MESHdesk firmware

- MESHdesk firmware is build using OpenWrt.
- You can download pre-build firmware images from this URL: http://sourceforge.net/projects/radiusdesk/files/MESHdesk/Firmware/
- If you are more technical and want to build your own firmware, you can follow the documentation under the **Technical discussions** section.
- By default the firmware runs a ssh server with user **root** and password **admin**. You are encouraged to change the password through the MESHdesk back-end.
- It boots up in such a way that it will be a **DHCP Client** and thus needs a **DHCP Server** to supply an IP Address to the device it runs on.

Flashing the firmware onto the hardware

- Each type of hardware has a unique way to get the firmware *installed* onto the device.

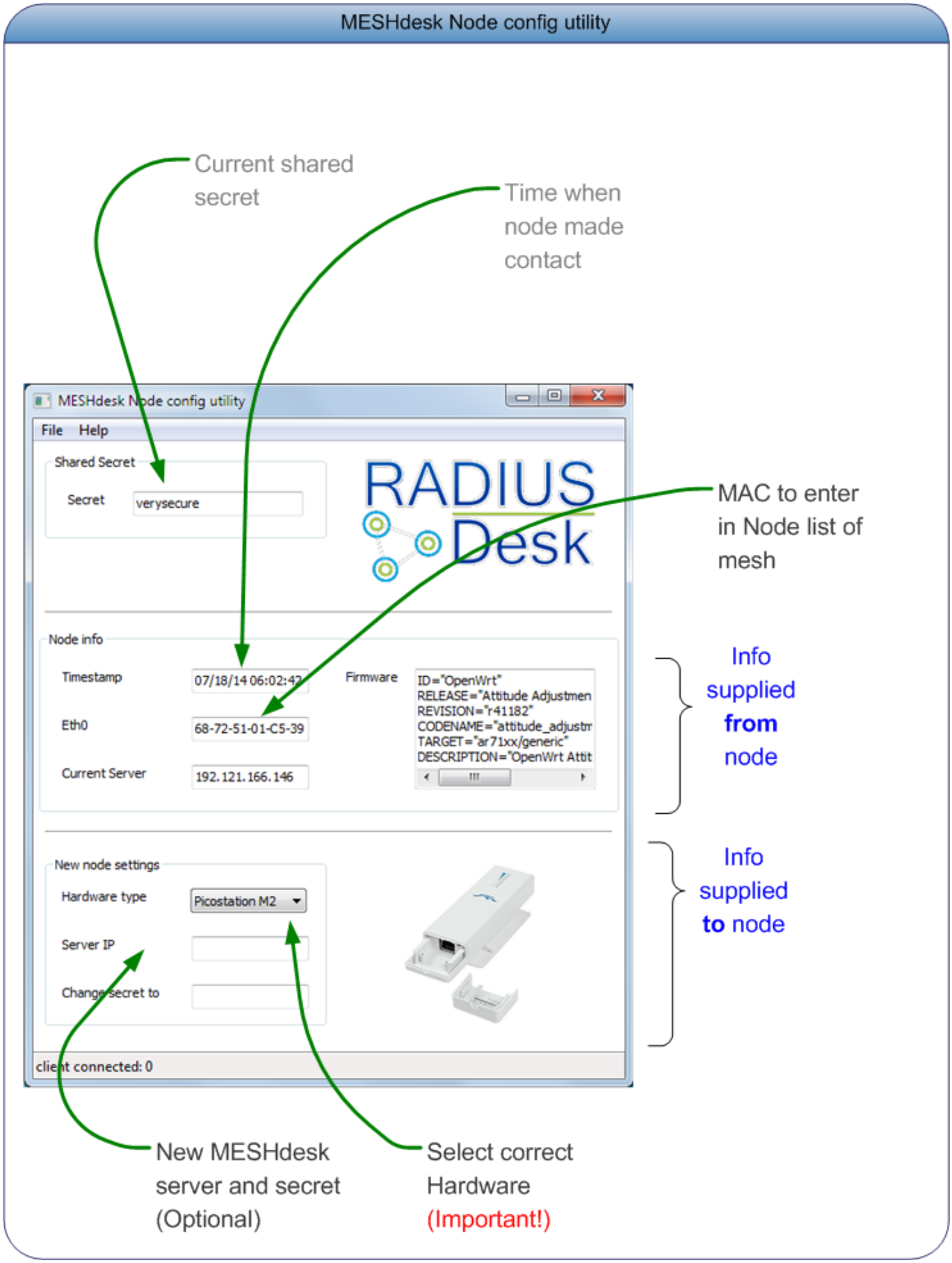
Hardware	Instructions
Dragino	http://wiki.dragino.com/index.php?title=Web_FailSafe_Uboot
OpenMesh OM2P	http://help.cloudtrax.com/hc/en-us/articles/202210960-How-to-manually-flash-firmware-on-a-CloudTrax-enabled-access-point
Ubiquity PicoStation HP	http://www.radiusdesk.com/old_wiki/user_guide/chilli/ubiquity_basic#flashing_openwrt_onto_the_picostation2

Configuring the firmware

- Unlike other cloud managed solutions which are owned and managed by a third party, you manage your own controller.
- The firmware you just flashed onto the hardware do not know where your controller is running.
- We need an easy way to configure the firmware after it was installed onto the hardware.
- We have two basic needs:
  - Tell the MESHdesk server about our hardware node. This is required so that the node can contact the server for its settings.
  - Tell our hardware node who he should contact in order to get its settings.
- The **MESHdesk Node config utility** makes it super easy to:
  - Find the MAC Address of the hardware node running the MESHdesk firmware.
  - Point the hardware node to your server.
- If you are a hardcore command line junkie you do not need to use the **MESHdesk Node config utility**. Simply ssh to the DHCP given IP Address of the node and change the /etc/config/meshdesk file manually to point to your server and specify the correct hardware.

Installing and running the MESHdesk Node config utility

- The MESHdesk Node config 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.
- See the following graphic which describes the GUI:


MESHdesk Node config utility
Current shared secret
Time when node made contact
MESHdesk Node config utility
File Help
Shared Secret
Secret
verysecure
RADIUS Desk
MAC to enter in Node list of mesh
Node info
Timestamp
07/18/14 06:02:42
Firmware
ID="OpenWrt"
RELEASE="Attitude Adjustmen
REVISION="r41182"
CODENAME="attitude_adjustr
TARGET="ar71xx/generic"
DESCRIPTION="OpenWrt Attit
Eth0
68-72-51-01-C5-39
Current Server
192.121.166.146
Info supplied from node
New node settings
Hardware type
Picostation M2
Server IP
Change secret to
Info supplied to node
client connected: 0
New MESHdesk server and secret (Optional)
Select correct Hardware (Important!)

Set the IP Address of your machine

- The node contacting the **MESHdesk Node config utility** expects it to be listening on **192.168.255.20** and on TCP port 3000
- The node will set it's own address to **192.168.255.200** before trying to contact the machine running the **MESHdesk Node config 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

1. Configure the Windows machine to have IP Address **192.168.255.20**
2. Ensure the Windows Firewall allow incoming connections on tcp port 3000 or disable it for the duration that you will be using the program.
3. Double click the **.exe** file.
4. Connect **the Ethernet port** of your node to the same network as the Windows machine and power it up.
5. 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.

Let us consider the various parts of the utility.

Shared secret

- The **Shared secret** is a secret that has to be common between the node contacting the **MESHdesk Node config utility** and the **MESHdesk Node config utility**.
- It is used as a security measure to prevent anyone from reconfiguring your hardware. The default value is **verysecure** and you are encouraged to change it.
- Remember to change the default value during start-up to your own value if you are configuring a node after the very first set-up since the MESHdesk Node config utility does not remember it.
- If the secrets (between the utility and the node) are not common; this text box will turn red when the node makes contact.
- Then you either have to correct it on the utility or re-flash the node with the default firmware again in order to ensure both are the same.

Timestamp

- The time when the node made contact to supply its info.
- This is handy to see if a new node made contact and when it was.

Eth0

- MESHdesk uses the MAC Address of eth0 on the node to uniquely identify a node to the MESHdesk back end.
- We use this value in order to add it to the list of nodes which a mesh network comprises of.
- When a node contacted the utility we can **copy** and **paste** this value to add the node to a specified mesh network which we defined in **MESHdesk**.

Current server

- This is the IP Address of the current MESHdesk server which the node will contact for it's settings.

Firmware

- Lists the information on the Firmware running on the node. This is more for informational purposes.

Hardware type

- This setting will help the MESHdesk firmware to use the correct selection in terms of LEDs specific to the hardware.

- In future there also might be more hardware specific configurations per hardware type.
- **Make sure you select the correct type** as this selecting a wrong hardware type can **wreak havoc** with your LEDs!

- Be careful when you have multiple hardware booting while the utility runs in the background.
- It will work as designed and might change the hardware selection on the firmware.

Server IP

- The IP Address of the server that you want the node to contact for their settings.
- *If you leave this blank, the current value reported by the node will remain unchanged.*

Change secret to

- The new shared secret that will be common between the node and the utility.
- *If you leave this blank the current value will remain unchanged.*
- If you reboot the node **after** it made contact with the utility that has a new shared secret specified **without** also changing the value of **Secret** at the top, these secrets will differ and the top text box will turn red to highlight the problem.
