Economical Duck Installation

The Economical Duck installation script is developed for Raspbian Stretch. To begin the installation a SD card should be flashed with a fresh image of Raspbian Stretch. If a headless setup is desired, the SD card’s “boot” partition can be accessed to add a “wpa\_supplicant.conf” file – containing the information to connect to a wireless network, and a “ssh” file, containing a single space to enable the SSH server on the Raspberry Pi. The “wpa\_supplicant.conf” file follows the following format:

ctrl\_interface=DIR=/var/run/wpa\_supplicant GROUP=netdev

update\_config=1

country=GB

network={

ssid="wifiname"

scan\_ssid=1

psk="wifipassword"

}

Once connected to the pi, git should be installed with the “apt install git” command. This will be used to clone the “ecoduck-software” repository with the “git clone <https://github.com/ThePraeceps/ecoduck-hardware/>” command.

The installation script can be found as the “initial-setup.sh” file under the repository. Running this script as root will install the Economical Duck software onto the pi. It will take around 30 minutes.

This script does a number of things. Firstly it will update the kernel to the latest version using the rpi-update command, and update all the packages to their latest versions. This is done to ensure that the if the script is ran on an older version of Raspbian the Pi will have the packages required to act like a composite device.

It will then make the file system for the mass storage gadget and install all the packages required for both the installation and function of the Economical Duck. It will then overwrite the configuration files for these packages to bring up the interfaces and DHCP server for the networking gadgets.

The script will then setup the device to continue the script after a reboot. The script will then attempt to patch the dwc2 device driver to output USB connection logs to dmesg. This is done by identifying the current kernel branch the pi is on, cloning that repository, then running a patch file on the dwc2 driver. If this is successful it will replace the driver with the patched version and backup the original to a “kernel-patch” folder located in the same directory as the patch-kernel script.

The script will then setup the “ecoduck-init” service and add it to start on boot, and clone the ecoduck-software repository under “/usr/ecoduck/” to be used by the service. Finally it will create an open vswitch bridge to combine the two networking gadget devices into a single device for the dhcp server.

It will reboot one last time, and the device will be ready for use.