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1 Hardware and software requirements for Remote Observing

- Mac computer running OSX (High Sierra (10.13) or later are recommended as they have been tested)
- Forticlient VPN 6.2 installed
- Zoom Meeting Client 4.6
- at least 8 Mbits/sec of bandwidth available … this will be better achieved on an Internet2 connection from the US.
- Monitor preferable 4K or 3840x1440 in order to adequately support the viewing of the two FullHD monitors in use in the Magellan control rooms. A single FullHD monitor or something with functional resolution larger than 1920x1200 is the minimum requirement and will allow remotely viewing one of the control room screens at a time.

2 Request a remote observing run
Please send an email to remoteobs@lco.cl indicating your RUN CODE and scheduled date, upon approved you will receive your VPN credentials and a Zoom meeting ID.

2.1 Setting up your VPN
Your VPN credentials will give you access to the Observer Machine only, on the telescope Control Room where your run is assigned, the how to for Forticlient installation can be found HERE. the VPN account will be valid only for the duration of your run, once finished the account will be removed.

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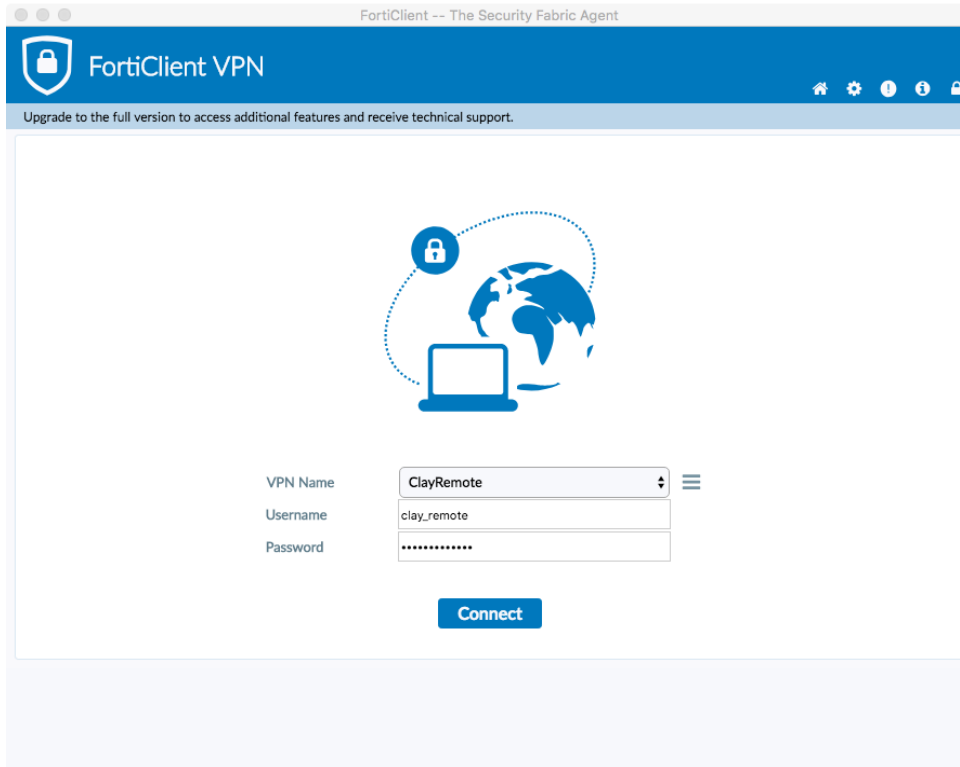


After configuring as documented in the link and entering your password, when you click Connect, the following screen should indicate success…

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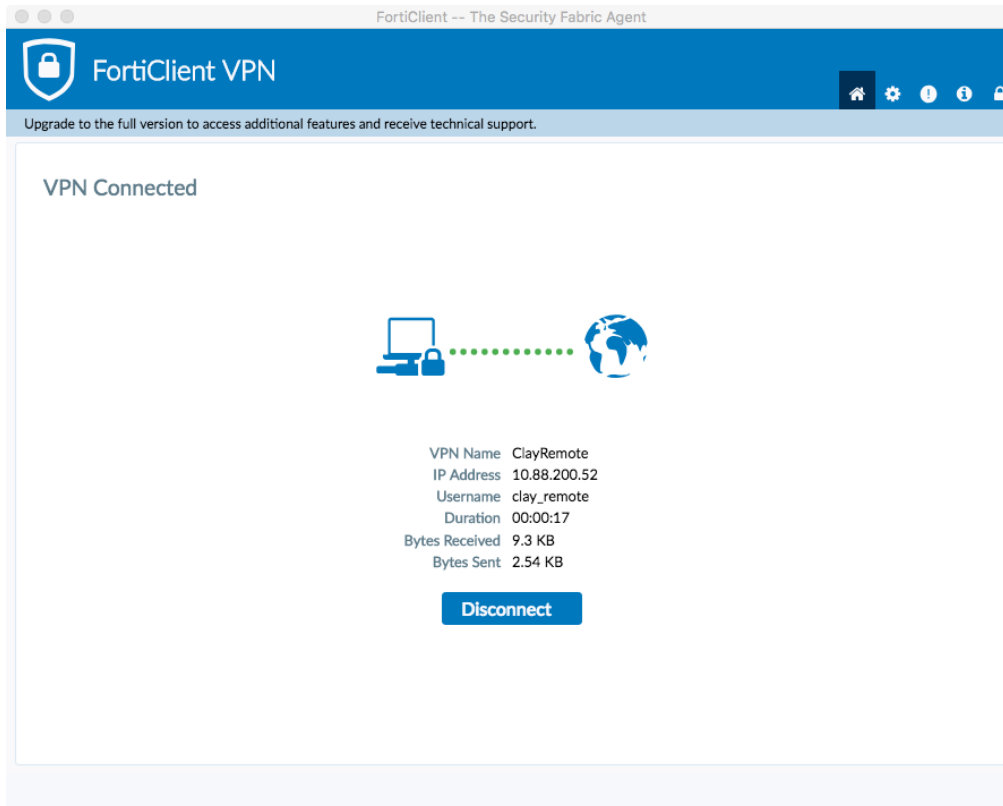


2.2 Verifying your internet connection
You can measure the available bandwidth on your connection using Iperf3 from command line or WIFIperf gui

2.2.1 ifperf3 test
- Download Iperf 3 binaries from https://iperf.fr/iperf-download.php#macos
- Unzip the app to the folder you prefer
- Open terminal and cd into the folder where iperf3 was uncompressed.
- 4 run the following command
  - ./iperf3 -c iperf-lco.lco.cl (this will check the transfer speed from your computer to LCO)
  - ./iperf3 -c iperf-lco.lco.cl - R (this wil check the spedd form LCO to your computer)

There is also a GUI option called WIFIperf, free download from appstore.

![Carnegie Science | Las Campanas Observatory]

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It can be tested with the IP address 10.8.8.105 as follows:
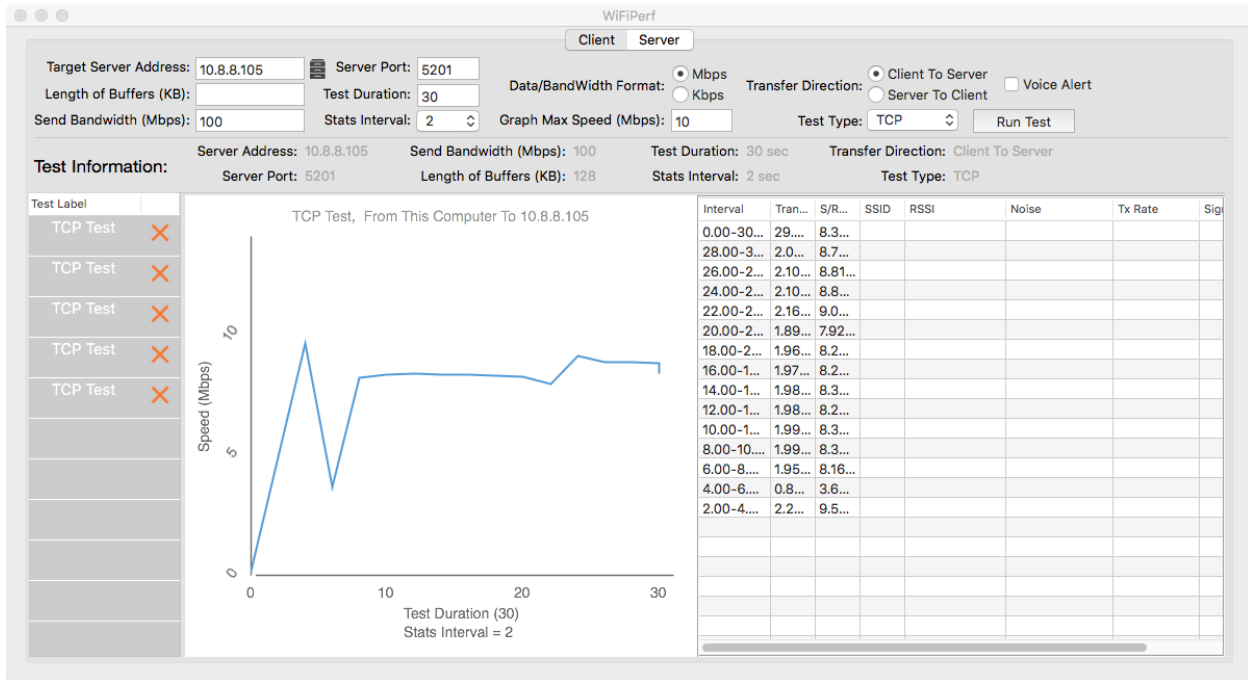


2.3 Zoom Meeting for Control communication
The Zoom Meeting ID received  will be valid for the duration of your RUN, it will allow you to be in contact with the Instrument team for calibrations , and during the night let you be in contact with the Operator and the rest of the LCO crew on the control Room.

If you already have a zoom account, please join the meeting using the meeting ID received.
If you don't have a zoom account, please download the zoom client from https://zoom.us/download., once installed, select join a meeting and enter the provided meeting ID.

Alternate communication with the control room if Zoom is not yet active or you are prepared to initiate a remote sharing session with the observer workstation can be via telephone as follows:
Clay Telescope phone: +56-51-2203637 or +1-626-310-1230
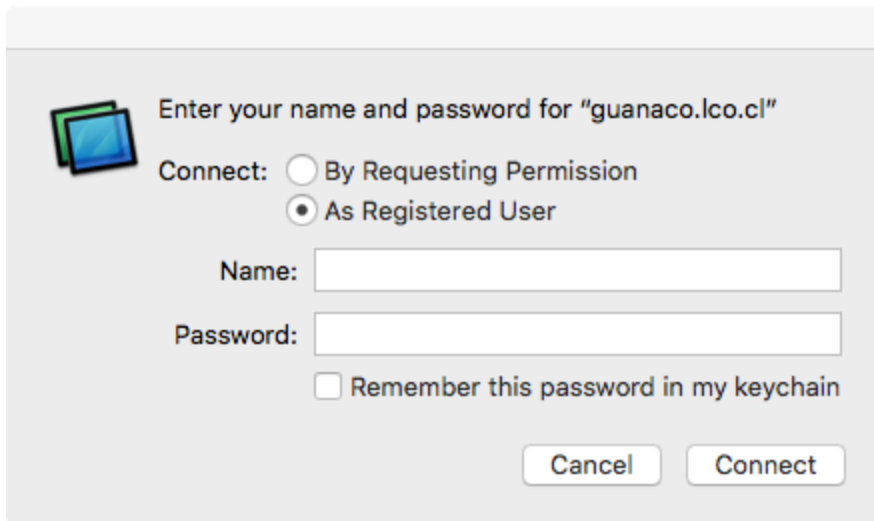Baade Telescope phone: +56-51-2203635 or +1-626-310-1223

2.4 Open remote Screen Sharing connection

Contact the control room via Zoom or telephone to advise site staff of your desire to initiate the remote connection.
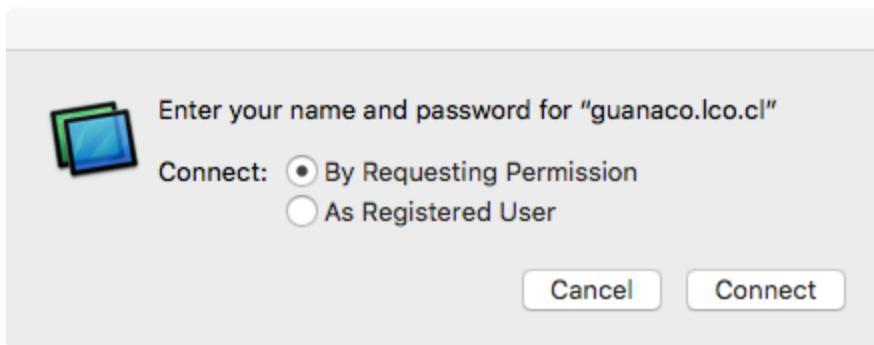
Use command-K or select from Finder-> Go -> Connect to Server

For Clay Telescope enter vnc://guanaco.lco.cl

For Baade Telescope enter vnc://llama.lco.cl



The dialog box above should appear.

Please select By Requesting Permission



Site staff in the control room will grant access permission and you will have interactive access to the Observer Workstation.

Note: your VPN account will only allow access to the telescope on which you are assigned time.

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Suggestions for Screen Sharing setup to facilitate interaction:

Screen Sharing -> Preferences
When viewing a computer with a larger screen - Select Show Full Size
Scroll the screen - Select Only when the scroll bars are adjusted

Screen Sharing -> View -> Adaptive Quality

Screen Sharing -> View -> Turn Scaling Off

It is best to minimize moving elements around on the remote desktop (i.e. GUI windows or terminals) as this forces rewrite of the screen and consumes extra bandwidth.

Interactive display manipulation as is done within an IRAF DS9 window will also consume more bandwidth on the connection and you will need to be patient with your mouse motions due to latency in the connection over VNC to the US.