

Issues connecting to remote equipment in the OpenEngineering Laboratory

The OpenEngineering Lab uses a mix of technologies to provide a highly responsive connection between a user and equipment. To achieve this, we use WebRTC, a peer-to-peer protocol, for video and audio, and websockets for data connections and establishing the video link. However, not all systems and browsers support these technologies. Here we will address a few of the more common issues previous students have encountered. Please make sure you read the information on connecting to and booking a slot in the materials on your Module VLE.

We recommend regularly visiting

https://learn5.open.ac.uk/course/format/sciencelab/section.php?name=t212_videotest_r60 to ensure your equipment and network combination can successfully connect to the equipment. This is especially important if you change any component in the system you use to connect, e.g. a new laptop, a different location, new browser. The video check booking system allows you to choose to view live video and audio of part of a laboratory.

Each time you enter a booked session, the lab system conducts a number of checks (Figure1).

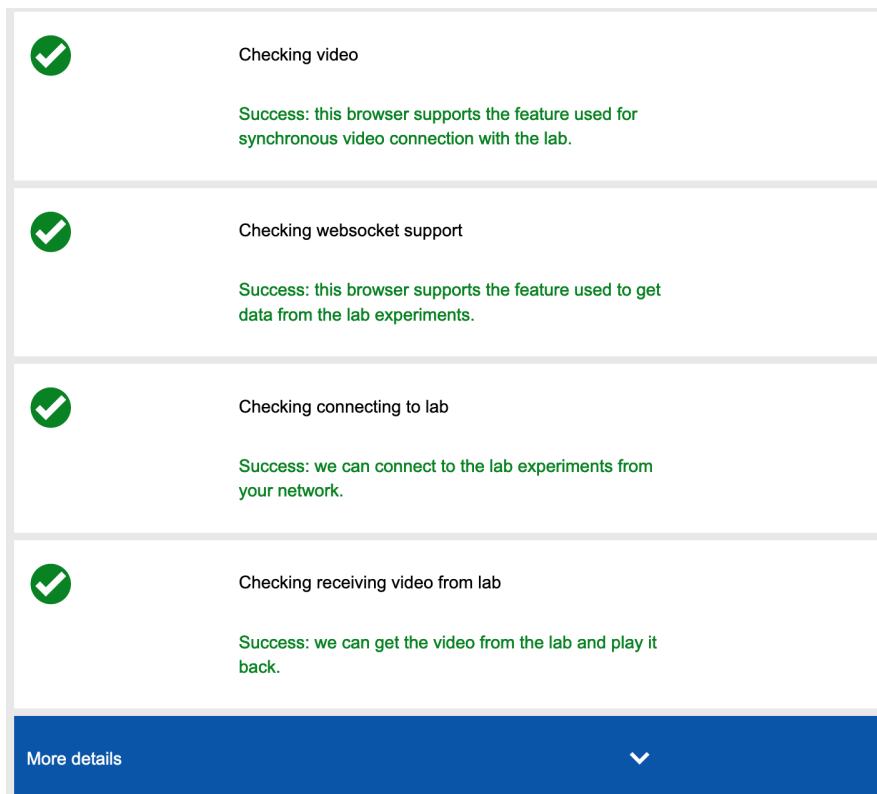


Figure 1

If all the checks are successful you will continue through to the experiment.

1 One or more of the tests fail

If you fail any checks then we suggest you re-try by reloading the page, using the browser back and forward buttons, or log out of your session and then log back in. Sometime failures are ephemeral due to connection issues between your machine and the lab as all the checks have a timeout. You may need to do this several times. Finally, check that any antivirus or blocking software on your machine is not the cause. If you get a consistent result, then look to solve it using some of the tips below.

Checking Video: The laboratory uses WebRTC as part of its technology suite to deliver video. Unfortunately, not all browsers support this protocol. We recommend you use up-to-date versions of Firefox or Chrome as we test against these. It is possible to use other browsers, for example Opera and Microsoft Edge (version 79 and up), but we cannot guarantee the experience. If you have a locked down machine, please contact your IT department to see if they can load either Chrome or Firefox on your machine.

The most common browsers not supporting the WebRTC we use in the lab are Internet Explorer, Microsoft EdgeHTML, and Apple Safari. Also, iOS devices are not supported.

Checking websocket support: This is a rare phenomenon in our experience as all modern browsers support the websocket protocol. If you consistently get this, please check that you are using an up-to-date version of either Firefox or Chrome.

Checking connection to the lab: This is a rare phenomenon as most networks will allow an HTTP connection to be made. If you are accessing the equipment from a secured network then please discuss this with your IT team.

Checking receiving video from the lab: This is the most frequent cause of error reported to date. There are a number of reasons why this might fail.

- Latency – the test times out after a predetermined period. If the lab system has not received a response it will assume a fail. If you have a poor internet connection then this may be a constant problem for you. There are a number of free resources available on the internet for checking the condition of your connection.
- Firewall – sometimes a firewall rule may block the ports required for WebRTC communications. This may be most noticeable in corporate or other secured environments where network rules prohibit such traffic. The first thing you should do is contact your IT team to discern if this is the case, and request a change if so. Other examples include settings on public open wi-fi networks, hotel networks (sometimes the ‘free’ version is more restricted than a premium offering), telephone carrier rules, and using a proxy server or VPN. You also should investigate settings on your own machine.

2 No live video when all the tests pass

System error – sometimes, even though the connection should allow it, video does not load into the window. First, try clicking the browser back button and then the forward button, it may take several attempts. Finally, try logging out of the experiment clear the browser cache and then log back in. If this does not resolve the issue, try moving some of the controls to see if you get a data output. If you do, try other tips below. If not, it may mean that you are not connected to a piece of equipment (see below).

Browser developments – browser vendors are increasingly concerned with privacy and preventing things such as nuisance advertisements playing. To do this, there may be a browser setting which blocks audio and/or video from auto-playing. You also might have loaded an extension which does the same. There are several solutions to this. First, check the browser and any extension settings and alter if necessary. It is not recommended that you change universal settings, you should set your browser to enable <https://osl1.open.ac.uk/> to auto-play. For example, the most recent versions of Firefox default to block all video and audio. This is immediately evident if you enter the experiment and get what looks like a low-grade photo image. The browser address bar also will show that auto-play is blocked (Figure 2).



Figure 2

To allow a site to auto-play, click on the icon just before 'https://' and choose 'Allow audio and video'. You can always change this in the preferences for the browser if you change your mind. Chrome has a different site-based approach based on audio auto-play. This should not be a problem when entering experiments as all audio is off by default to overcome this.

Alternatively, once the experiment has loaded, right-click on the video pane and select either 'Play' (Firefox) or 'Show controls' (Chrome) from the contextual menu. This is possible at the time of writing but will be blocked in the future iterations of the lab to conform with best practice.

VPN – for WebRTC to work, it requires that the ip addresses of both the user's and lab's computers can be established. If it is not possible to establish both addresses then you will need to use a non-VPN solution. There are several possibilities where a VPN connection can be established: the operating system level; browser; router, and by using a VPN service.

Equipment not available – there is a rare possibility, it has only happened in testing, that not enough pieces of equipment are available to fulfil the booking requests. We always have more pieces of equipment in the lab than booking slots available, but there is always the possibility this buffer is not sufficient to cover malfunctioning units. In such instances, an application window will load with no equipment attached. To test for this, try using the controls and see if any data is produced. No data means that there is no connection. In these instances, we can only apologise and ask you to re-book a slot.

3 Getting help

If you continue to have problems with accessing the experiments after trying the tips above then please post a message on your module forum where either a member of the team or a fellow student may be able to help.

You will appreciate there is a limit to the help we can give beyond general pointers as we cannot interrogate your machines or systems.