Remote Viewing of Elevators

First download and connect to the ezViz camera using a mobile device

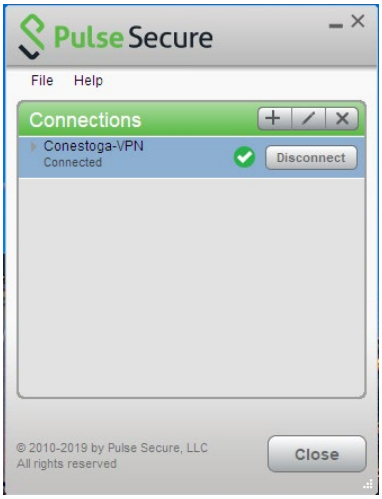
1. Download ezViz from the Google play store
2. Create a new ezViz account using your smartphone number and college email address
3. Email Dave or Michael with the telephone/email used to register an account and we will share the video feed with your ezViz account
4. Once we have shared the feed with you, login to the mobile app and accept the share
    a. **NB: you will need to accept the video share on your mobile device and view the stream on your phone once before the feed will show up on the Desktop/Laptop app below (you may need to logout/close the app and log back in)**
5. Start the live feed on your mobile device

Second (Optional) download the Desktop version (ezViz Studio)

1. Go to https://support.ezvizlife.com/en-us and download/install ezViz Studio
2. Log in to your account
3. Start the live feed in ezViz studio

Remote Controlling the Elevators (Updated Mapping)

To connect to the Elevator Network remotely you must first connect to the College VPN using the Pulse Secure app (found here: https://it.conestogac.on.ca/support/vpn) and connect to the network.



You will then connect to the specific Pi/Elevator using the following Network Address Translation (NAT) mapping / port forwarded addresses. The NAT mapping shows the translation between remote and local IP addresses for the Raspberry Pi's. This mapping has been created in the router used in the Elevator Network.

Remote IP	Remote Port#	Local IP	Local Port#	Service	Elevator #
142.156.193.130	50000	192.168.0.201	80	HTTP	1
	50002		22	SSH / SFTP	
	50010	192.168.0.202	80	HTTP	4
	50012		22	SSH / SFTP	
	50020	192.168.0.203	80	HTTP	3
	50022		22	SSH / SFTP	
	50030	192.168.0.204	80	HTTP	(3)
	50032		22	SSH / SFTP	
	50040	192.168.0.205	80	HTTP	(4)
	50042		22	SSH / SFTP	
	50050	192.168.0.200	80	HTTP	2
	50052		22	SSH / SFTP	

NAT Port Forward Mapping Between Local and Remote IP addresses

Update: The VPN Permissions for students do not allow for a connection directly to the 142.156.193.130 and a workaround that uses a Virtual Private Server at 68.183.197.89 as a Reverse Proxy via SSH-based tunneling has been developed. Using this method you will not have to connect to the College VPN. Simply use the IP address and ports in the table below instead of thos in t he NAT forwarding table.

Remote IP	Remote Port#	Local IP	Local Port#	Service	Elevator #
68.183.197.89	60000	192.168.0.201	80	HTTP	1
	60002		22	SSH / SFTP	
	60010	192.168.0.202	80	HTTP	4
	60012		22	SSH / SFTP	
	60020	192.168.0.203	80	HTTP	3
	60022		22	SSH / SFTP	
	60030	192.168.0.204	80	HTTP	(3)
	60032		22	SSH / SFTP	
	60040	192.168.0.205	80	HTTP	(4)
	60042		22	SSH / SFTP	
	60050	192.168.0.200	80	HTTP	2
	60052		22	SSH / SFTP	

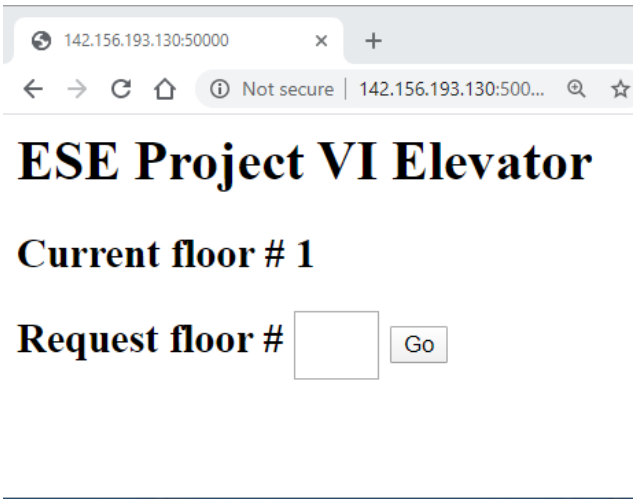
VPS Based Reverse Proxy Mapping Between Local and Remote IP addresses

The remote IP you need to connect to (**142.156.193.130**) is the same for all Elevators. It is the IP of the Elevator Network router that will forward incoming connections to the correct Pi/Elevator depending on the port requested. A DHCP reservation has been made by IT so that this number will never change.

Viewing the Web Page for a Specific Elevator

To view the web page of Elevator #1 (IP address: 192.168.0.201), for example

1. Make sure you are **connected** to the College VPN
2. In your browser enter: 142.156.193.130:50000
    a. The IP address (142.156.193.130) is that of the Elevator Network router
    b. The port number (50000) maps to port 80 (HTTP server is listening at this port) of the Raspberry Pi of Elevator 1 (192.168.0.201) – see the NAT Port forwarding table above

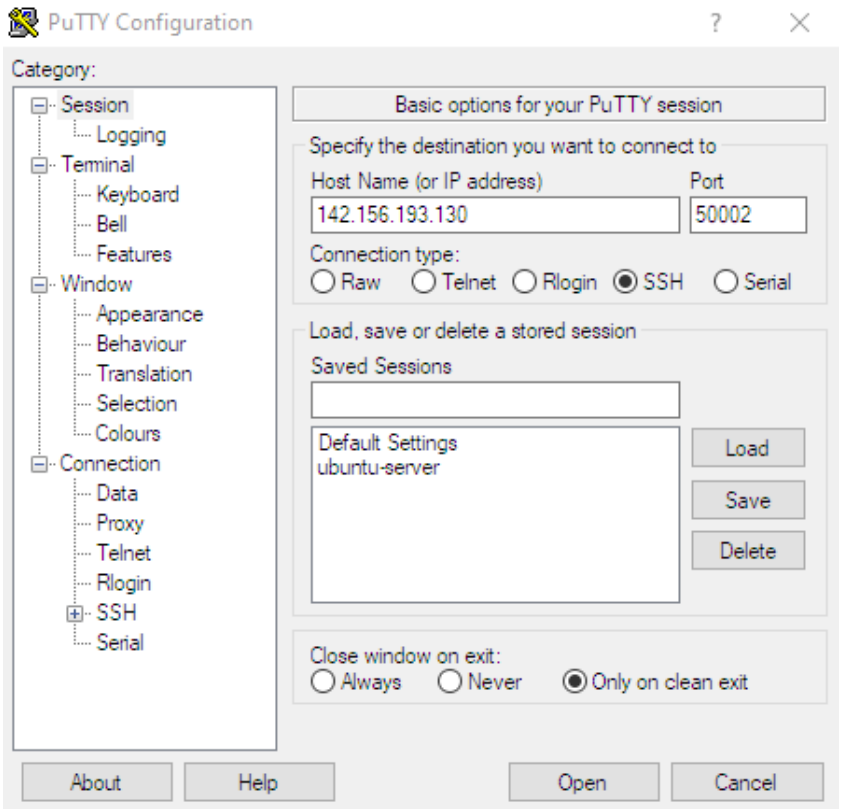


Note that the elevator cannot yet be controlled from the web page. To enable control of the website a 'listener' program that listens for requests made on the web page and forwards them to the Elevator controller must first be started. We will do this in the next step.

Running the 'Listener' Program

To turn on the listener program, connect to the Raspberry Pi via SSH. This can be achieved in Linux from the terminal or in windows by using a small program called PuTTy (available here).

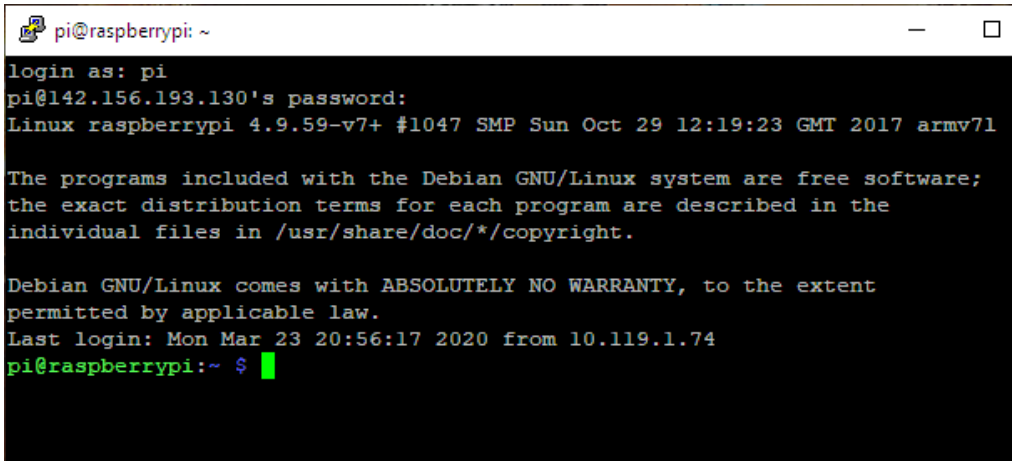
To connect to the Raspberry Pi (in the example above) on port 22 (SSH) we must make the request at port 50002 (see NAT Port forward mapping table). The image below shows this as an example.



Putty configuration to connect via SSH to port 22 (SSH server) of the Raspberry Pi at IP address 192.168.0.201. The NAT port forward mapping shows that we must make the request at the router IP address 142.156.193.130 at port 50002

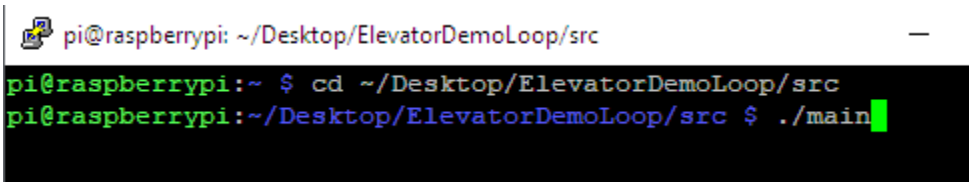
After clicking 'Open' a terminal window will be displayed. In order to connect via SSH you will need to enter the following credentials at the prompt:

Login as: pi
Password: ese

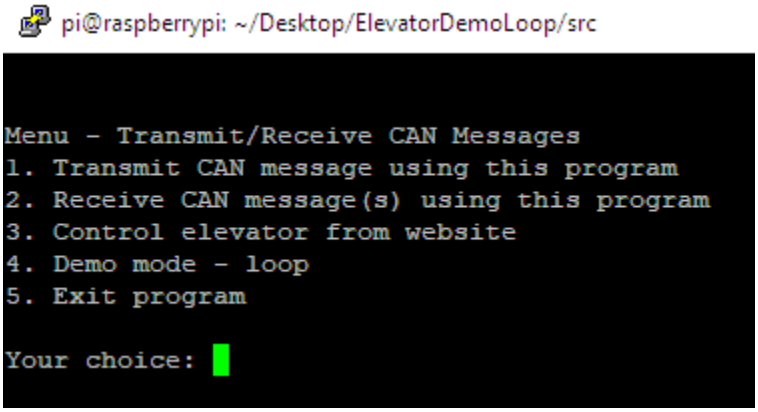


Once signed into the termanal type the following:

$ cd ~/Desktop/ElevatorDemoLoop/src
$ ./main



The ./main command will start the program we can use to listen to requests from the webpage or send commands directly to control the elevator.



Select option #3 to enable the 'listener' program that will listen for commands from the webpage. Keep this program running (don't close the window or press ctrl-z to pause it) for as long as you wish to control the elevator from the webpage.

You may now control the elevator from its webpage and see it move on the live video stream. Note that you can zoom in to your particular elevator to see it better.

Please operate the elevators only between floors 1 and 2 until further notice.

To stop the program press ctrl-z to pause the program.

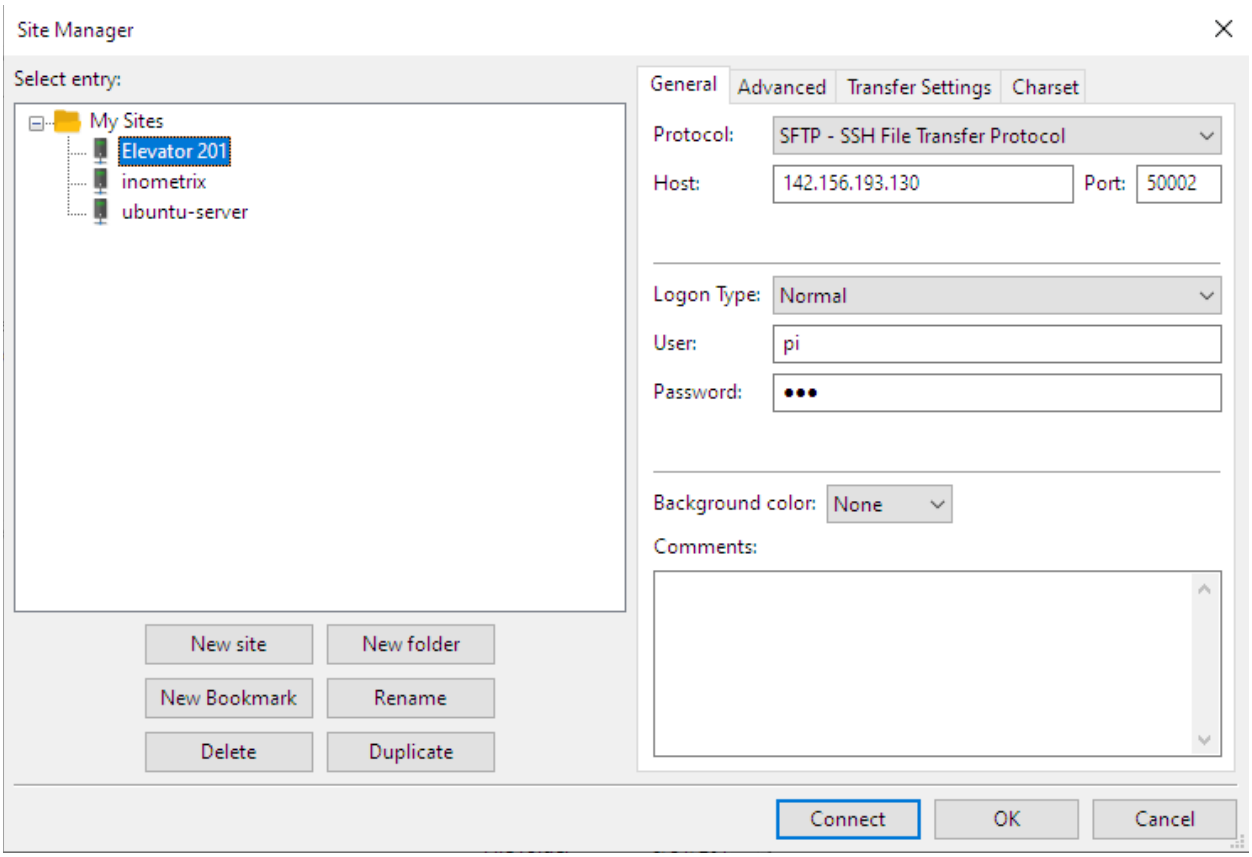
To log off the SSH connection simply close the remote window.

Remote File Transfer

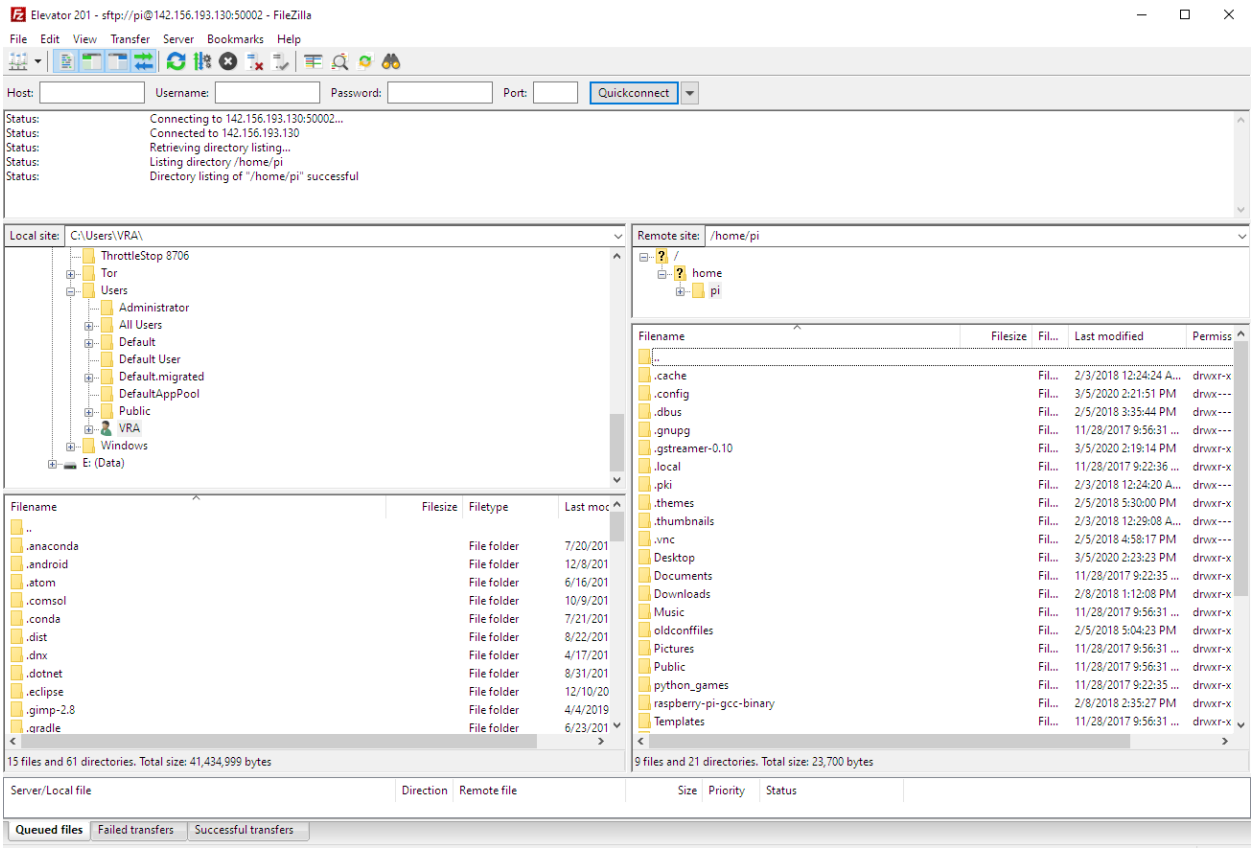
You may send files over SSH using the 'scp' command (as described here) but you may find it convenient to use an SFTP client (like FileZilla) to drag and drop multiple files between source and destination

1. Download FileZilla (get it here here)
2. Make sure you are **connected** to the College VPN
3. From within FileZilla you will need to connect using SFTP so click 'Open Site Manager'

4. In Site Manager, to connect to Port 22 on the Elevator #1 Raspberry Pi (IP address 192.168.0.201) you must connect to: 142.156.193.130 at port 50002 (according to the NAT forward mapping) using SFTP as the Protocol as shown below. Note that the user is 'pi' and the password is 'ese'.



If your connection was successful you will see the local files from your computer on the left and the remote files (home directory of the raspberry pi) listed on the right.



You may drag and drop files between local and remote but be careful. You may wish to make a backup copy of the contents of the ‘Desktop’ folder and back them up to your local directory. When you are done don’t forget to disconnect from the remote server.