**Auto Connecting the UAS to the GCS**

As the goal of the project is to develop a set-and-go (SAG) device, streaming data by manually telling the Pi to was not a long term option. By this point the reader understands the establishment of the Tailscale network and has presumably manually tested the connection with success. For SAG operations, We must now automate the process of automatically launching a MAVLink telemetry stream from the Raspberry Pi 5 connected to a Pixhawk flight controller via UART, and transmit this over the Tailscale-enabled network to a remote GCS running QGroundControl.

While manually running the MAVProxy command in a terminal successfully streamed data to the GCS, attempts to automate the process using systemd or background scripts failed — likely because MAVProxy depends on running within an interactive terminal shell where it can access full environment variables and terminal input/output features.

To solve this, we decided to launch MAVProxy inside its own dedicated terminal window after the Raspberry Pi finishes booting into the desktop GUI. This approach simulates the exact manual behavior that had worked reliably in testing. Using Raspberry Pi OS’s autostart functionality, we configured a *.desktop* file to run a MAVProxy startup script within an lxterminalsession after a 60-second delay. This ensured both Tailscale and the Pixhawk had enough time to initialize before MAVProxy launched, and guaranteed that the command ran in a fully interactive shell. As a result, MAVProxy now starts automatically, opens in its own terminal session, and reliably connects to the GCS every time the Pi boots — even without a monitor attached.

**1. Create the MAVProxy launcher script:**

| nano /home/pi/start\_mavproxy\_gui.sh |
| --- |

***Add:***

| #!/bin/bash sleep 60 #time to wait after boot (allows for Tailscale startup) /usr/local/bin/mavproxy.py --master=/dev/ttyAMA0 --baudrate 57600 \ --out=udpin:0.0.0.0:14551 \ --out=udp:<GCS\_TAILSCALE\_IP>:14550 |
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*(Replace <GCS\_TAILSCALE\_IP> with your actual ground station’s Tailscale IP.)*

**Make it executable:**

| chmod +x /home/pi/start\_mavproxy\_gui.sh |
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**2. Create an autostart file to launch the script in a terminal window:**

| mkdir -p ~/.config/autostart |
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| nano ~/.config/autostart/mavproxy.desktop |
| --- |

***Add:***

| [Desktop Entry] Type=Application Name=Start MAVProxy Exec=lxterminal -t MAVProxy -e /home/pi/start\_mavproxy\_gui.sh X-GNOME-Autostart-enabled=true |
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**3. Reboot to test:**



| sudo reboot |
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