

SPARTA Blue Origin

Flight Simulation: Operation Guide

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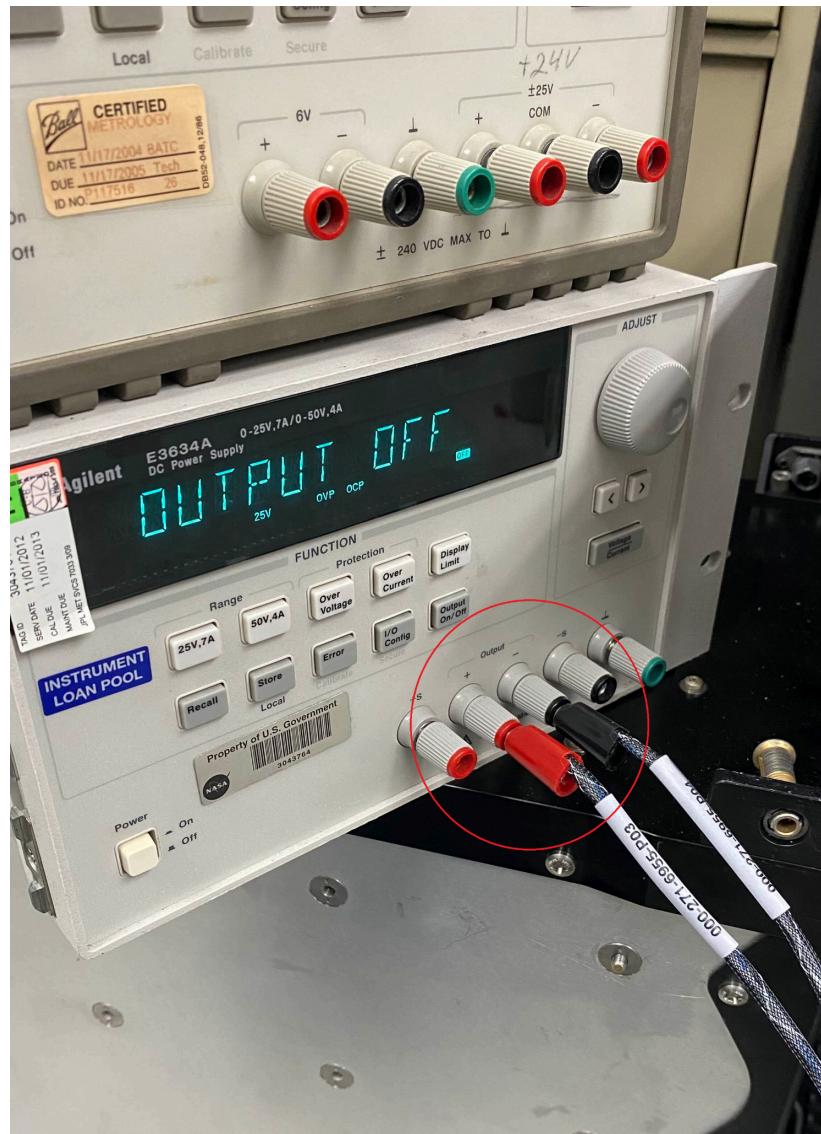
Last Updated: November 21st, 2024

Powering and Connecting the IPC:

1. Find the black cable with the two power cables, ethernet cable, and circular pin cable.



2. Plug the power and ground cables into the power supply and turn it on



3. Find the IPC and have the top side facing up like this



4. Take the circular pin cable and plug it into the J1 slot



5. Plug the ethernet cable into the white adapter in the laptop



6. Locate the white circular pin cable on the SPARTA Blue box
7. Flip the IPC onto its backside
8. Plug the white circular pin cable into the C1 slot



9. Go back to the power supply and press the “Output On/Off button”



10. Press the “50V, 4A” button under the Range settings



11. Rotate the knob on the top right clockwise until it reaches about 26.99V



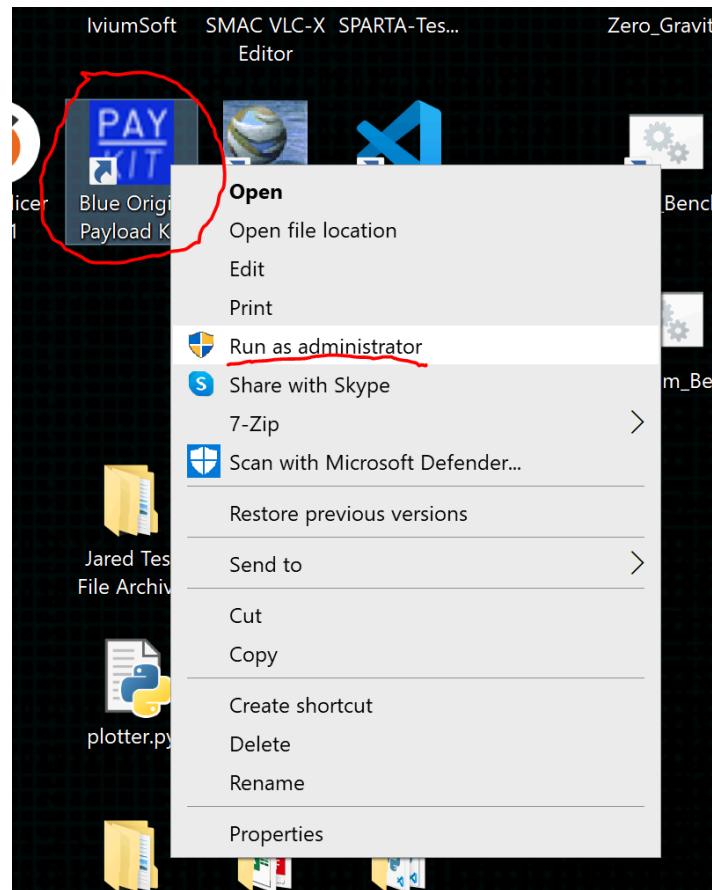
12. Wait about 30 seconds to a minute and check the lights on the front side of the IPC.
13. All three lights “STAT, COM, PWR” should be lit up



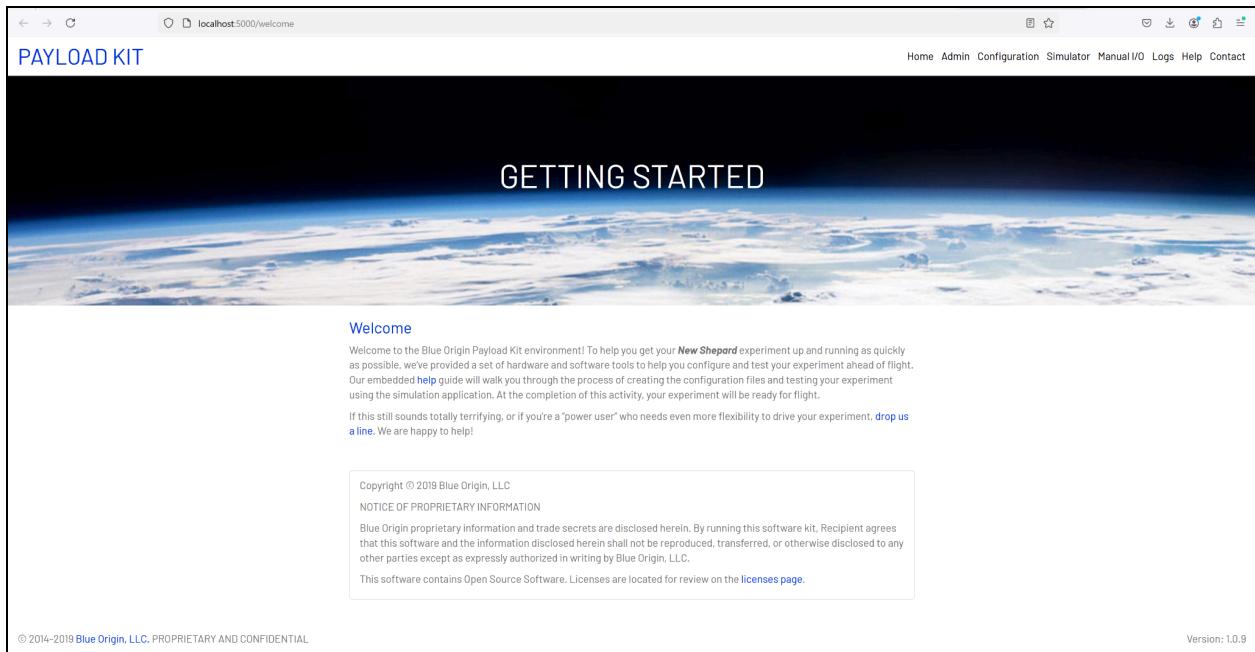
The IPC is now powered on and connected to the laptop

Opening The Interface:

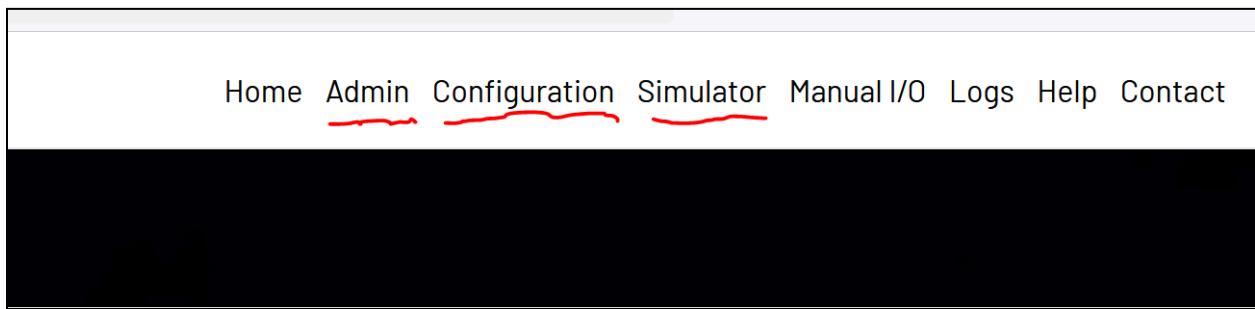
1. On the top right corner of the desktop, right click “Blue Origin Payload Kit” and click “Run as administrator”
2. It will ask for permission, click yes.



3. The home page should open



4. The main three tabs you're going to use are Admin, Configuration, and Simulator.



Admin Page:

1. You shouldn't need to do anything (besides a quick status check) on this page since all of the IP address stuff is already set.
2. The page should look like this:
 - a. IP address is displayed
 - b. SSH key is displayed and checked off as verified

Setup

IP address

Before getting starting with your experiment, you'll need to configure the Payload Kit to use the unique IP address for your Integrated Payload Controller (IPC). Without the IP address, your desktop computer will not be able to communicate with the IPC.

Please enter your unit's IP address in the box below and click **Submit**. Each IPC has a unique IP address which can be looked up based on your IPC's serial number (printed on the IPC) using the table below.

IP address **Submit** Current IP address: 10.132.5.122 [► IP address lookup table](#)

SSH key

After entering the IP address above, you'll also need to upload the unique SSH private key for your IPC. The SSH private key allows your computer to communicate securely with the IPC.

You should have received the unique SSH private key for your IPC from Blue Origin; the filename matches the format "cps_ipc_key_sn#_v#", where # represents a numerical value. Use the **Choose** button to select the SSH private key file, then use the **Upload** button to save the file to the Payload Kit.

If the IP address and SSH private key are accepted, you should see check mark and a message indicating that the SSH key is valid. You are now connected to the IPC!

+ Choose **Upload** **Cancel**

SSH key: cps_ipc_key_sn116747_v001
✓ Valid SSH key

System logs

Setup

The integrated payload controller (IPC) is not connected! Please connect the IPC by plugging in the supplied customer integration harness. Then input your IPC's IP address and SSH key below.

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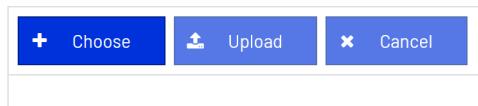
IP address Current IP address: [▶ IP address lookup table](#)

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If the IP address and SSH private key are accepted, you should see check mark and a message indicating that the SSH key is valid. You are now connected to the IPC!



SSH key:

3. BUT if you see the red message at the top saying the IPC isn't connected, try:
 - a. Unplugging the ethernet cable and replugging it
 - b. Restarting the power supply and Blue Origin Payload Kit program

Configuration Page:

1. This page is for managing the IPC code, which I've already written so again, not much you need to do besides a quick check.
2. Just make sure the “SPARTA_IPC.xml” file is in the list

Configuration

Existing experiment XML files

Your experiment configuration files:

Filename	Valid?	Remote updated?	Last modified	Size (bytes)	Local actions
SPARTA_IPC.xml	✓	Up to date	Tue Nov 5 10:56:24 2024	2528	
default_flight_logger.xml	✓	Up to date	Tue Jun 23 16:49:46 2020	3510	

File editor

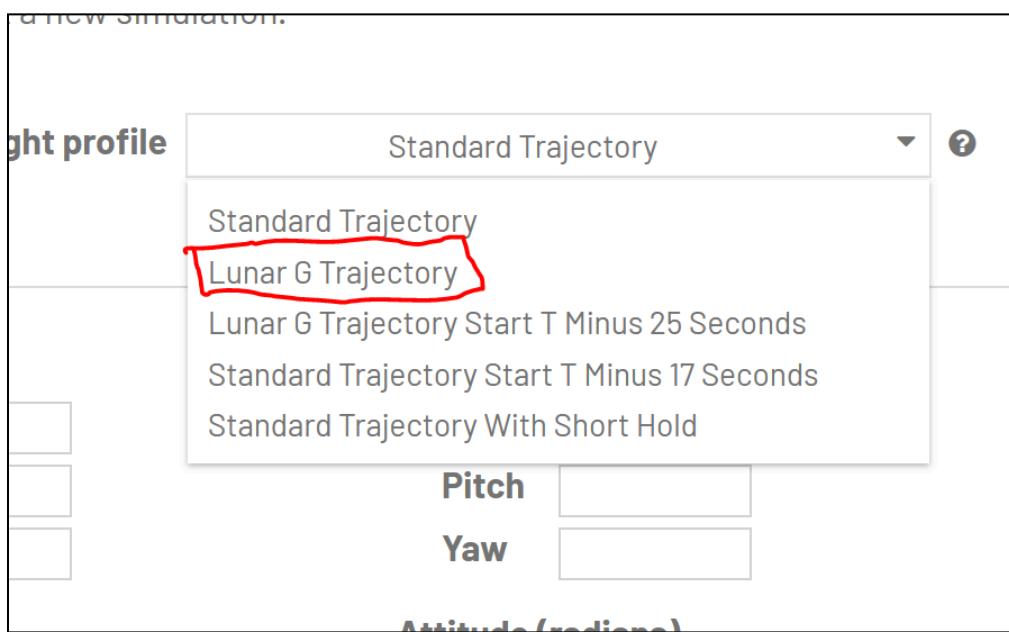
Create a new experiment file or edit an existing file using the editor below.

New From Template

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <experiment name="experiment name here" sample-rate="100" enabled='true' xmlns="http://www.blueorigin.com/remconfig">
```

Simulation Page:

1. This is where you will run the flight simulation and view the flight event sequence
2. Click the flight profile dropdown and choose the Lunar Gravity option



3. Click the “Start New” button and the flight simulation should start

The screenshot shows the SPARTA software interface. At the top right, there are four buttons: "Start New" (highlighted with a red oval), "Pause", "Resume", and "Cancel". Below these buttons is a section titled "Vehicle telemetry (to IPC)". It contains two boxes: "Experiment time (sec)" with the value "5.4" and "Events (sec)" which lists various mission events with their corresponding times. To the left of the telemetry section is a "Warnings" box containing five items: Liftoff, RCS, Drogue chute, Landing, and Chute fault.

Event	Time (sec)
Escape enab.	2.0
Liftoff	
MECO	
Separation	
Coast start	
Apogee	
Coast end	
Drogue chutes	
Main chutes	
Touchdown	
Safing	
Mission end	
Escape cmd.	

4. As the sequence of events progresses, so will the experiment.
5. At any time you want to stop the experiment and cutoff power going to the SPARTA Blue box, just click the Cancel button