Requirements and Considerations for Initializing USB/POE/Ethernet Adapters for Use with Wyze T-31 Devices Running Wz_Mini_Hacks

- Latest Wz_Mini_Hacks_Master Release Appropriate for the Particular OS.

- Fresh SD Card / Basic Class 10 SDHC 32GB FAT32 with the wz_mini folder and the factory_xXX_camera I.D. file as the _only_ contents. They are located in the SD_ROOT folder of the main wz_mini_hacks_master directory. Note: Larger cards can be used for increased memory once you're up and running and know the basics are functional, but FAT32 is still a hard requirement for using wz_mini successfully.

- A UCTRONICS adapter that at least lights up (both green and yellow LEDs) when attched to a POE or USB power source. The green LED indicates power. The yellow LED indicates network status /activity.

- A reasonable understanding of the Mini_Hacks README contents is required, though the section for activating the USB/ETH functionality is where it can be easy to assume a USB Ethernet adapter should just be plug and play. It is not.

- The wz_mini folder contains the wz_mini.conf file which is where the main configuration parameters reside. They can be set or modified with any _plain text_ editor using or adapting to the Unix line feed convention. Preliminary editing of the file prior to copying to the SD card is recommended to avoid any possible anomolies introduced between the editing method, SD card, camera card reader, etc. Fancy format editors will not work. (Notepad _will_ work for Windows users as explained below.)

- The standard OEM 4.36.9.131~139 v3 firmware is recommended. If desiring RTSP functionality, enable it in the wz_mini.conf file and configure the parameters following the example in the README to initially test streaming. Keep everything else simple to ensure the best chances for succes on the first boot from the SD card and to minimize troubleshooting multiple file variables if things don't work as expected. DO NOT enable the USB/ETH function at this time. Those unfamiliar with setting up SSH or navigating the Linux file system **_MUST_** enable the web server function in the wz_mini.conf file for the live online editing required to successfully enable the USB/ETH functionality. SSH is not a requirement for Mini Hacks but should be seriously considered as the safest method of camera access for ongoing operations. The web server is _highly_ insecure and should only be used in otherwise _highly_ secure environments.

- *** Here's where users can become a bit foggy about the proper sequence required to successfully enable the USB/ETH functionality and can ultimately experience failure thinking the adapter is bad or ending up with hung firmware requiring a complete re-initialization of the camera from scratch. While the intial 'auto-detect' instruction in the README loosley implies a PnP scenario, the last paragraph is equally casual when *it is the absolute most inportant requirement for any of this to work and actually goes hand in hand with the first instruction as an integrated process.*

- <u>The ethernet adapter will not be auto-detected and loaded automatically simply by enabling the function as implied.</u> While true after successful initialization of the adapter *by wz_mini on the network*, the inference can seem rather vague without understanding the relevence of the later instruction specifying doing so from Wi-Fi mode. Ideally, additional details with emphasis on the dhcp process and its importance in this particular scenario would be extremely helpful if also included in the README. Liberties have been taken to do so below.

- (Extracted from README)

USB Ethernet Adapter:

ENABLE_USB_ETH="true"

ENABLE_USB_ETH_MODULE_AUTODETECT="true"

ENABLE_USB_ETH_MODULE_MANUAL=""

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To have the Ethernet NIC be auto-detected and loaded automatically, set the ENABLE_USB_ETH_MODULE_AUTODETECT value to "true". ***The camera must be online and initially booted with the wz_mini SD card in Wi-Fi mode and the ethernet adapter connected to an active network with an active dhcp server <u>when changing this setting.</u> This allows dhcp discover for the adapter's hardware address to obtain an IP address once the setting has been set to "true" and the camera rebooted to apply the changes. This disables Wi-Fi and re-initiates the dhcp process which then proceeds to obtain a NEW IP ADDRESS for the ethernet adapter and releases the previous address assigned to the camera itself. <u>This cannot be done offline and then implemented on a power-up boot. It must be done with the camera live online from Wi-Fi mode. The camera will not boot from the SD card and load wz_mini as a wired device until this process has been successfully completed first.</u>***

IMPORTANT: The WYZE app will show the camera as active and will display the new IP address upon successful implementation of the changes. The Wi-Fi icon will become transparent but the original Wi-Fi MAC address will remain as it is hard coded into the camera firmware. It is now irrelevent unless the camera is again rebooted as Wi-Fi and should not be confused with the hardware address of the ethernet adapter which will require being identified by external means.

To use the web-based configuration tool, set WEB_SERVER_ENABLED="true" in the wz_mini.conf as the default. When the camera initially boots from the SD card, simply access the web server by the camera's current Wi-Fi IP address. The configuration tool opens a GUI for editing and saving the wz_mini.conf file and also includes a command for rebooting the camera. An "update" box is at the bottom of the page for saving any changes to the configuration. CLICK THIS BOX ONLY ONCE! Multple clicks can have unintended consequences including deleting the entire contents of the file (and possibly the contents of any other .conf files that may have been saved.)

Once any edits have been saved, highlighted text will appear at the top of the page for rebooting the camera and for reverting to the previous configuration. Both have provided unintended results in the past which seem to have been somewhat addressed in recent weeks. Most notably, the reboot function did not work. It now does. If rebooted successfully, the camera will no longer be accessible at its original IP address and is now accessible at the new IP address of the ethernet adapter displayed in the WYZE app (or by whatever means is being used to monitor the changes). The hardware (MAC) address can now be determined by association with the new IP address any number of ways as well -- the simplest being from the dhcp server / router.

**** The Wyze app itself can also be used to reboot the camera and may be required if the web interface command isn't successfully implemented or seems to have hung. Be patient as the cloud delay of the app can take some time before the changes are displayed. If the camera seems to have rebooted without showing a new ip address, a second reboot from the app may be necessary for the new address to be displayed. If reconnecting to the web server is desired to review the changes or make additional edits it must now be done with the new IP address.*

If all went well your camera is now a Wz_Mini / UCTRONICS POE/Ethernet device.

Congratulations!

(Important notes on following page.)

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Note: Simply shutting down the camera and removing the wz_mini SD card will return the camera to its normal Wi-Fi condition and functionality using the onboard OEM firmware. This can also be done live by disabling the USB/ETH function in the wz_mini.conf file and rebooting the camera. The adapter can remain attached as a POE power source if desired. To return to USB/ETH adapter connectivity, simply power down the camera, re-insert the wz_mini SD card containing the new USB/ETH configuration for the adapter and power back up -- OR edit the wz_mini.conf file live accordingly and reboot. It should NOW successfully initiate dhcp discover for the adapter which will NOW be auto-detected and assigned an IP address for wired ethernet connectivity via the USB interface.

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* A note about editing with Notepad:

Linux users will be right at home text editing with Vim, nano, etc. Windows users will be faced with preliminary editing by alternate means for initial configuration settings unless comfortable enough to configure an appropriate SSH platform for direct access to the camera using command line methods. Despite numerous sources indicating otherwise, Windows Notepad works fine when editing most text files *initially created in a Unix environment* and has done so reasonably well since 2018. It will recognize and conform to the Unix (LF) convention if present and will indicate such on the bottom bar of the document. *Copying and editing* the file will result in the problematic Windows (CRLF) convention being applied to the document which will also be prominently indicated at the bottom of the page. This line feed convention will not work.