

Technical requirements

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Test the technical requirements for the virtual room against our test server

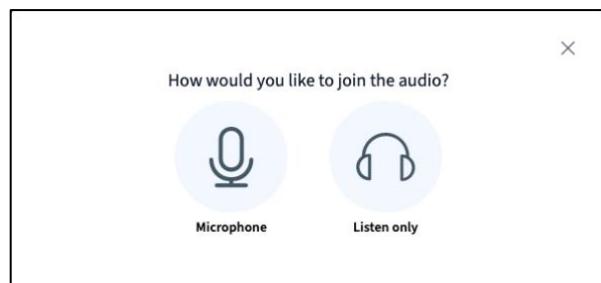
You can test whether the technical requirements for participating in a smooth virtual event are met by using our test server:

1. Please enter the following URL in your web browser. Please only use the latest versions of Google Chrome, Mozilla Firefox, Microsoft Edge or Safari on iOS (iPad and iPhone).

<https://virtualroom3.de/index-edu-test.html>

2. Enter your name on the following web page and click on **Join**.

3. Select 'Microphone' when entering the virtual room.

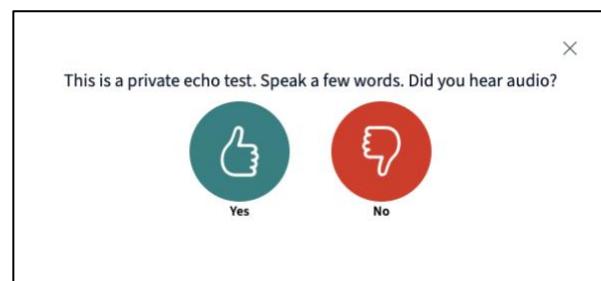
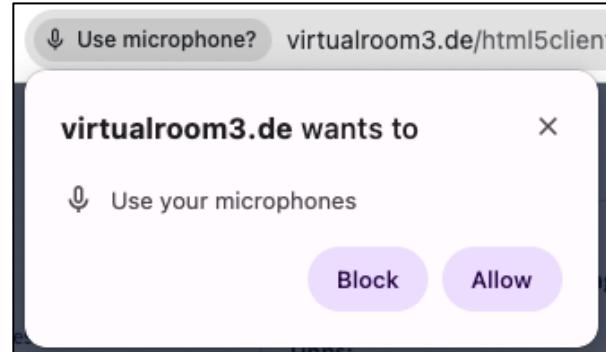


A window will open (e.g. in Chrome at the top left of your browser) with access to your connected microphones. Click on 'Allow'.

This example refers to sharing in Google Chrome. Please note the sharing modality in other browsers.

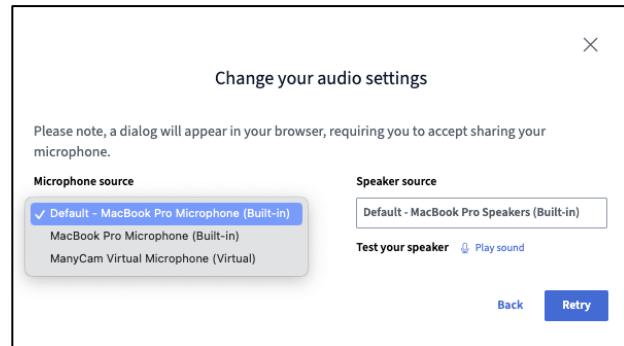
An echo test is then carried out. You will be asked to say a few words to ensure that your microphone is working. Press the '**Thumbs up**' symbol if your voice is easy to understand.

You will then be forwarded to the virtual room.





If you want to use a different microphone or speaker output, click on the 'thumbs down' symbol during the echo test (even if you hear an echo). The 'Change audio settings' settings window will then appear, in which you can explicitly select the devices you want to use.

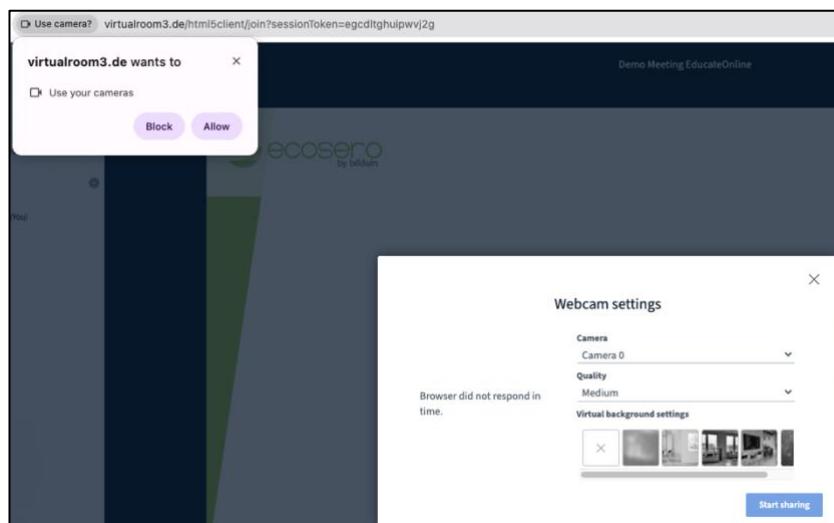


4. Testing webcam

After entering the virtual room, you will see the following symbols at the bottom centre..



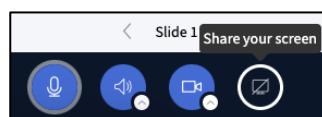
Click on the 'Share webcam' icon and the 'Webcam settings' screen will appear. Please select your webcam or authorise access to your webcam and click on 'Start sharing' to share your webcam video.



If you can see your webcam video, the webcam test is successful.

5. Testing Desktop sharing

To do this, please click on the 'Share screen' button below the presentation area.



Your browser will then ask you what you want to allow access to (whole screen or a specific window or browser tab). You can then select what you want to share. Note, that if you want to share audio too, you need to use a Chromium based browser and have to share a specific browser tab.

Bitte beachten Sie, dass

1. this virtual room is only for testing audio, video and network access and is not up to date and
2. other people can also be in this virtual room and also carry out tests.

If you cannot get into the virtual room or have audio/video problems, please check the following technical requirements.

Technical requirements for smooth events in virtual space

WebRTC is used for audio and video transmission.

WebRTC (Web Real Time Communications) is a pioneering open standard from W3C that enables real-time communication natively via web browsers without additional software and plug-ins. Low latency times and the peer-to-peer connection under https make it very efficient and tap-proof.

To check the technical requirements, please get the support of a technically experienced person in your company (e.g. system administrator).

1. Internet access

Test your Internet connection e.g. via

<https://www.wieistmeineip.de/speedtest/>

Minimum download rate of 3 MBit/s and minimum upload rate of 1 MBit/s

Please also carry out a ping test. This tests the network connections and routing in the network. The lower the ping value, the better.

Please note that there may be temporary fluctuations in your Internet connection, despite contractually guaranteed upload and download bandwidths from your Internet provider. Therefore, the actual bandwidth available at the time of your online event and the quality of your internet connection are decisive.

For WLAN connections, please ensure the stability/quality of the connection.

2. Use the latest versions of the following browsers

- Google Chrome or Mozilla Firefox (on Mac)
- Google Chrome, Mozilla Firefox or Microsoft Edge from version 83.0.478.37 (on Windows)
- Safari on iOS (iPad and iPhone)

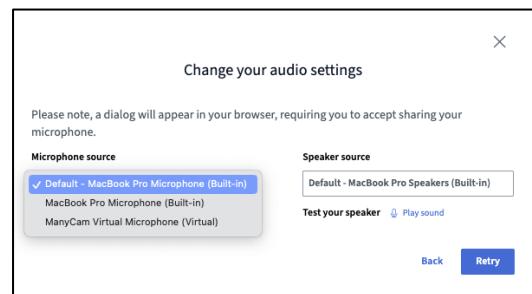
3. Use high-quality end devices

Use high-quality end devices (microphone, webcam, headset) to ensure good audio and video quality.

Make sure that you select the correct end devices in the browser when starting the virtual room if several end devices (e.g. several webcams) are connected to your computer.

This will ensure that the correct device is used:

If you click on 'No' in the echo test (even if you can hear an echo well), you can change the audio settings. You can explicitly select a different microphone or a different loudspeaker output.



This allows you to explicitly specify your end devices if you are unsure which device is being used.

Poor audio quality can also be caused by participants. You can identify possible sources of interference by switching off the microphone of the person concerned.

4. Use powerful end devices (computer / tablet / smartphone)

Sufficient CPU power is required, especially if several participants with webcams are taking part in an event.

Close all unnecessary programmes and check the CPU load, e.g. via the task manager. This should not be at the limit.

Please also consider the drivers of your end devices. Update the drivers if necessary.

5. Please check whether the required authorisations are set correctly in the web browser

This is only necessary if the pop-ups for accessing the webcam etc. are not displayed and instead a message is displayed stating that access was not possible.

Firefox:

1. Open the configuration menu (≡) in the upper right corner. Select **Settings** -> **Privacy and Security** -> **Permissions** (Camera, Microphone) -> **Settings**
2. Check whether the website address of the virtual room (the entry in the address bar of your browser, e.g. <https://virtualroom8.de> or <https://bilduin-virtualroom16.de>) is included in the list and access to the devices is permitted.
3. The 'Block new requests for access to your [device]' box should not be ticked.

Chrome:

1. Open the configuration menu (⋮) in the upper right corner and select **Settings** -> **Privacy and security** -> **Site settings**
2. For each device (camera, microphone), 'Ask (Default)' or 'Allow' should be active.

Safari:

- Settings -> Websites
- Check for each device

Mac in general:

- Here, access to the devices is also strictly controlled by the operating system.
- So if a device does not work:
 - System Settings -> Privacy & security
 - For each device, check whether the browser is generally authorised to use it

iOS

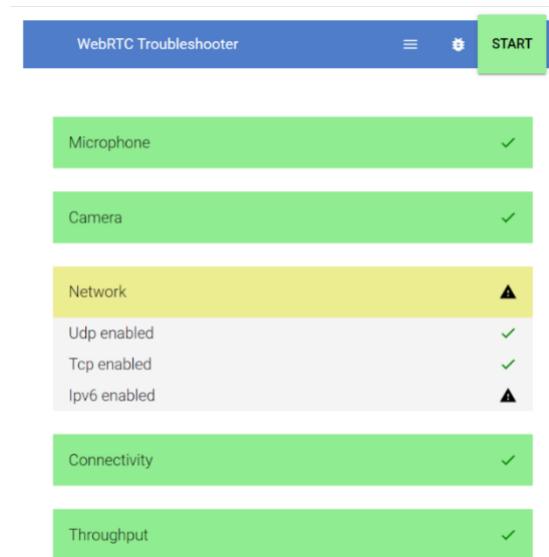
Settings -> Safari -> Website settings -> Camera / Micro ->
should at least be set to „Ask“

6. Ensure that WebRTC is not blocked in the web browser (WebRTC is not blocked by default)

Local firewall, WLAN or router settings or web browser blockers can prevent WebRTC communication.

You can test WebRTC compatibility via this URL:

<https://test-webrtc.bilduin.de>



If necessary, carry out the test several times with different browsers if at least one tick is not set in the respective area.

You can check the WebRTC settings/blocker in your browser and set them if necessary as follows:

Firefox:

1. Enter **about:config** in the address bar
2. Click "I know the risk!"
3. Enter **media.peerconnection.enabled** in the search bar
4. If the value is set to '**false**', please double-click to set the value to '**true**'

Chrome:

There are several known Chrome extensions that could block WebRTC, such as uBlock Origin and WebRTC Network Limiter:

1. uBlock Origin:
`chrome-extension://cjpalhdlnbpafiamejdnhcphjbkeiagm/dashboard.html#settings.html`

Please enable WebRTC here if necessary - this is the case by default.

2. WebRTC Network Limiter

If the WebRTC Network Limiter is in use, please select the following option via the 'Options' menu: **„Give me the best media experience“**

7. Firewall configuration

If firewalls are in use, the following ports must be enabled, which is usually the case.

Ports	Protocol	Description
80	TCP	HTTP
7443	TCP	HTTPS
443	TCP/UDP	TLS listening port (TURN over TLS)
3478	TCP/UDP	Coturn listening port (STUN)
16384 - 32768	UDP	WebRTC, FreeSWITCH, Kurento, HTML5 RTP streams

- **Server names to be approved for the virtual rooms**
 - virtualroom1.de up to virtualroom12.de
 - bilduin-virtualroom*.de
(bilduin-virtualroom13.de, bilduin-virtualroom14.de, ...)
- **Turn servers to be approved:**
 - turn-1.de up to turn-5.de
 - bilduin-turn*.de

8. VPN client or proxy does not block WebRTC

Please check whether WebRTC is blocked via your VPN clients and/or via your proxy.

9. Proxy server does not hinder HTML5 WebSocket communication

HTML5 web socket communication leads to an enormous reduction in unnecessary network traffic and latency compared to conventional polling and long polling solutions. Proxy servers usually work well with WebSockets. In some cases, an additional proxy server configuration or an update of the proxy server may be required for smooth communication.

You can test the WebSocket and WebRTC compatibility of your browser via the following links:

<https://websocketstest.com/>

<https://www.webrtc-experiment.com/DetectRTC/>

<https://html5test.co/>

10. Deactivate SSL scanning if necessary

11. If you have fulfilled all requirements, please test with our test server as described above.

<https://virtualroom3.de/index-edu-test.html>