



Competition Technical Hardware Set Up

This manual describes how to set up the technical equipment hardware required to run a weightlifting competition. It does not include information on how to prepare or run an event using the Olympic Weightlifting Competition Management System (OWLCMS) software. For information on OWLCMS, click [here](#).

In this setup, all the devices are wired using Ethernet, and the network is private. The advantage of this set up is the competition can go on if the facility's network is down or if there is no WiFi at the venue. A competition router is used to create the private network and a switch is used to provide more access ports to the devices communicating with one another in the private network.

The secretary laptop is the only “high-performance” laptop and runs OWLCMS. The referee, down signal, and jury hardware used is from [Nemikor](#) and integrates directly with OWLCMS. The announcer, athlete-facing, and jury laptops each have Nemikor, Blue Owl software installed and must run that software while OWLCMS is running to operate the referee buttons, down signal box, time keeper box, and jury buttons. A Raspberry Pi 400 computer is used to drive the attempt board and scoreboard displays which are each on 50” TV’s in the main room.

Use industry best practices when connecting all devices together during set up like keeping all cables and cords neat and taped down on high traffic areas. After each event, take inventory of equipment used and return all equipment neatly in the proper storage containers.

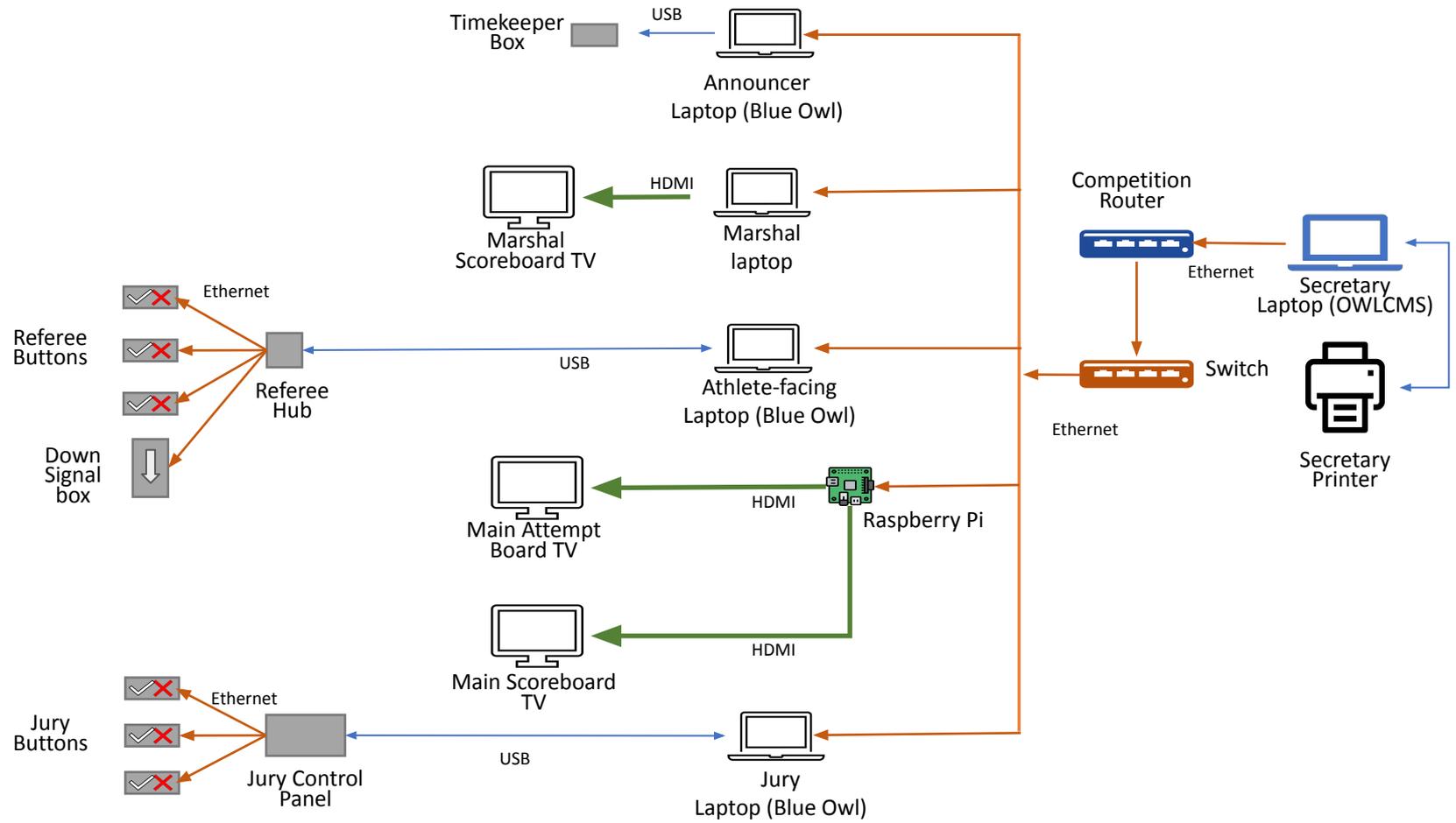


Competition Technical Hardware Set Up: Revision Table

Revision Number	Description	Revised By	Date Created
00	Initial draft	Anthony Agtarap	2024/03/13
01	Added jury, GoPro, equipment set up, additional instructions, establishing connection, troubleshooting	Anthony Agtarap	2024/10/18



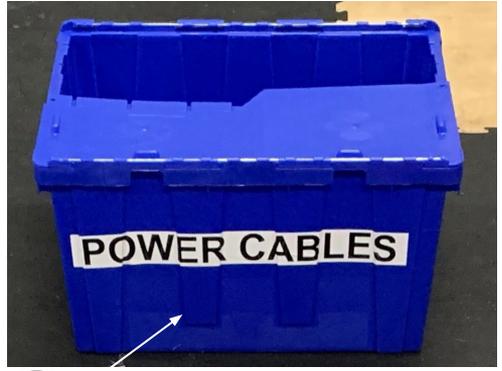
Competition Technical Hardware Set Up: System Schematic





Competition Technical Hardware Set Up: BOM

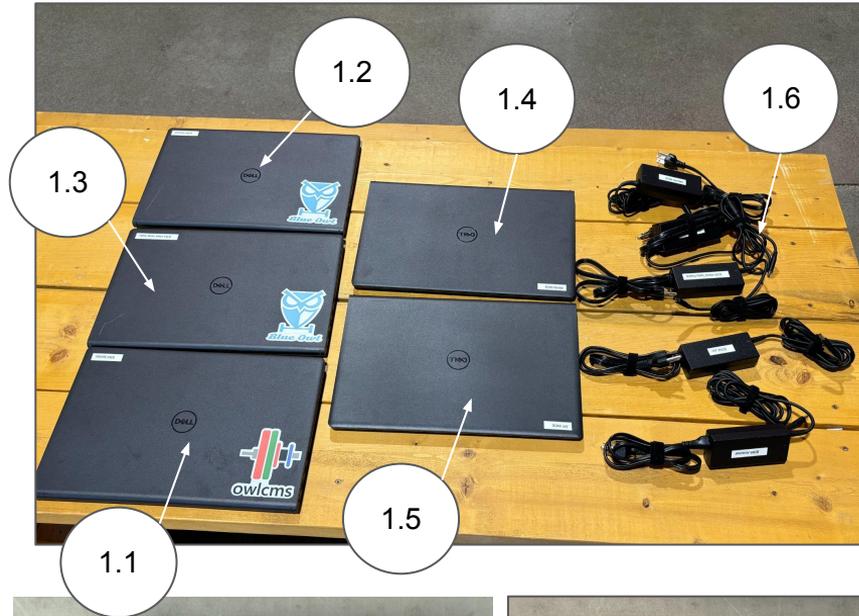
No.	QTY	Description
1	1x	Electronics Bin 1
2	1x	Printer Box
3	1x	Main Attempt Board TV 50"
4	1x	Marshal TV 50"
5	1	GoPro TV 40"
6	1x	Cables Bin





Competition Technical Hardware Set Up: Electronic Bin 1 Contents

No.	QTY	Description
1.1	1x	Secretary laptop
1.2	1x	Announcer laptop
1.3	1x	Athlete-facing laptop
1.4	1x	Marshal laptop
1.5	1x	Jury laptop
1.6	5x	Laptop power cords
1.7	1x	Large Silver briefcase
1.8	1x	Small Silver briefcase
1.9	1x	GoPro Case





Competition Technical Hardware Set Up: Large Silver Briefcase Contents

1.7.12 1.7.11 1.7.14 1.7.13 1.7.15

No.	QTY	Description
1.7.11	1x	Jury control panel
1.7.12	3x	Jury buttons
1.7.13	3x	Ethernet cables (flat)
1.7.14	1x	USB power cord
1.7.15	3x	TV power cords
1.7.16	1x	HDMI cable (long)



1.7.16



Competition Technical Hardware Set Up: Large Silver Briefcase Packed Up



Pack up all the components neatly as shown. Place the 1.7.6 and 1.7.10 in the small compartment.



Pack up the 1.7.5, 1.7.15, and 1.7.16 neatly on top of the components as shown.



Competition Technical Hardware Set Up: Small Silver Briefcase Contents

No.	Quantity	Description
1.8.1	1x	Down signal box
1.8.2	1x	Referee hub
1.8.3	1x	Time keeper box
1.8.4	2x	USB power cord
1.8.5	4x	Ethernet cables (flat)
1.8.6	3x	Referee buttons
1.8.7	1x	Down signal power cord





Competition Technical Hardware Set Up: Small Silver Briefcase Packed Up



Please ensure that all the Blue Owl Referee and Timekeeper hardware from 1.8.1 to 1.8.7 is put away neatly in the small silver briefcase. Make sure all ethernet cables and power cords are wrapped neatly as shown.



Competition Technical Hardware Set Up: GoPro Case Contents

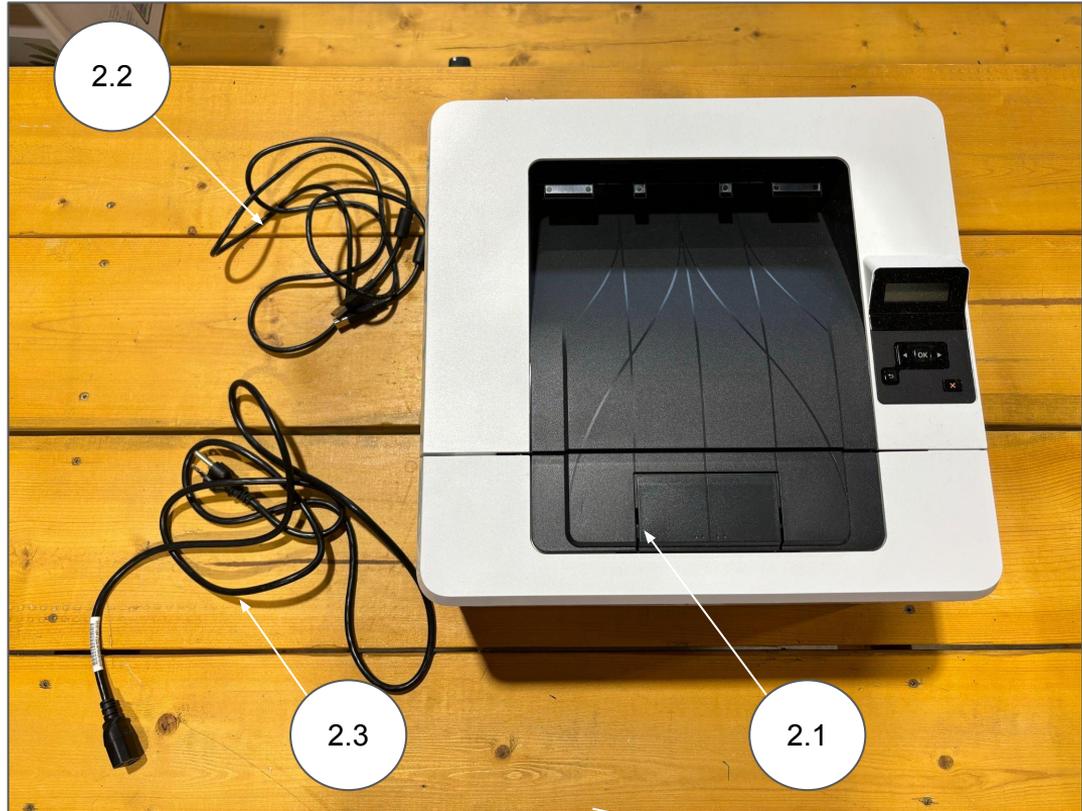
No.	QTY	Description
1.9.1	1x	GoPro camera
1.9.2	1x	HDMI Extender Sender
1.9.3	1x	HDMI Extender Receiver
1.9.4	2x	HDMI Extender power cord
1.9.5	1x	GoPro camera power cord
1.9.6	1x	HDMI cable
1.9.7	1x	micro-HDMI cable





Competition Technical Hardware Set Up: Printer Contents

No.	Quantity	Description
2.1	1x	Printer
2.2	1x	Printer cable
2.3	1x	Printer power cord





Competition Technical Hardware Set Up: Cables Bin Contents

No.	Quantity	Description
6.1	2x	Ethernet cable 30'
6.2	3x	Ethernet cable 50'
6.3	2x	Ethernet cable 100'
6.4	2x	Power cord 16'
6.5	2x	Power cord 30'
6.6	1x	Power cord 50'
6.7	7x	Power bar



6.3

6.1

6.2

6.5

6.4



6.7



6.6



Competition Technical Hardware Set Up: Cables Bin Packed Up

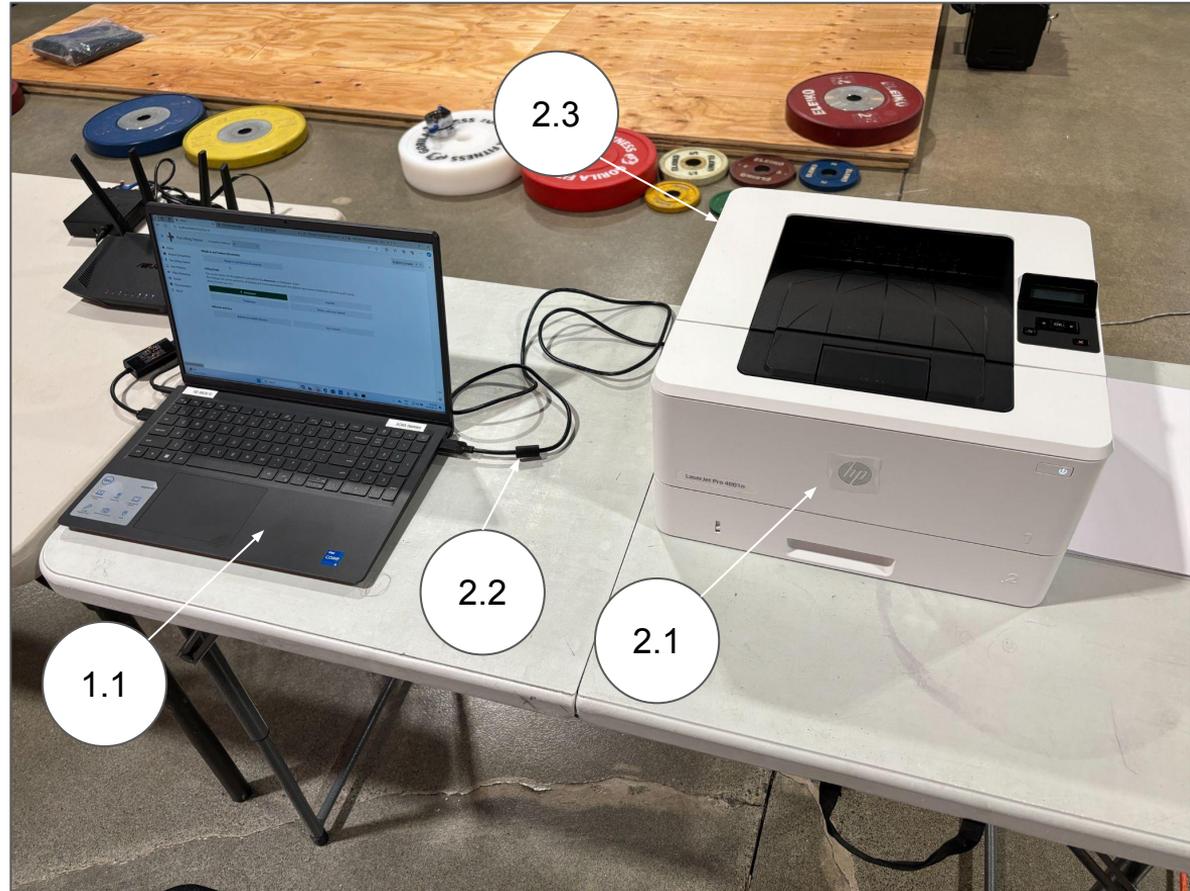


Please make sure all ethernet cables are wrapped neatly. Please also make sure all cables are coiled with no kinks.



Competition Technical Hardware Set Up: Secretary laptop & Printer Setup

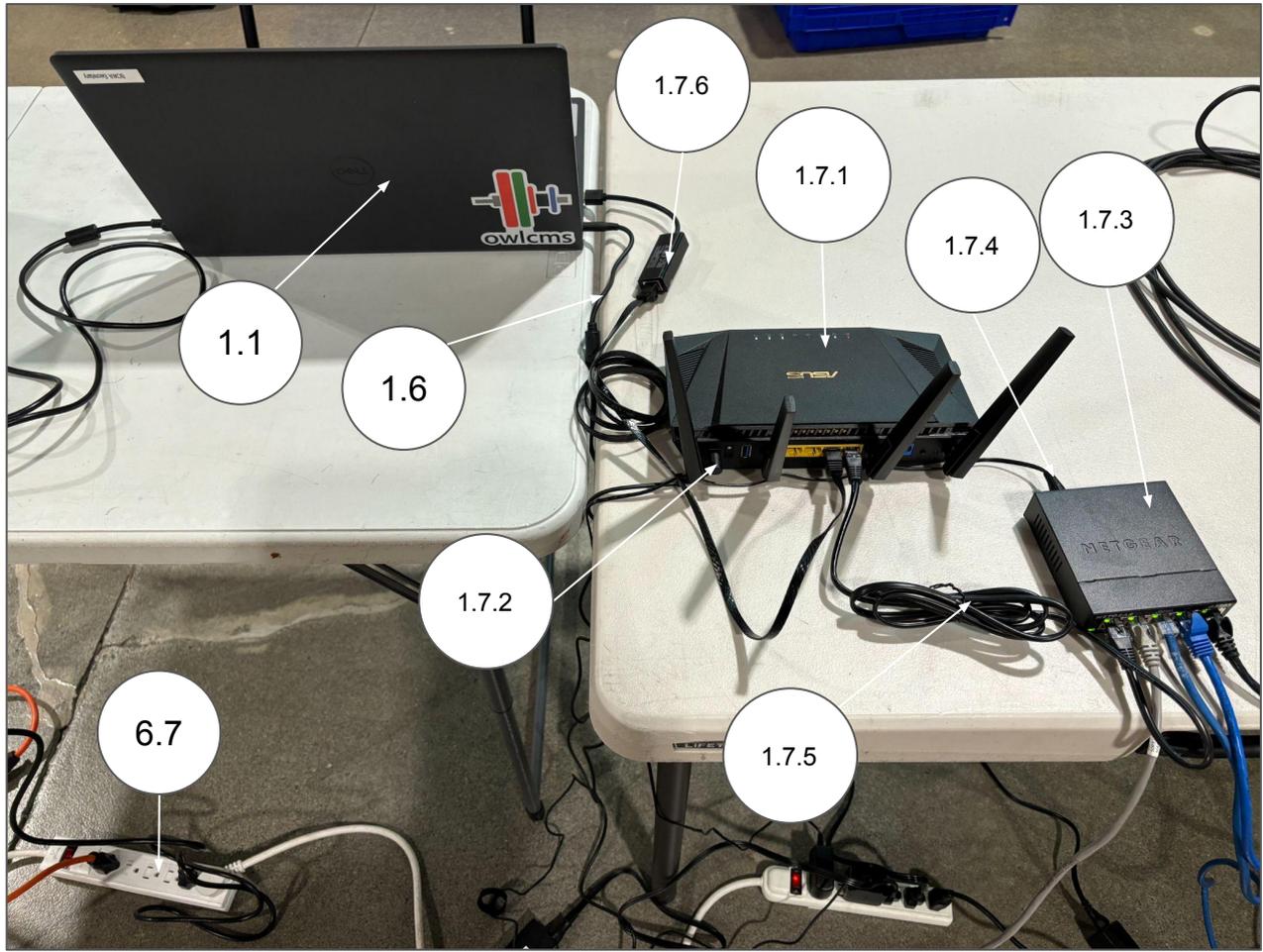
No.	Quantity	Description
1.1	1x	Secretary laptop
2.1	1x	Printer
2.2	1x	Printer cable
2.3	1x	Printer power cord





Competition Technical Hardware Set Up: Secretary laptop, Router, Switch Setup

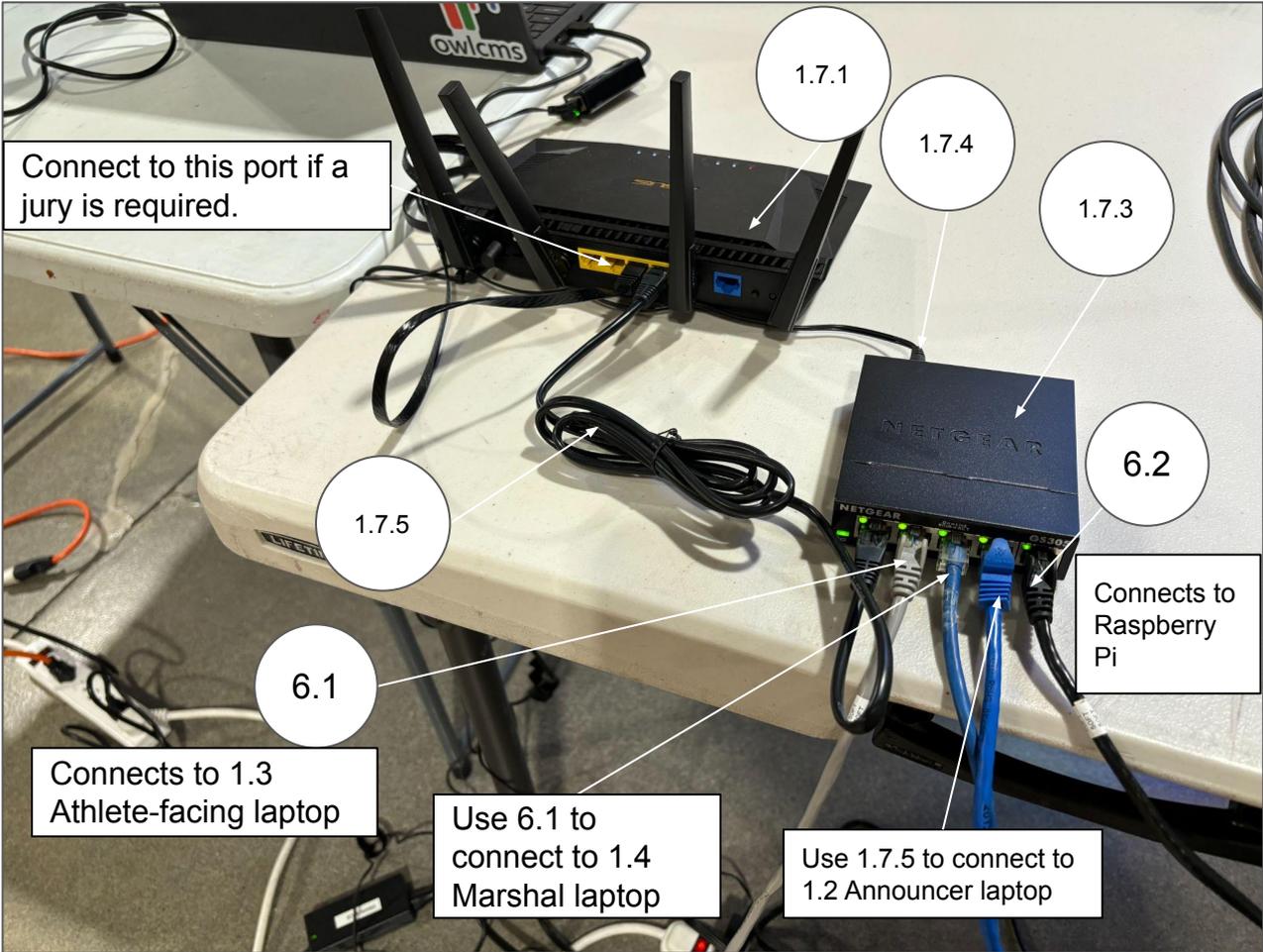
No.	Quantity	Description
1.1	1x	Secretary laptop
1.6	1x	Secretary laptop power cord
1.7.1	1x	Competition router
1.7.2	1x	Competition router power cord
1.7.3	1x	Switch
1.7.4	1x	Switch power cord
1.7.5	2x	Ethernet cable (short)
1.7.6	1x	USB-Ethernet adaptor
6.7	2x	Power bar





Competition Technical Hardware Set Up: Router, Switch Setup Details (continued)

No.	Quantity	Description
1.7.1	1x	Competition router
1.7.3	1x	Switch
1.7.4	1x	Switch power cord
1.7.5	2x	Ethernet cord (short)
6.1	2x	Ethernet cable 30'
6.2	1x	Ethernet cable 50'



Connect to this port if a jury is required.

1.7.1

1.7.4

1.7.3

1.7.5

6.2

6.1

Connects to Raspberry Pi

Connects to 1.3 Athlete-facing laptop

Use 6.1 to connect to 1.4 Marshal laptop

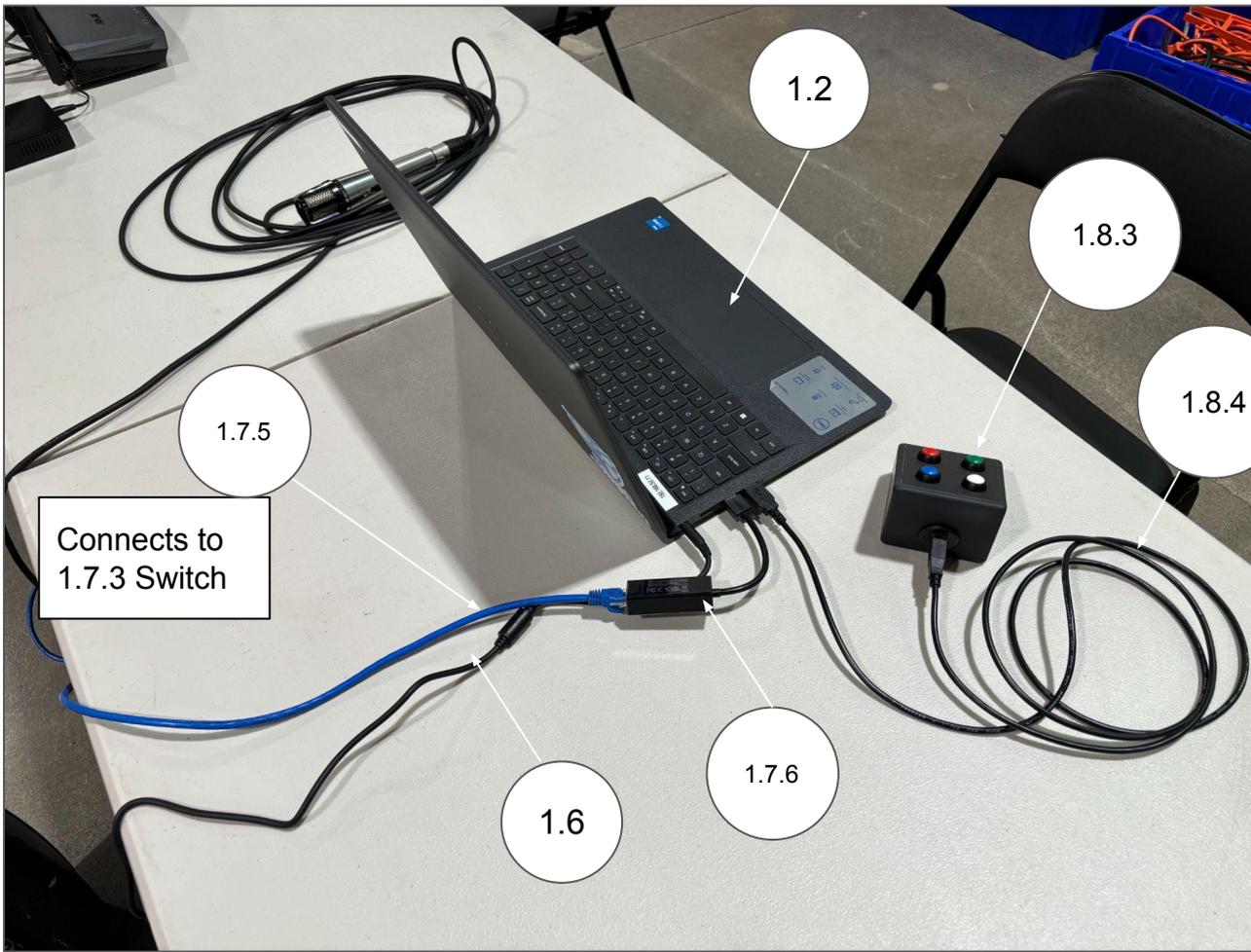
Use 1.7.5 to connect to 1.2 Announcer laptop

This is an example set up. Use the appropriate length of ethernet cable as needed for your specific event situation.



Competition Technical Hardware Set Up: Announcer Laptop Setup Details

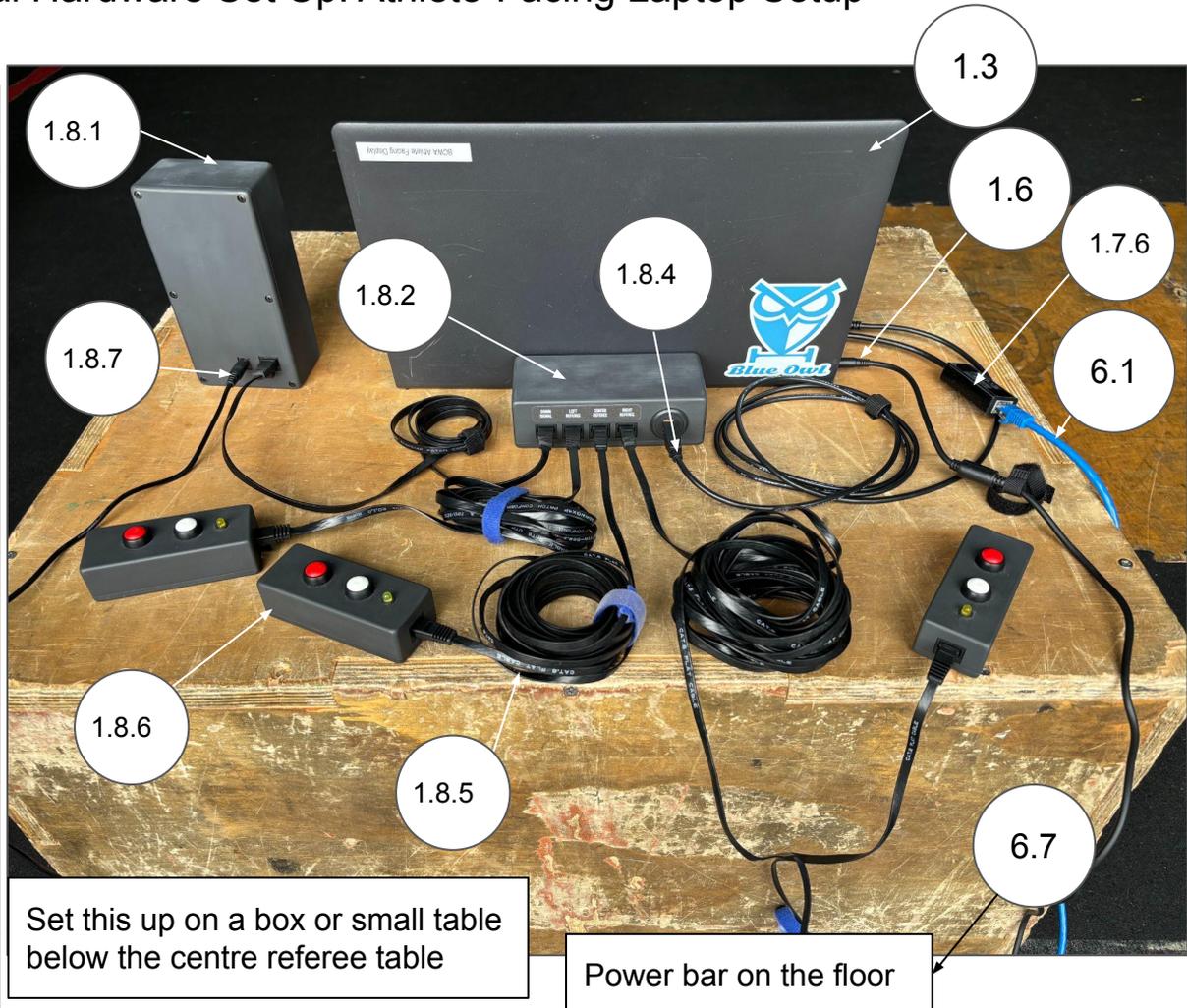
No.	QTY	Description
1.2	1x	Announcer laptop
1.6	1x	Announcer laptop power cord
1.7.5	1x	Ethernet cable (short)
1.7.6	1x	USB-Ethernet adaptor
1.8.3	1x	Timekeeper box
1.8.4	1x	USB power cord





Competition Technical Hardware Set Up: Athlete-Facing Laptop Setup

No.	Quantity	Description
1.3	1x	Athlete-facing laptop
1.6	1x	Laptop power cord
1.7.6	1x	USB-Ethernet adaptor
1.8.5	4x	Ethernet cord (flat)
1.8.6	3x	Referee buttons
1.8.2	1x	Referee hub
1.8.4	1x	USB power cord
1.8.1	1x	Down signal box
1.8.7	1x	Down signal power cord
6.1	1x	Ethernet cable 30'
6.7	1x	Power bar

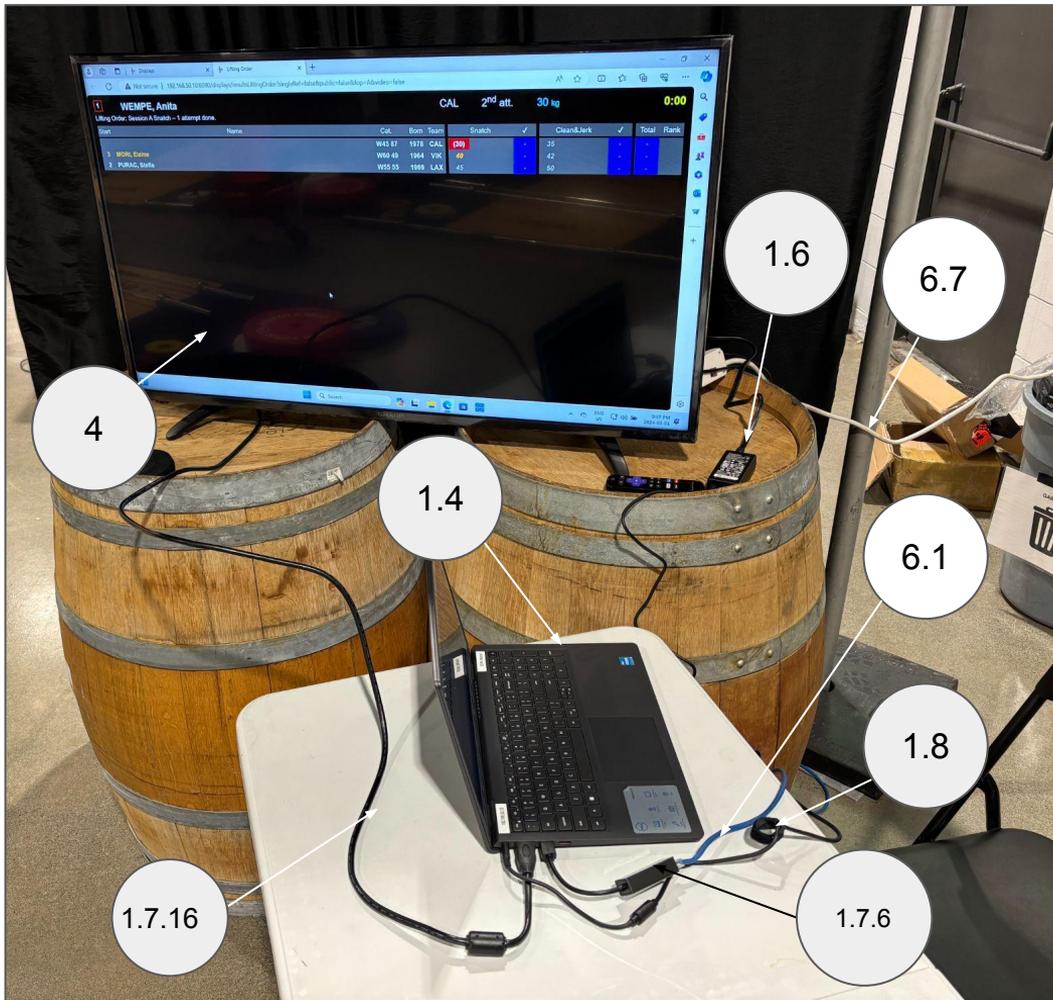




Competition Technical Hardware Set Up: Marshal Laptop Setup

No.	Quantity	Description
1.4	1x	Marshal laptop
1.6	1x	Marshal laptop power cord
1.7.6	1x	USB-Ethernet adaptor
1.7.16	1x	HDMI cable (long)
1.13	1x	Power bar
4	1x	Marshal TV 50"
6.1	1x	Ethernet cable 30'
6.7	1x	Power bar

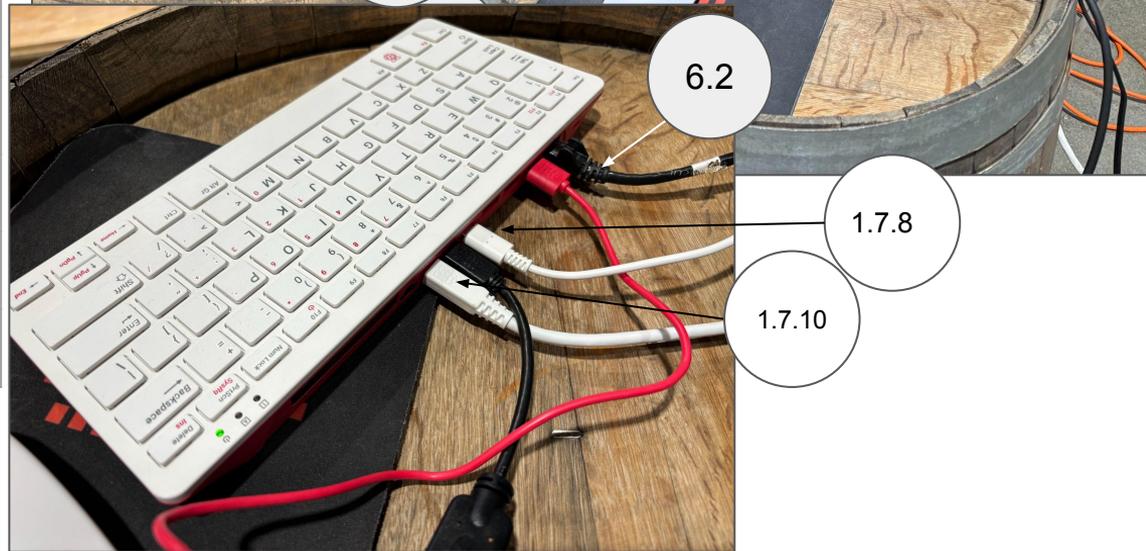
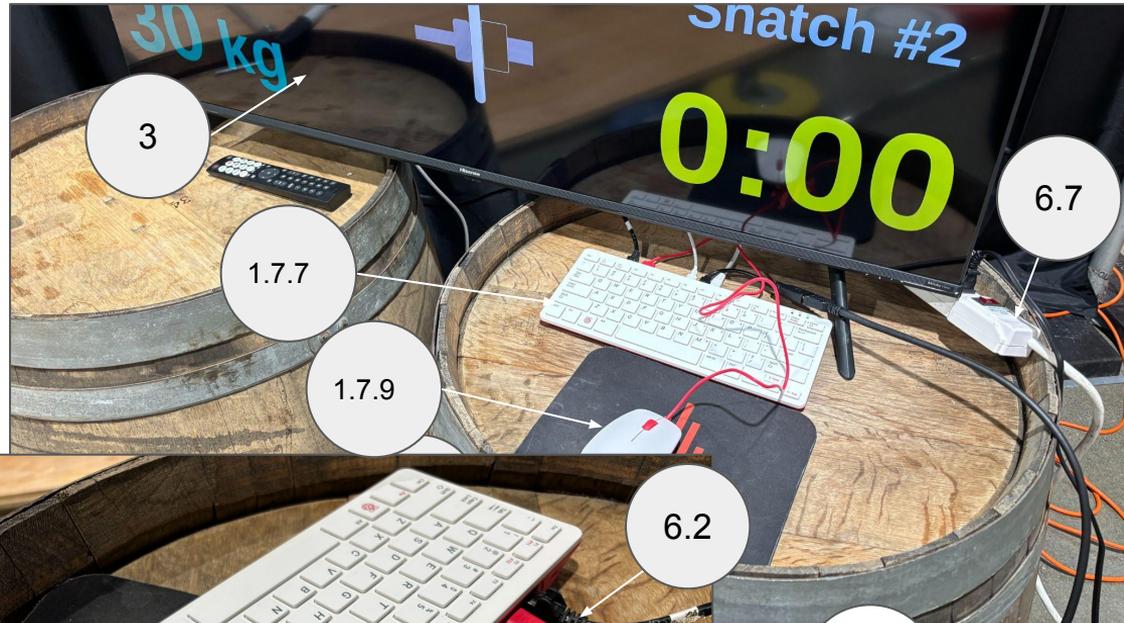
This is an example set up. Use the appropriate length of ethernet cable as needed for your specific event situation.





Competition Technical Hardware Set Up: Raspberry Pi Setup

No.	Quantity	Description
1.7.7	1x	Raspberry pi
1.7.8	1x	Raspberry pi power cord
1.7.9	1x	Raspberry pi mouse
1.7.10	1x	micro-HDMI cable
1.7.18	1x	HDMI cable
3	1x	Main Attempt Board TV 50"
6.2	1x	Ethernet cable 50'
6.7	1x	Power bar





Competition Technical Hardware Set Up: Jury Set Up

No.	Quantity	Description
1.5	1x	Jury laptop
1.6	1x	Jury laptop power cord
1.7.6	1x	USB-Ethernet adaptor
1.7.11	1x	Jury control panel
1.7.12	3x	Jury buttons
1.7.13	3x	Ethernet cables
1.7.4	1x	USB power cord
6.2	1x	Ethernet cable 50'

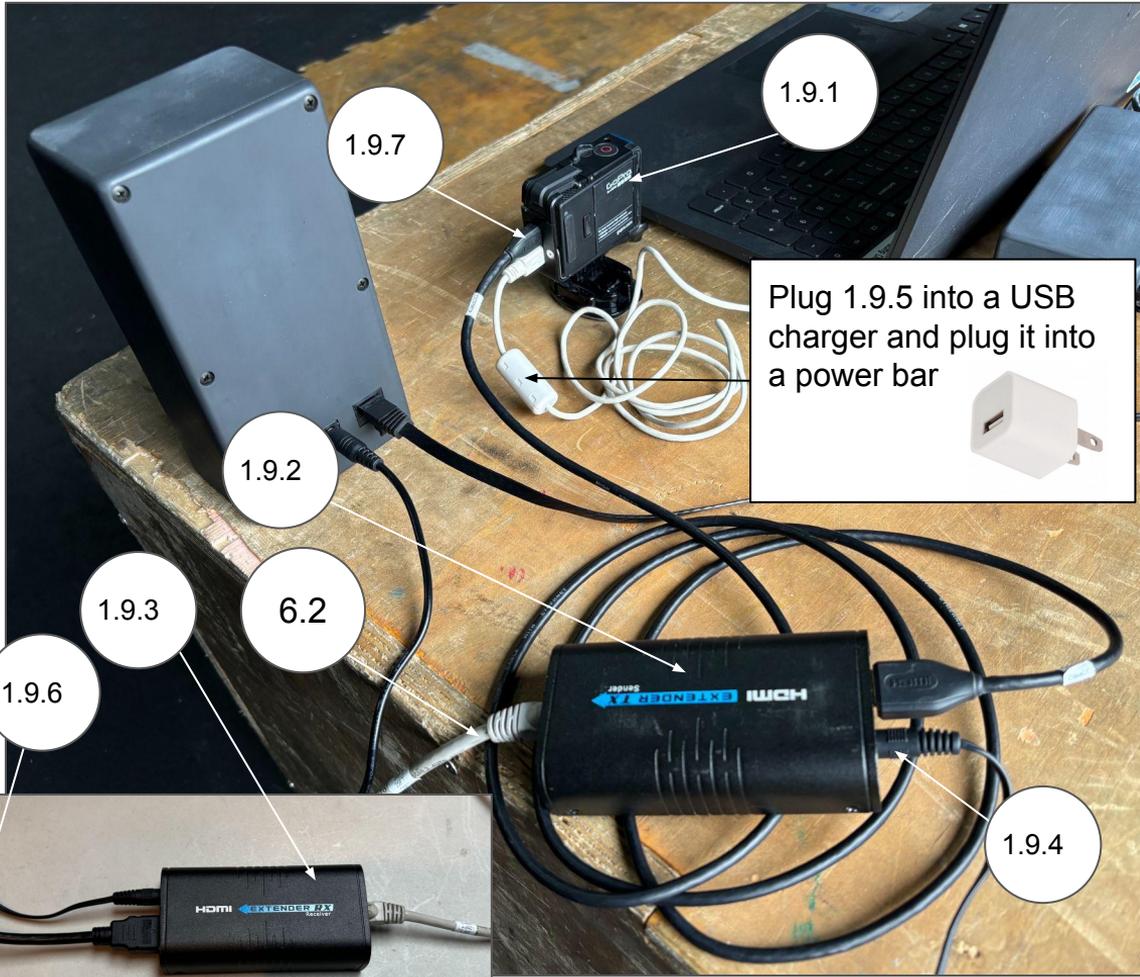


The jury table should be placed no further than 6m behind the referees.



Competition Technical Hardware Set Up: GoPro Setup

No.	Quantity	Description
1.9.1	1x	GoPro camera
1.9.2	1x	HDMI Extender Sender
1.9.3	1x	HDMI Extender Receiver
1.9.4	2x	HDMI Extender power cord
1.9.5	1x	GoPro camera power cord
1.9.6	1x	HDMI cable
1.9.7	1x	micro-HDMI cable
6.2	1x	Ethernet cable 50'
6.7	1x	Power bar



6.7 Connect to 5 (GoPro TV 40")



Competition Technical Hardware Set Up: Establishing Server Connection

Procedure:

1. Turn on the Secretary Laptop and run OWLCMS by clicking on the OWLCMS icon located on the desktop or on the taskbar
2. go to the Microsoft Edge browser
3. Type in **localhost:8080** in the address bar as an address to connect to. OWLCMS interface will appear.
4. OWLCMS will indicate the address where it thinks the server is located. Use the (wired) address that's shown and type that address in the Microsoft Edge browser for each laptop

When the (wired) address is entered in the browser, OWLCMS will start on that laptop indicating that connection has been established.

The screenshot shows the OWLCMS - Olympic Weightlifting Competition Management System interface in a Microsoft Edge browser window. The address bar shows localhost:8080. The main content area displays the OWLCMS logo and the text: "The competition system is reachable using the following address(es):". Below this, two addresses are listed: <http://192.168.50.126:8080> (wired) and <http://192.168.50.194:8080> (wireless). A navigation menu on the left includes Home, Prepare Competition, Run Lifting Session, Start Displays, Video Streaming, Results, and Documentation. A callout box highlights the OWLCMS icon on the taskbar and the browser window.

Microsoft Edge
Browser

OWLCMS icon



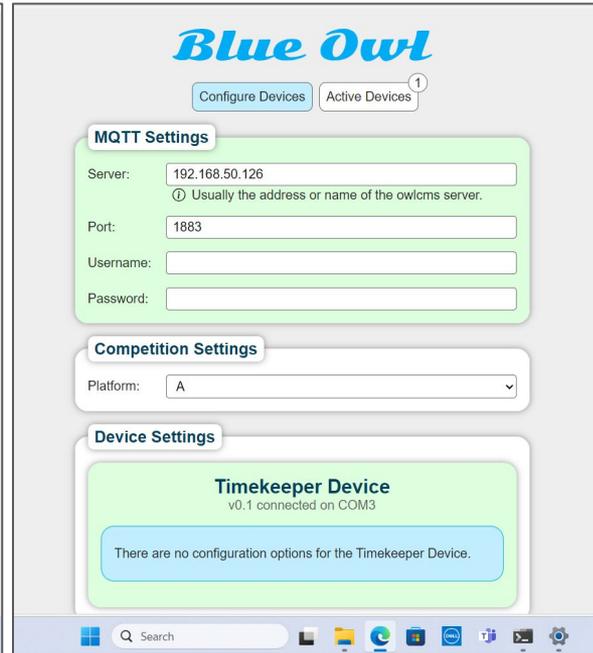
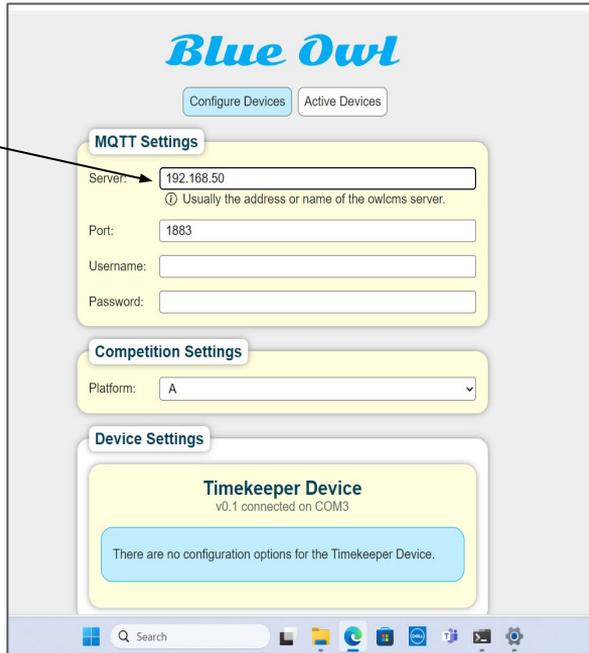
Competition Technical Hardware Set Up: Announcer Laptop Blue-Owl Connection

After OWLCMS is successfully connected to the server on the Announcer Laptop, the Blue-Owl Timekeeper Software needs to be run in the background.

Procedure:

1. Click on the **blue-owl-announcer-interface** on the desktop to run the Timekeeper Device software
2. In the server bar, type in the (wired) address. If this is done correctly, the interface will turn green
3. Leave the software running in the background for the duration of the competition

Type in address here





Competition Technical Hardware Set Up: Athlete-Facing Laptop Blue-Owl Connection

After OWLCMS is successfully connected to the server on the Athlete-Facing Laptop, the Blue-Owl Timekeeper Software needs to be run in the background.

Procedure:

1. Click on the **blue-owl-referee-interface** on the desktop to run the Referee Hub software
2. In the server bar, type in the (wired) address. If this is done correctly, the interface will turn green
3. Leave the software running in the background for the duration of the competition

Type in
address here

Blue Owl

Configure Devices Active Devices

MQTT Settings

Server: 192.168.50.194
① Usually the address or name of the owlcms server.

Port: 1883

Username:

Password:

Please update the MQTT Settings to connect to OWLCMS.

Competition Settings

Platform:

Device Settings

Referee Hub
v0.2 connected on COM4

Single Referee Three Referees

Blue Owl

Configure Devices Active Devices ¹

MQTT Settings

Server: 192.168.50.126
① Usually the address or name of the owlcms server.

Port: 1883

Username:

Password:

Competition Settings

Platform: A

Device Settings

Referee Hub
v0.2 connected on COM4

Single Referee Three Referees

Connect a Referee Control Box to each of the following ports on the Referee Hub:



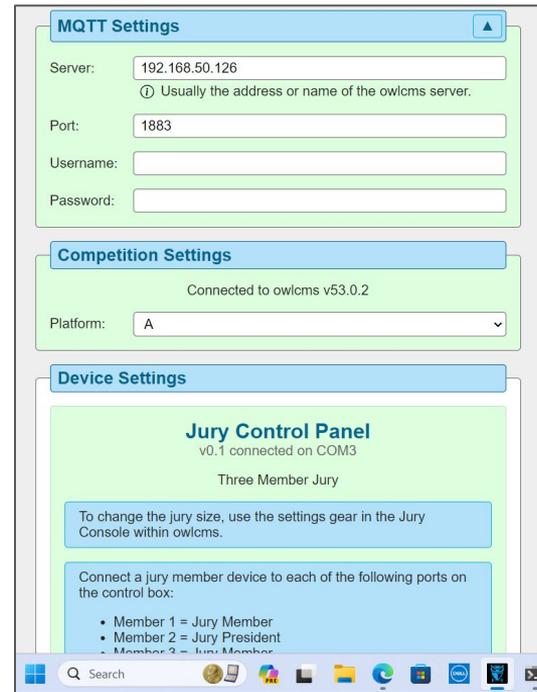
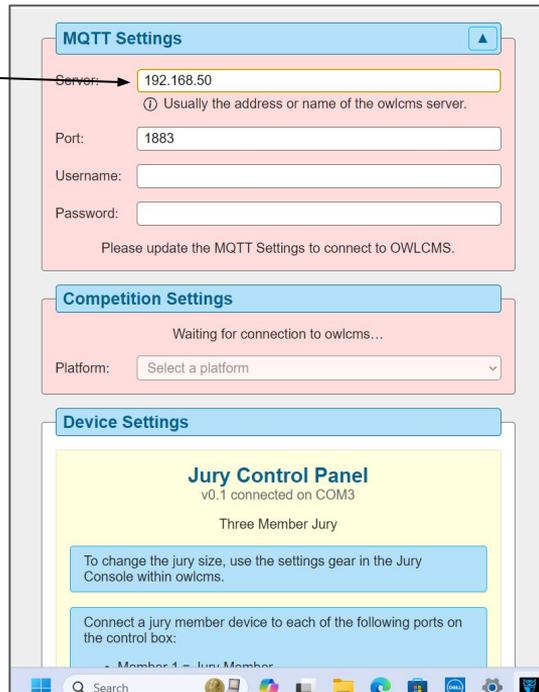
Competition Technical Hardware Set Up: Jury Laptop Blue-Owl Connection

After OWLCMS is successfully connected to the server on the Jury Laptop, the Blue-Owl Jury Software needs to be run in the background.

Procedure:

1. Click on the **blue-owl-jury-interface** on the desktop to run the Jury Hub software
2. In the server bar, type in the (wired) address. If this is done correctly, the interface will turn green
3. Leave the software running in the background for the duration of the competition

Type in
address here



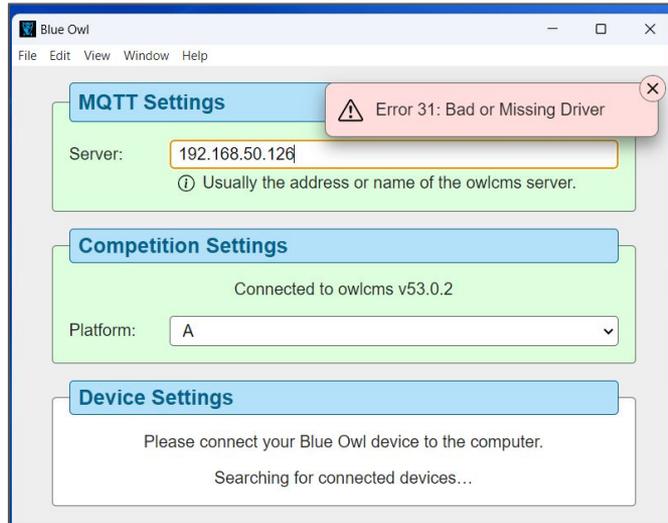


Competition Technical Hardware Set Up: Error 31: Bad or Missing Driver

If **Error 31: Bad or Missing Driver** shows up when you run the Blue-Owl software on either the Athlete-Facing (referee hub), Announcer, or Jury laptop, do the following:

Procedure:

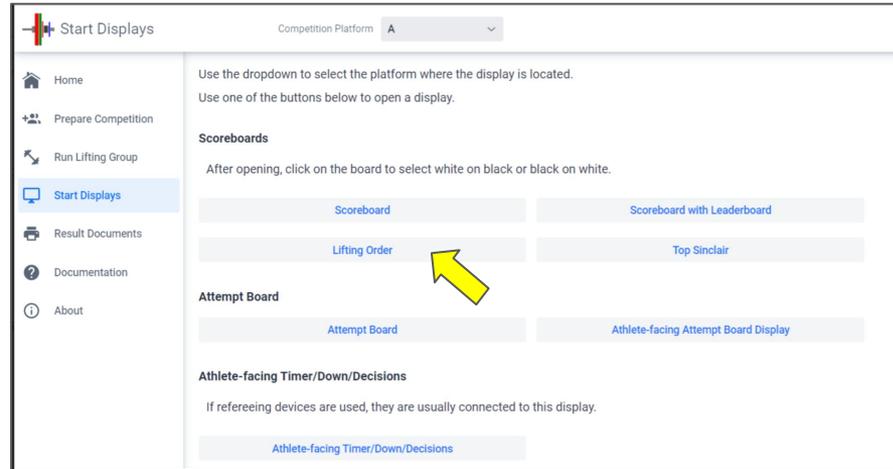
1. Click on the CH341SER.EXE on the desktop to run the tool. This tool has been previously downloaded from <https://blue-owl.nemikor.com/software/support/ch340-driver> so if it doesn't work, you will need to download the tool from this website
2. Once the tool has completed running, the error will go away and the devices will communicate properly





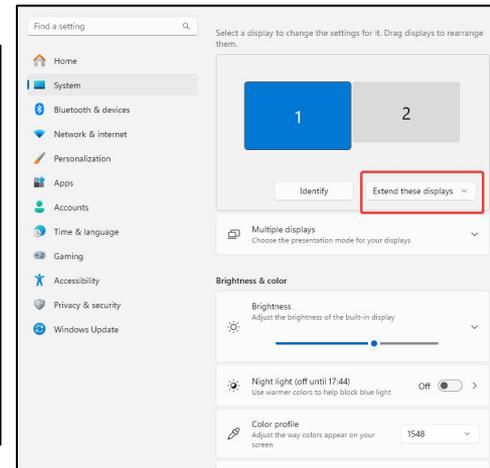
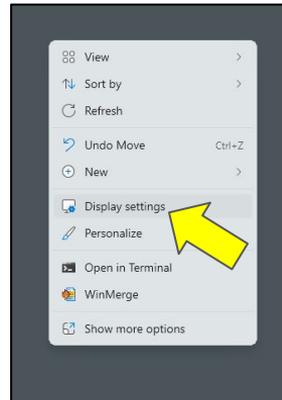
Competition Technical Hardware Set Up: Marshal Display Set Up

When OWLCMS is running on the browser of the Marshal laptop, to display the Lifting Order screen from the Marshal Laptop to the TV, click on **Start Displays** → **Lifting Order**



To display the Lifting Order screen from the Marshal Laptop to the TV:

1. Right-click in the desktop background to pull up a menu.
2. Select "Display Settings" then there is the option to "Extend these display" or "duplicate". Select "Extend these displays".
3. Drag the Lifting Order screen on the Marshal Laptop to the edge of the screen towards the TV until you see the screen displayed on the TV.
4. Expand the TV screen to be "full screen".





Competition Technical Hardware Set Up: Marshal Display Set Up

To get the Marshal screen on the Marshal Laptop, open a browser to get the OWLCMS interface up and running.

Click on **Run Lifting Order** → **Marshal**

This is the screen where the marshal will enter any declarations and weight changes in the warm up area.

