Config Utility**.
- Before we go into the various tabs let us first discover how to use the **MESHdesk Node Config Utility** (here after simply called the utility) in the correct manner.

Overview

- The utility is used to configure the hardware which runs the MESHdesk firmware.
- Since the RADIUSdesk project is Open Source and available to tweak and install you can install your own cloud controller (RADIUSdesk and MESHdesk + APdesk).
- For the hardware to be controlled by controller you have to point them to the controller.
- This is where we use the utility.
- Another purpose for the utility is to 'prime' the hardware for an Internet connection.
- We took the lead and added extra functionality to our firmware so that you are not limited to Ethernet (LAN) connection for Internet connectivity anymore.
- We now support the following types of Internet connections.
    - Ethernet (LAN) which require a DHCP server and Internet connection on the LAN the hardware connects to. Most cloud based controlled hardware like OpenMesh, Meraki, or IgniteNet use only Ethernet.
    - **3G/4G dongle** support. For this you simply need a router with a USB port. With the Node Config Utility you preset the hardware with settings to obtain an Internet connection through the dongle. Not many commercial cloud controlled hardware includes a USB port.
    - **WiFi Client** support. No need for extra hardware, we can simply use your current WiFi router to connect as a client to a WiFi network and distribute the connection from there. In other words, we can build a mesh network onto your existing WiFi network. Again a first, especially on meshes.

- With **3G/4G dongle** and **WiFi Client** support we can really say goodbye to LAN cables on our meshes and access points!
- 3G / Mobile support for APdesk and MESHdesk
- Support for WiFi Client as an Internet connection

Installing and running the MESHdesk Node config utility

- The utility is a windows .exe file which you simply double click to start up.
- Download the MESHdesk_Node_config_utility.<version>.zip from this URL: http://sourceforge.net/projects/radiusdesk/files/MESHdesk/NodeConfigUtility/
- Unzip it.
- Double click MESHdesk_Node_config_utility.exe to launch the program.

- The node expects the utility to be listening on 192.168.255.20 / TCP port 3000
- The node will set it's own address to 192.168.255.200 before trying to contact the machine running the utility.
- Be sure to allow this through on the Windows Firewall.

> ⚠️ Failing to set the IP Address on you local machine to 192.168.255.20 will render the utility useless

> 💡 You can change the IP Address which the node will contact by changing the value specified in **/etc/config/meshdesk** on the node.

Operating instruction for MESHdesk Node config utility

- Configure the Windows machine to have IP Address 192.168.255.20 in the **Ethernet port**.
- Ensure the Windows Firewall allow incoming connections on TCP port 3000 or disable it for the duration that you will be using the program.
- Connect the **Ethernet port** of your node to the same network where Windows machine's Ethernet port is connected and power it up.
- When the node contacts the utility, the status bar will turn green, the node's detail will be filled in the text fields and after that the node will disconnect resulting in the status bar to turn from green to grey.

> ❌
> - If it is the **first time** after a firmware flash that you boot the node please allow the device to stay on for **at least two minutes** after it contacted the MESHdesk Node config utility.
> - The reason for this is that OpenWrt needs time to prepare the file system during the very first boot.
> - If you switch the node off before the filesystem is prepared all changes will be lost.
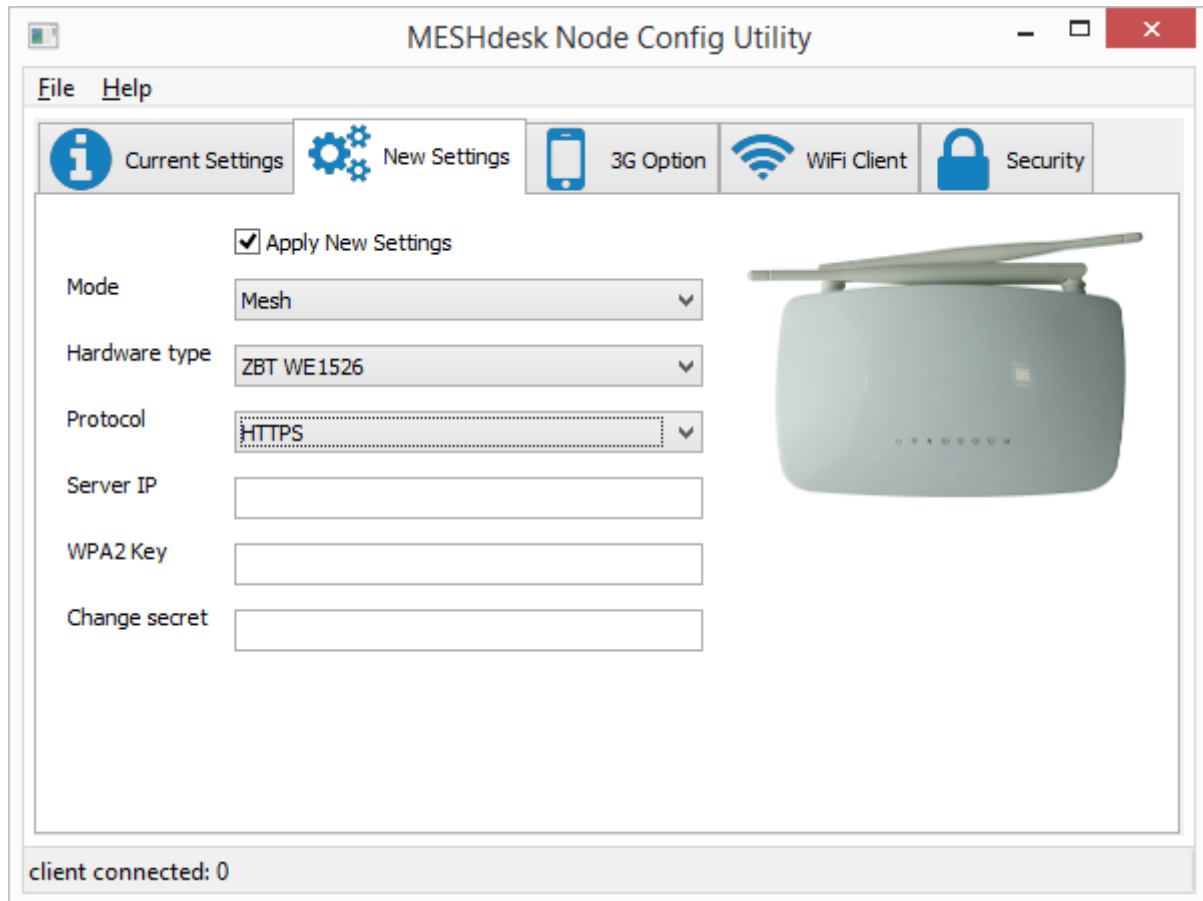
- Next we'll go through the various tabs of the utility and explain the function of each.

Current Settings

- The current settings tab will reflect the settings of the device when it was powered up.
- The following table lists the various fields with comments where necessary.

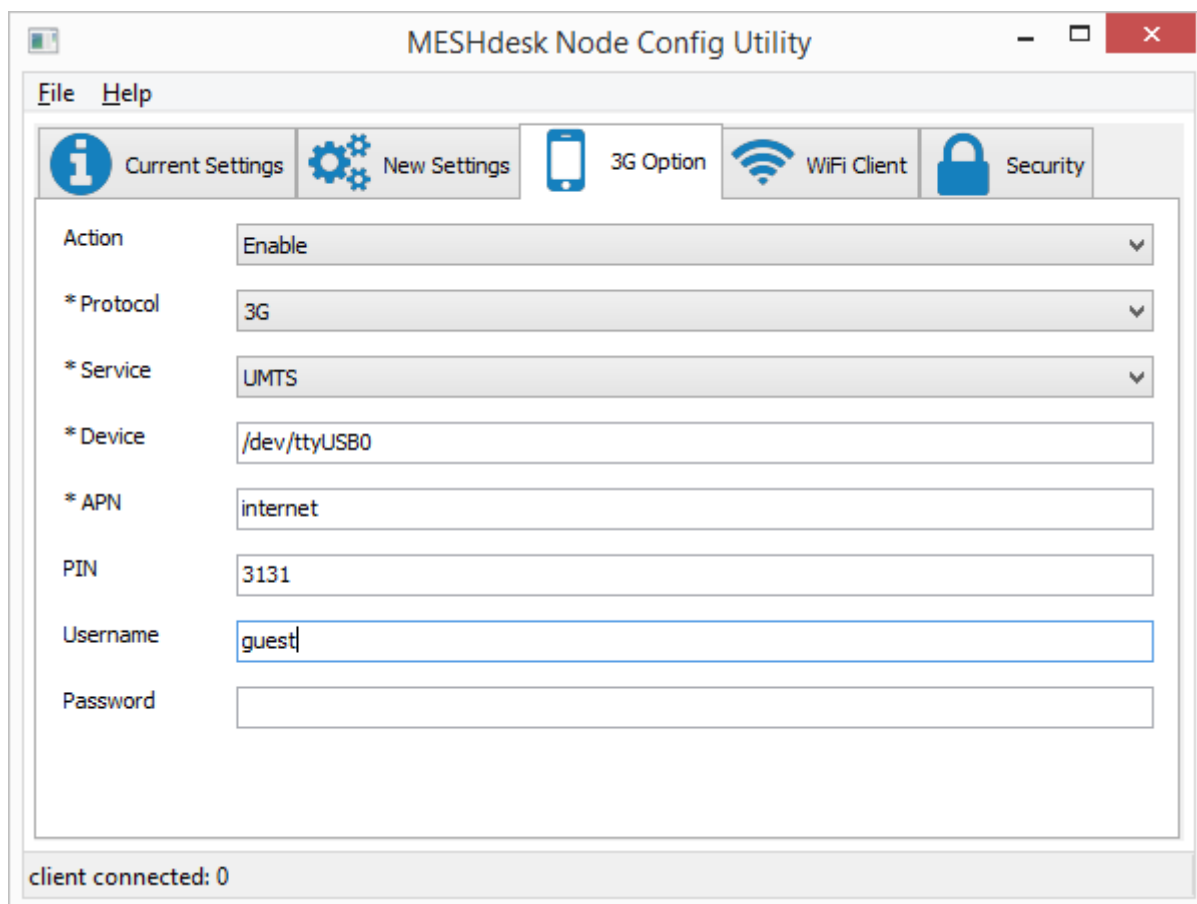| Item	Typical Value	Comment
Last Contact	Just Now	This will initially state "Never Before" during start-up. When the hardware contacts the utility, the background turns green with a counter. After 30 seconds since the last contact the background turns blue
Eth0	78-A3-51-15-25-18	This is the MAC Address of Eth0 interface and used as a unique identifier to the back-end
Mode	mesh	In mesh mode it is controlled by **MESHdesk** and in ap mode it is controlled by **APdesk**
Protocol	http	Can be either **http** or **https**
Server	178.32.59.137	The IP Address of the RADIUSdesk server
WPA2 Key	radiusdesk	the WPA2 Key for the hidden ssid **meshdesk_config**
Firmware	ID=LEDE….	

New Settings

- To apply new settings you have to check the **Apply New Setting** checkbox.
- The settings are automatically applied as the hardware contacts the utility.
- Empty values will be ignored.
- The hardware type selection is important to ensure the LEDs are correctly assigned.
- You will typically leave **WPA2 Key** and **Change secret** empty.

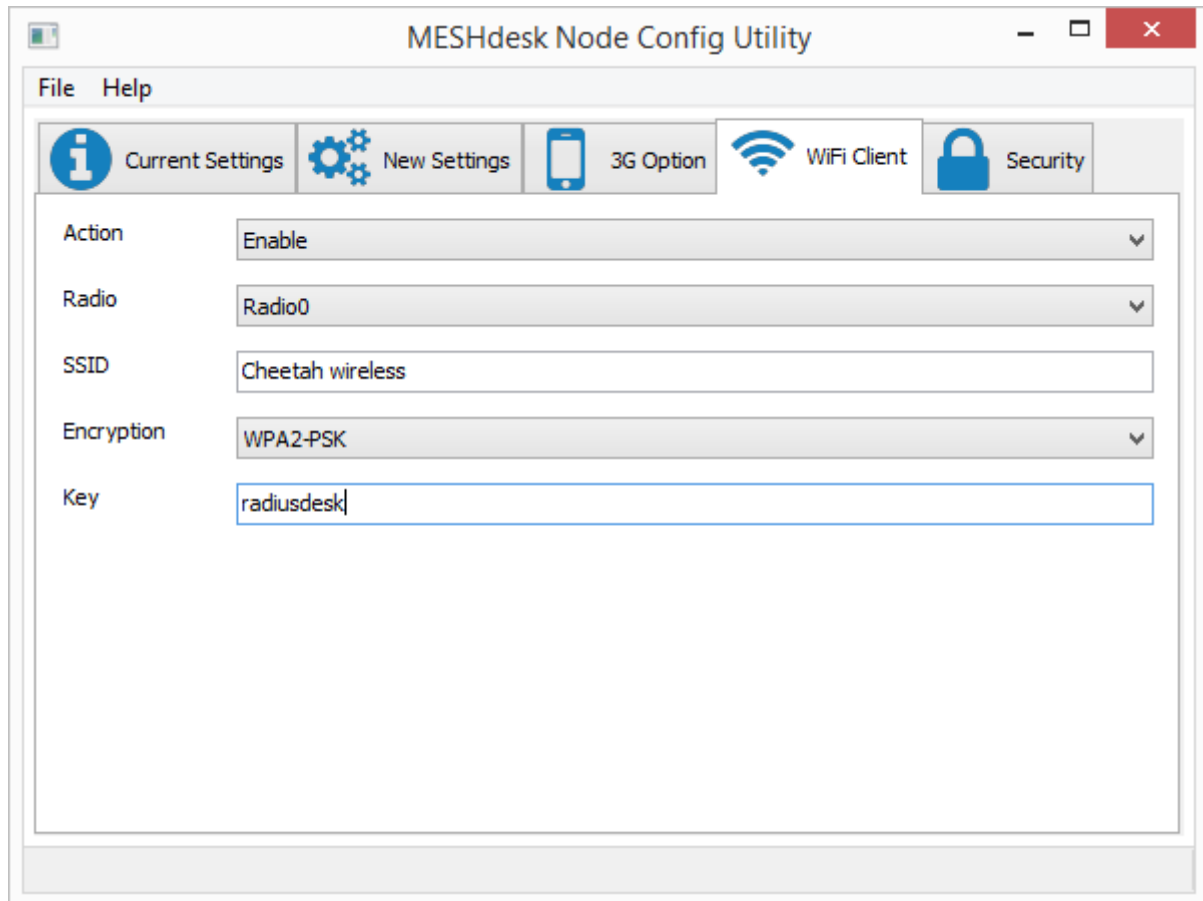> No need to save anything to the device. The new values are committed on the fly as soon as the device makes contact with the utility.

3G Option

- The **3G Option** offers an alternative way to configure the device for obtaining an Internet connection.
- Be sure the device has either an on-board 3G/4G module or an USB port with the required packages included with the firmware for 3G/4G dongle support.
- The default value of **Action** is not to change any existing setup.
- If you select **Enable** the other fields becomes available to configure.
- Normally there are two things that require setting up. They are the **APN** and **PIN**.
- The value of the **APN** depends on the mobile provider and may also include an optional **Username**.
- The PIN is specific to the SIM card which you use for connecting to the mobile network and may be disabled. Simply leave the field blank if the PIN is disabled.
- If you wish to disable an existing 3G setup, simply change the **Action** to **Disable** and ensure the device re-contacts the utility (power cycle the device) to commit those changes.

WiFi Client

- The **WiFi Client** offers an alternative way to configure the device for obtaining an Internet connection.
- For this option we do not need any additional hardware and make use of the radio in client (station) mode to provide also Internet connectivity. Be sure though that the firmware includes the **relayd** package for this option to work.
- The default value of **Action** is not to change any existing setup.
- If you select **Enable** the other fields becomes available to configure.
- Normally there are three things that require setting up. They are the **SSID**, **Encryption** and **Key**.
- If you have a dual radio device, you can also opt for selection one of the two radios. For single radio devices, leave the default of **Radio 0**.
- If you wish to disable an existing WiFi Client setup, simply change the **Action** to **Disable** and ensure the device re-contacts the utility (power cycle the device) to commit those changes.

- The MediaTek and Atheros ath9k WiFi drivers allow the radio to support multiple modes simultaneously.
- This enable us to offer this option while also using the same radio to do Mesh and Access Point at the same time.
- Remember though there will be a performance drop.
- If speed is an issue consider using dual radio hardware instead or connecting through the LAN port

Security

- This is an advanced setting. Leave it untouched unless you know what you're doing.

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