

## Recommended equipment for online rehearsals

The following guide outlines the recommended equipment needed to allow users to participate in online rehearsals using the University service.

### 1. Environment - Infrastructure

It is recommended that for the optimum performance levels the individual will be located in a room in their college or department with a wired connection to the University network. The reasons for this are to do with **security** and **performance**.

**Security** – the service allows access based on the users IP address which has to be part of the University range. It is therefore private to University users. If it were made public it would increase the security risk to the University servers and would also allow other non-University members to put load on the server and also take part (possibly uninvited) in rehearsals. University users wishing to use the service from outside the University estate can do so via VPN but this will possibly inject latency into the performance (see below).

**Performance** – the quality of the service for users will very much depend on latency, i.e. the speed measured in milliseconds (mps) that it takes for data to move back and forth across the network. For most purposes this can be reasonably high but for ensemble music rehearsals this needs to be as low as possible (around 15-20mps). Factors that can affect (i.e. increase) latency are: a) using WiFi as opposed to wired connections; b) using VPN; c) geographical distance from the server.

It is for these reasons that we recommend that for the optimum performance levels the individual will be located in a room in their college or department with a wired connection to the University network. However, users may find that a WiFi connection from a non-University residence using VPN is acceptable but this cannot be guaranteed.

In the room you will need:

- A **computer** with a wired network connection to the University network
- A copy of the client software on the computer
- An **audio interface** device to allow input to the computer from a microphone and/or electrical instrument, but also to allow output to headphones

For the **computer** we recommend:

- Windows machine running Windows 10
- Mac running MacOS El Capitan (v10.11) or higher
- Linux

For the audio interface this will depend on how the room will be used, and how much you are willing to spend.

## 2. Equipment - Recommendation 1



### **Focusrite Scarlett Solo Studio.**

A complete recording package with interface, headphones and microphone.

<https://focusrite.com/en/usb-audio-interface/scarlett/scarlett-solo-studio>

£199 list price. Academic price £180.

Suitable for units where individuals will be rehearsing in the room by themselves. It is easy to set up and configure. If you envisage having more than one person in the room with their own input (i.e. separate microphone or instrument) each person will need their own Scarlett Solo Studio, and their own computer with a wired network connection.

## 3. Recommendation 2 (FTN1)



### **Focusrite Scarlett 18i20.**

Offers 8 microphone inputs, talkback microphone, and multiple outputs for headphone monitoring.

<https://focusrite.com/en/usb-audio-interface/scarlett/scarlett-18i20>

£450 list price. Academic price £390.

This would be suitable for rooms where it is envisaged 2 or more people may be participating as it allows multiple inputs/outputs through a single interface and would only require one networked computer. However, it is harder to support and configure and does not come with microphones or headsets.

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<sup>1</sup> The highest end spec equipment we would recommend is the Focusrite Red-8Pre. However, this is only for those units who will be engaging considerably with online music, and have expertise to hand. It will allow units to integrate using an audio Dante network, enabling remote recording between college and new the Schwartzman recording and broadcast studios when they are available.

<https://pro.focusrite.com/category/audio-interfaces/item/red-8pre>

£2,500 with academic discount.

For the Scarlett 18i20 we would also suggest:

***Microphones and accessories:***

AKG P120 Studio Condenser Recording Microphone - (suitable for voice, brass)

<https://www.akg.com/Microphones/Condenser%20Microphones/P120-.html>

£75

AKG Perception 170 Small Diaphragm Pencil Condenser Microphone (suitable for strings, woodwind, acoustic guitar)

[https://www.akg.com/Microphones/Condenser%20Microphones/P170.html?dwvar\\_P170\\_color=Black-GLOBAL-Current#q=akg%2B170&simplesearch=Go&start=1](https://www.akg.com/Microphones/Condenser%20Microphones/P170.html?dwvar_P170_color=Black-GLOBAL-Current#q=akg%2B170&simplesearch=Go&start=1)

£90

XLR microphone cables (varied lengths dependant on requirements). Available on Oracle, here:

[https://uk.rs-online.com/web/p/xlr-cable-assemblies/7424517?cm\\_mmc=UK-PLA-DS3A--google--PLA\\_UK\\_EN\\_Cables\\_%26\\_Wires\\_Whoop--XLR+Cable+Assemblies\\_Whoop--7424517&matchtype=&pla-530896011327&gclid=Cj0KCQiA-rj9BRCAARIsANB\\_4AB-DQ0Q3v\\_xMhmE0VtZrWzIFbUIEkKV4rv4I2o6nRn1xboXVSY8W7UaAvttEALw\\_wcB&gclsrc=aw.ds](https://uk.rs-online.com/web/p/xlr-cable-assemblies/7424517?cm_mmc=UK-PLA-DS3A--google--PLA_UK_EN_Cables_%26_Wires_Whoop--XLR+Cable+Assemblies_Whoop--7424517&matchtype=&pla-530896011327&gclid=Cj0KCQiA-rj9BRCAARIsANB_4AB-DQ0Q3v_xMhmE0VtZrWzIFbUIEkKV4rv4I2o6nRn1xboXVSY8W7UaAvttEALw_wcB&gclsrc=aw.ds)

Microphone stands (x 8), available on Oracle here:

[https://cpc.farnell.com/konig-meyer-k-m/21090-300-55/microphone-stand-with-boom-black/dp/ST02171?mckv=s\\_dc%7Cpcrid%7C405232558290%7Ckword%7C%7Cmatch%7Cb%7Cplid%7C%7Cslid%7C%7Cproduct%7C%7Cpgrid%7C82189714703%7Cptaid%7Cdsa-837269788454%7C&CMP=KNC-GUK-CPC-KWL&gclid=Cj0KCQiA-rj9BRCAARIsANB\\_4AD\\_CHJYviwiSeAH3ERhO4GLGKsKalLQhIL\\_CDgPlqIU1qDLq-VxpuMaAk5fEALw\\_wcB](https://cpc.farnell.com/konig-meyer-k-m/21090-300-55/microphone-stand-with-boom-black/dp/ST02171?mckv=s_dc%7Cpcrid%7C405232558290%7Ckword%7C%7Cmatch%7Cb%7Cplid%7C%7Cslid%7C%7Cproduct%7C%7Cpgrid%7C82189714703%7Cptaid%7Cdsa-837269788454%7C&CMP=KNC-GUK-CPC-KWL&gclid=Cj0KCQiA-rj9BRCAARIsANB_4AD_CHJYviwiSeAH3ERhO4GLGKsKalLQhIL_CDgPlqIU1qDLq-VxpuMaAk5fEALw_wcB)

***Headphones and accessories:***

Behringer HPM1000 Studio Headphones

<https://www.behringer.com/behringer/product?modelCode=P0223>

£10 each (x 8 units)

Behringer HA8000 V2 Headphone distribution amp (8 way)

<https://www.behringer.com/behringer/product?modelCode=POBRU>

£110

Headphone extenders, available on Oracle here:

<https://uk.rs-online.com/web/p/jack-cable-assemblies/7424567>

8-way balanced jack loom (to connect **Focusrite Scarlett 18i20** to **Behringer HA8000 V2 Headphone distribution amp**)

[https://cpc.farnell.com/pro-signal/psg01352/jack-loom-8-way-1-5m/dp/AV14520?mckv=sKIBosBqL\\_dc%7Cpcrid%7C224645200689%7Ckword%7C%7Cmatch%7C%7Cplid%7C%7Cslid%7C%7Cproduct%7CAV14520%7Cpgrid%7C53876376704%7Cptaid%7Cpla-890629185062%7C&CMP=KNC-GUK-CPC-SHOPPING&gclid=Cj0KCQiA-rj9BRCAARIsANB\\_4AA1ccYW-B3ryYLrIF3U2OoZn1Qde7qyf\\_yjRXC2R5eRw0mM6ZODhsaAijiEALw\\_wcB](https://cpc.farnell.com/pro-signal/psg01352/jack-loom-8-way-1-5m/dp/AV14520?mckv=sKIBosBqL_dc%7Cpcrid%7C224645200689%7Ckword%7C%7Cmatch%7C%7Cplid%7C%7Cslid%7C%7Cproduct%7CAV14520%7Cpgrid%7C53876376704%7Cptaid%7Cpla-890629185062%7C&CMP=KNC-GUK-CPC-SHOPPING&gclid=Cj0KCQiA-rj9BRCAARIsANB_4AA1ccYW-B3ryYLrIF3U2OoZn1Qde7qyf_yjRXC2R5eRw0mM6ZODhsaAijiEALw_wcB)