

AVer TR320/530 and PTZ310/330/N Camera Integration with Microsoft Teams and Skype Platform

Steps to integrate the AVer TR and PTZ Cameras with Microsoft Teams and Skype (March 2020)

AVer Pro-AV has high quality image Cameras (TR320/530 and PTZ310/330) that will integrate with the Microsoft Teams and Skype workflows for peak performance and ease of use. We will show the configuration process for both the TR and PTZ Camera lines and Microsoft Teams/Skype environment. **Microsoft Teams** has enterprise level security, compliance, and manageability as with Office 365. Has many built in apps and tools to help them work more effectively, combines instant messaging, video conferencing, calling, and document collaboration. **Skype for Business** will be replaced with Teams at or around July 31, 2021.

Microsoft Skype is typically used to make free video and voice one-to-one and group calls, send instant messaging and share files with other people on Skype. You can use Skype on your mobile, computer or tablet.

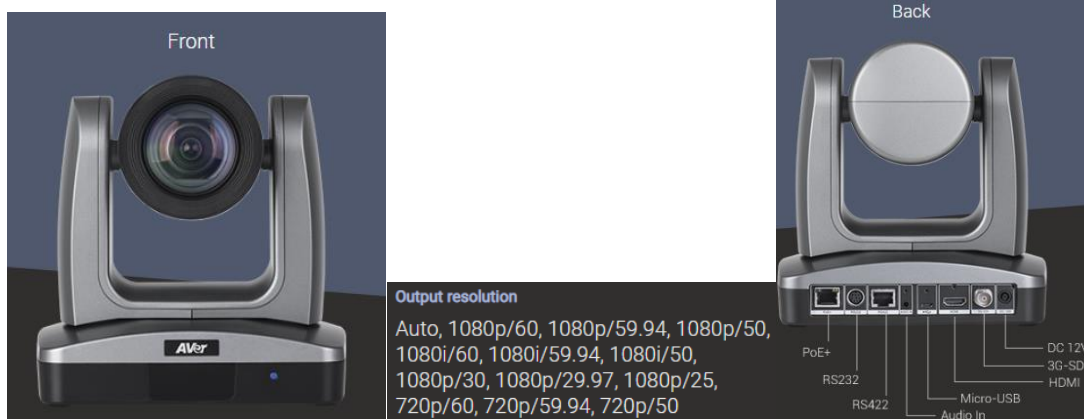
AVer Cameras with Microsoft products

The workflow from the AVer cameras is seamless; there are three main methods to configuring the capture device depending on the environment. We will discuss each environment:

- SDI / HDMI
- USB
- RTSP (Streaming)

The AVer PTZ310/330(N) and TR320/530 cameras have various video output capabilities; here is a brief overview of each.

PTZ 310/330/N Camera



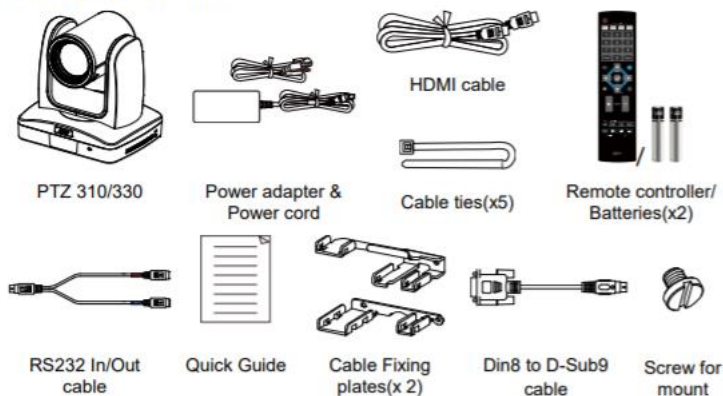
Video output 3G-SDI, HDMI, IP, USB	Audio output 3G-SDI, HDMI, IP, USB	Audio input MIC / Line-in
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Audio - channel 2ch (stereo)	Audio - codec AAC-LC (48/44.1/32/24K), G.711/PCM (16K/8K)	Audio - sample rate 48 / 44.1 / 32 / 24 / 16 / 8Khz
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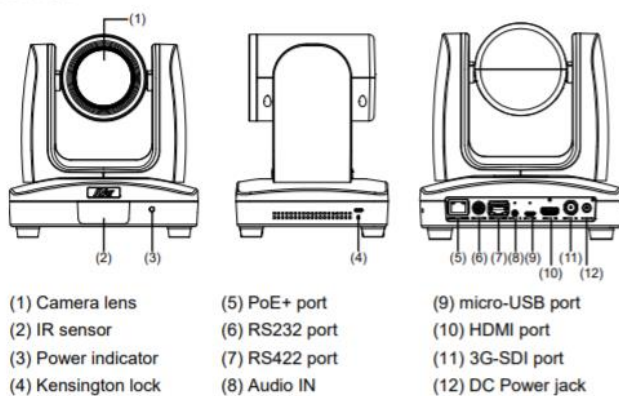
PTZ310/330/N Camera (continued)

- AVer PTZ310/330/N Camera and accessories.

Package Contents



Overview



TR 520/530 Camera

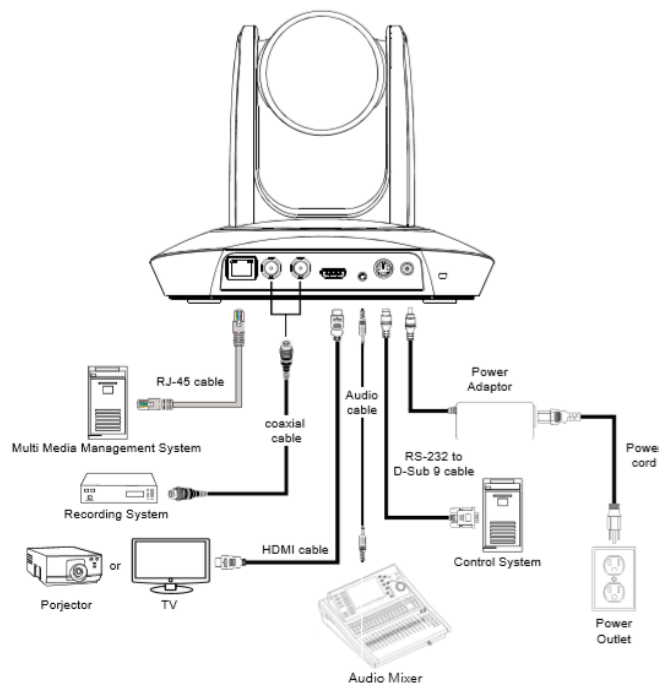


Camera	Audio	Output resolution
	PCM, AAC-LC, G.711	Auto, 1080p/60, 1080p/50, 1080i/60, 1080i/50, 1080p/30, 720p/60
Output interface	Video output capability	
3G-SDI*2, HDMI*1, IP (RJ45)	Up to 1080P/60	

Panoramic camera (Full view)
Output resolution
Auto, 1080p/60, 1080p/30, 720p/60

Interface/Streaming/Protocol	
Network protocol	IP video streaming
RTSP, RTMP, ONVIF	Dual video streaming (PTZ and panoramic view)

Device Connections



AVer PTZ 310/330/N Camera integration with Microsoft Teams and Skype

The following are the steps needed to configure the AVer Camera with the Microsoft platform. The PTZ camera has various outputs for video; Microsoft can support any one of these video connections.

They are:

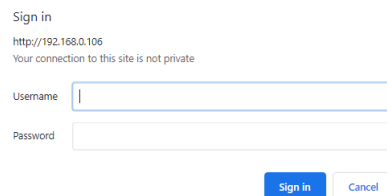
- HDMI
- 3G-SDI (Coaxial connection, SMPTE 424M)
- USB (Micro USB connection on Camera)
- IP - Network - RTMP (RJ45 Gbit network connection)

We can combine the outputs into 2 main groups of emphasis:

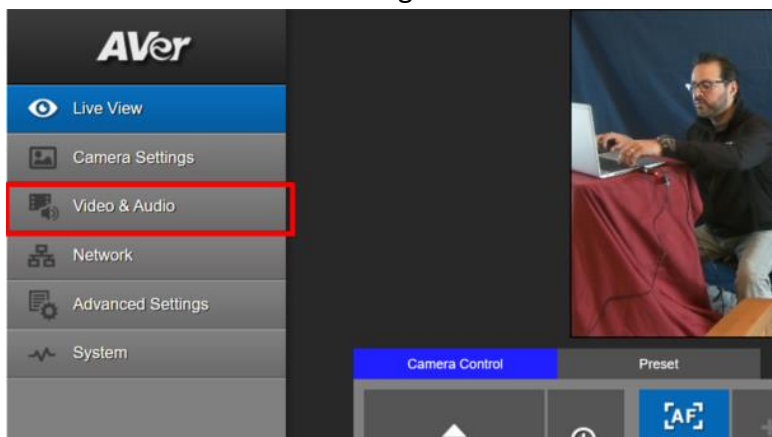
1. **HDMI/SDI/USB connection type**
2. **IP/Streaming (RTMP) connection type**

PTZ Camera *HDMI/SDI/USB* Output to the Echo360 System Input

1. Type the IP address of the camera in your Chrome browser (Setup on same subnet) and you should now see the login to the PTZ310/330 camera shown below.

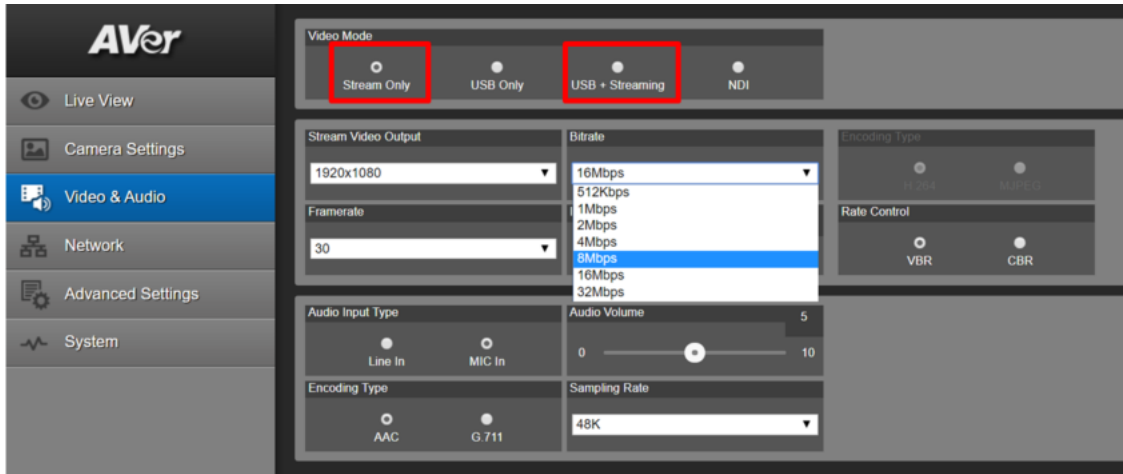


2. The default Username/password is “administrator”.
***Note:** If this is the first time accessing the PTZ330 camera via the Web login it may ask you to change the Username/Password.
3. Next, you should now see the main login screen with a “Live View” of the PTZ Camera.



4. Next, after selecting the *Video & Audio* setting, verify the Video Mode you are in. In this setup you should *NOT* be in NDI and *Stream Only* Video Mode, as it will disable the USB output.

***Note:** Some servers require a minimum bitrate of 2.5Mbps for their environment.



The PTZ Camera will have an SDI/HDMI video output in ALL modes.

Video Standard->	Stream Only (Various)	USB Only (Various)	USB + Streaming (Various)	NDI (1080p/60)
SDI Output	✓	✓	✓	✓
HDMI Output	✓	✓	✓	✓
USB Output	✗	✓	✓	✗
RTSP Output	✓	✗	✓	✓

PTZ Camera HDMI/SDI/USB connection to Microsoft

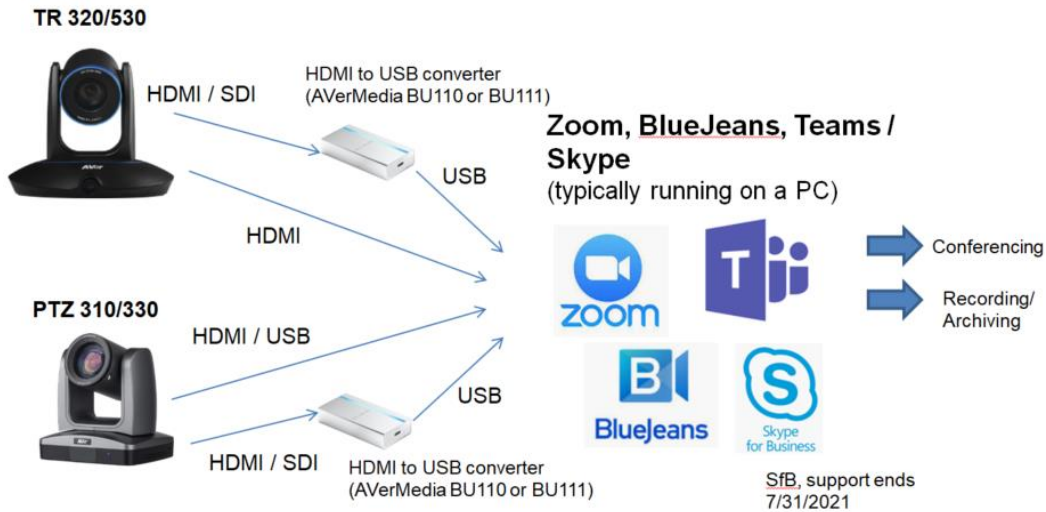
When connecting the camera to a Microsoft Teams/Skype platform the PTZ310/330 provides HDMI, SDI, and USB output standards. If you are using a desktop with a video capture card, they can have a direct HDMI input connection with high performance data transfer.

If you are using a laptop to capture video, you can use a direct USB connection or a portable HDMI to USB dongle like the AVer Media BU110 and BU111 provides a high speed, high quality connection.

Two Likely Scenarios:

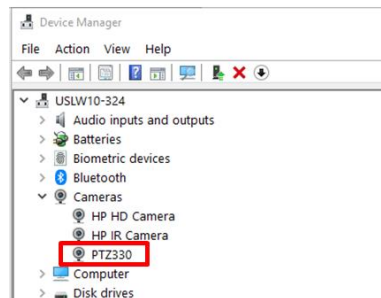
- HDMI or USB direct connection from PTZ camera
- HDMI / SDI connection using an AVer Media converter to USB connection





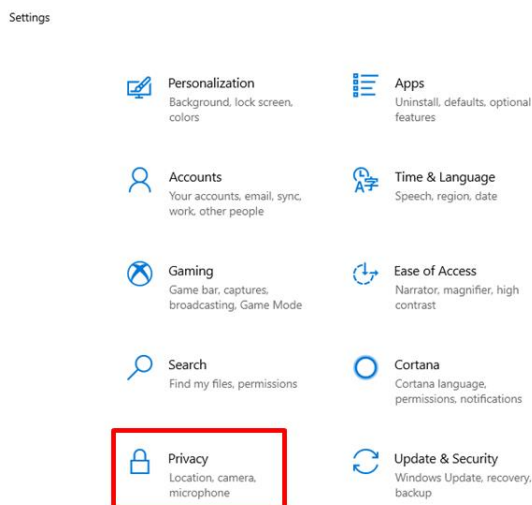
Microsoft OS Device Manager

Once the AVer PTZ310/330 Camera has been connected to a USB port on the PC using the USB to Micro-USB cable provided, verify that Windows does see the camera in the “Device Manager” window under Cameras.

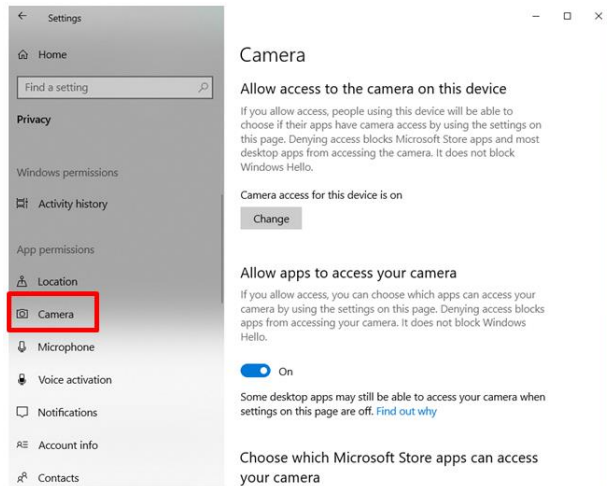


Microsoft Teams Desktop App

1. One of the very first things to check is if Microsoft Teams has permission to access your camera and microphone. There are instances where the App will not detect your camera if left disabled in your PC’s settings.
2. Press the **Windows Key** and **I** key together. This will bring up the **Windows Settings** page.



- Next, look for the **Privacy** setting and select it.
- Next, from the left sidebar, under **App permissions** click on **Camera**.



- Next, on the **Camera** page, you want to make sure the option **Allow Apps to access camera** is turned **On**.
- You also want to make sure that under **Choose which app can access your camera**, that **Microsoft Teams** is turned **On**.
- Now Microsoft Teams will appear here in this list if you have the Microsoft Teams desktop app installed.

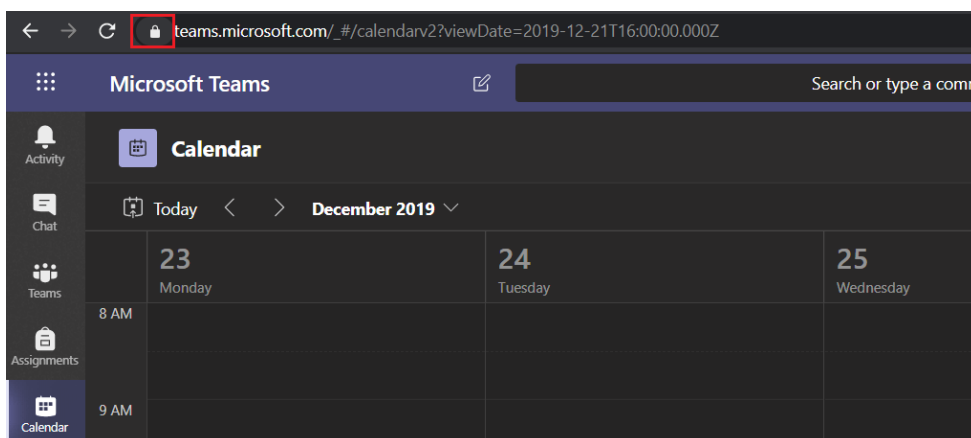
Microsoft Teams Web App

If you are using your web browser instead of using Microsoft Teams Windows app, you will need to make sure that the site has given permission to use your camera.

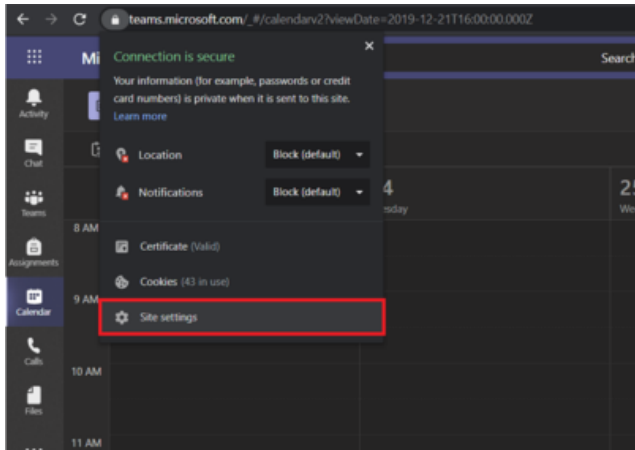
- Go to **Microsoft Teams** using your search browser (Google Chrome or Mozilla Firefox).
- Depending on your search browser, proceed with its appropriate steps:

Google Chrome

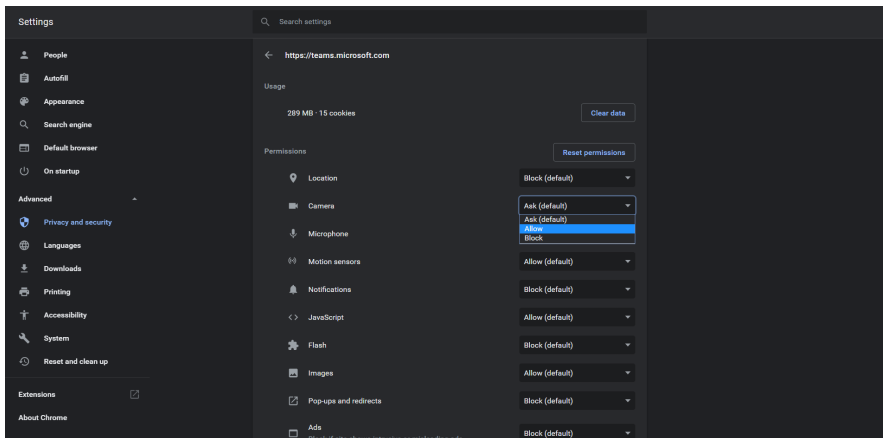
Click on the lock icon in the search URL box (at the top) as shown below.



- Next, click **Site Settings**.



4. You will be brought to your Google Chrome settings where under **Permissions** you will want to make sure that **Camera** is set to **Allow** rather than **Block** or **Ask**.



Ask is a secure option if you do not want your camera turned on without being prompted every time you access Microsoft Teams. **Block** prevents Microsoft Teams from accessing or even detecting your camera.

Mozilla Firefox: Click on the Firefox menu button ☰ Mozilla Firefox menu and select **Options**.

1. Next, click **Privacy & Security** from the left menu.
2. Then scroll down to the **Permissions** section and click the **Settings** button for the **Camera** option.
3. Now enter the website URL in the search field for the site that you want to access your camera. In our case, we will need to enter `https://teams.microsoft.com/` to allow **Microsoft Teams** access to our camera. Hit the **Enter** key.

Firefox makes it a secure and straightforward way to handle the websites that you want to provide access and the ones to not. You can remove it at any time by selecting it from the list and clicking the **Remove Website**. Finally don't forget to select the **Save changes** button!

4. Try testing to see if your camera works after enabling the camera access for the Microsoft Teams web app.

IP/STREAMING (RTMP)

PTZ Camera RTMP Output to Microsoft Teams using Microsoft Stream

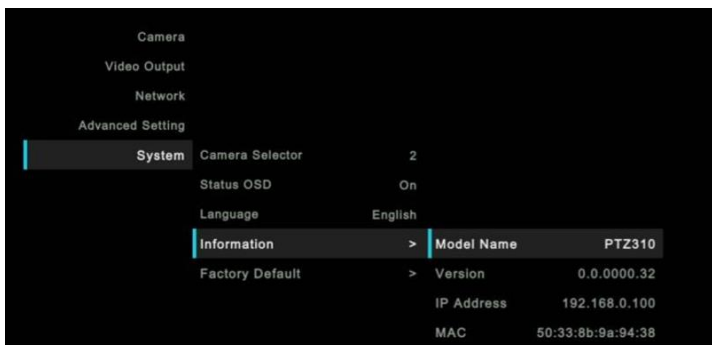
Microsoft Stream accepts live feeds from a variety of different encoders that output RTMP or RTMPS. Below we will cover how to configure the PTZ camera manually for a Live event.

1. Connect the PTZ330 camera via RJ45 Network Cat5E (or better) connection; verify IP address of Camera in order to connect via Web browser. If IP address is not known, locate the remote, select the “Menu” icon and navigate to the “**Network->DHCP->**” setting, verify DHCP is set to “On” in order to grab an available IP address. If you are reserving IP addresses, verify it is set to “OFF” and that the correct IP address has been set.

Go to **Network > DHCP > On**.

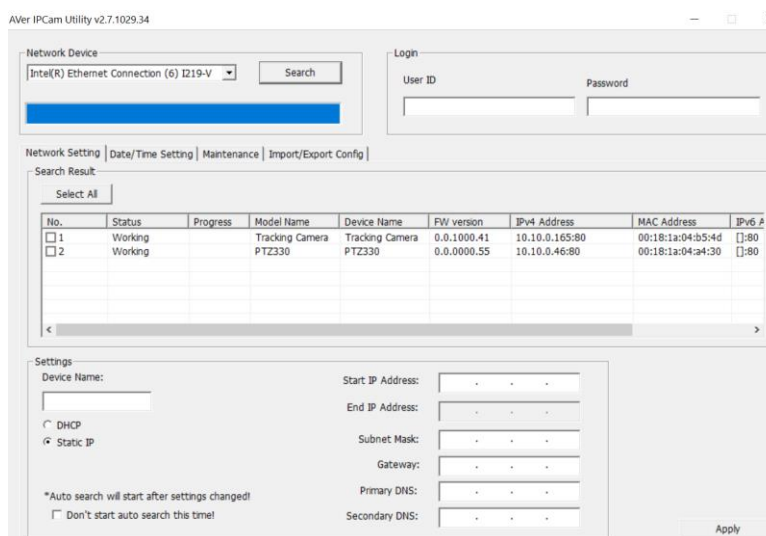


After turning DHCP on, go to **System > Information** to view the IP address.



2. Another way to find the Camera IP address (On same Subnet) is to use the AVer IPCam Utility to find the camera. AVer software can be found here:

<https://www.aver.com/download-center>.



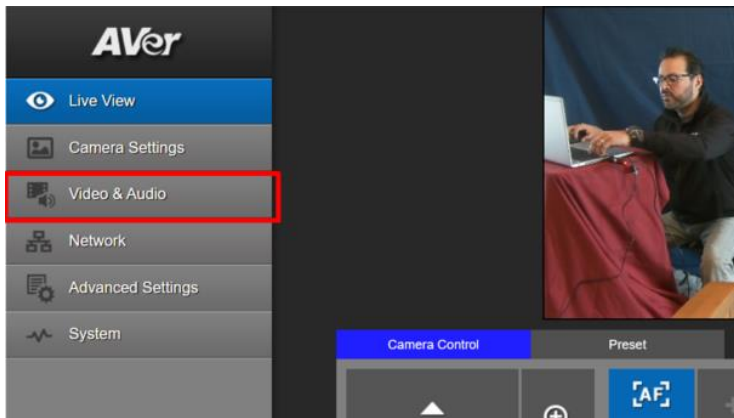
- Once you have the IP address setup, type the IP address in your Chrome browser (Setup on same subnet) and you should now see the login to the PTZ330 camera shown below.

Sign in
 http://192.168.0.106
 Your connection to this site is not private

Username

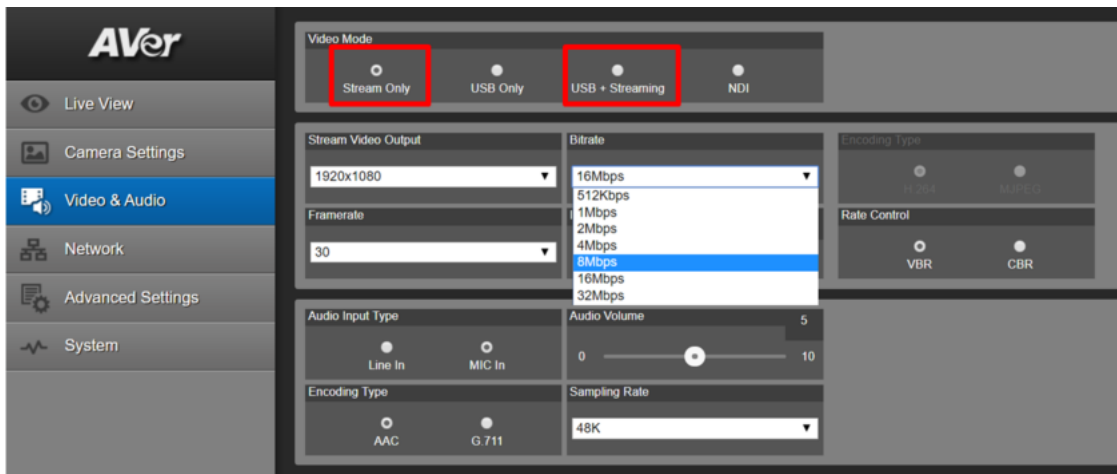
Password

- The default Username/password is “administrator”.
***Note:** If this is the first time accessing the PTZ330 camera via the Web login it may ask you to change the Username/Password.
- Next, you should now see the main login screen with a “Live View” of the PTZ Camera.



Next, after selecting the *Video & Audio* setting, verify that you have either “Stream Only” selected or “USB + Streaming” selected. Select your Stream Video Output, Bitrate, Framerate, Encoding, etc.

***Note:** Some servers require a minimum bitrate of 2.5Mbps for their environment.



	Stream Only (Various)	USB Only (Various)	USB + Streaming (Various)	NDI (1080p/60)
SDI Output	✓	✓	✓	✓
HDMI Output	✓	✓	✓	✓
USB Output	✗	✓	✓	✗
RTSP Output	✓	✗	✓	✓

Recommended settings from Microsoft

Ingest protocols

- Single bitrate RTMPS or RTMP

Video format

- Codec: H.264
- Profile: High (Level 4.0)
- Bitrate: Up to 5Mbps (5000 kbps)
- Strict Constant Bitrate (CBR)
- Keyframe/GOP: 2 seconds

There must be an IDR frame at the beginning of each GOP

Frame Rate: 29.97 or 30fps

Resolution: 1280 x 720 (720P)

Interlace Mode: Progressive

- Pixel Aspect Ratio (PAR): Square

Audio format

- Codec: AAC (LC)
- Bitrate: 192 kbps
- Sample Rate: 48 kHz or 44.1 kHz (recommend 48 kHz)

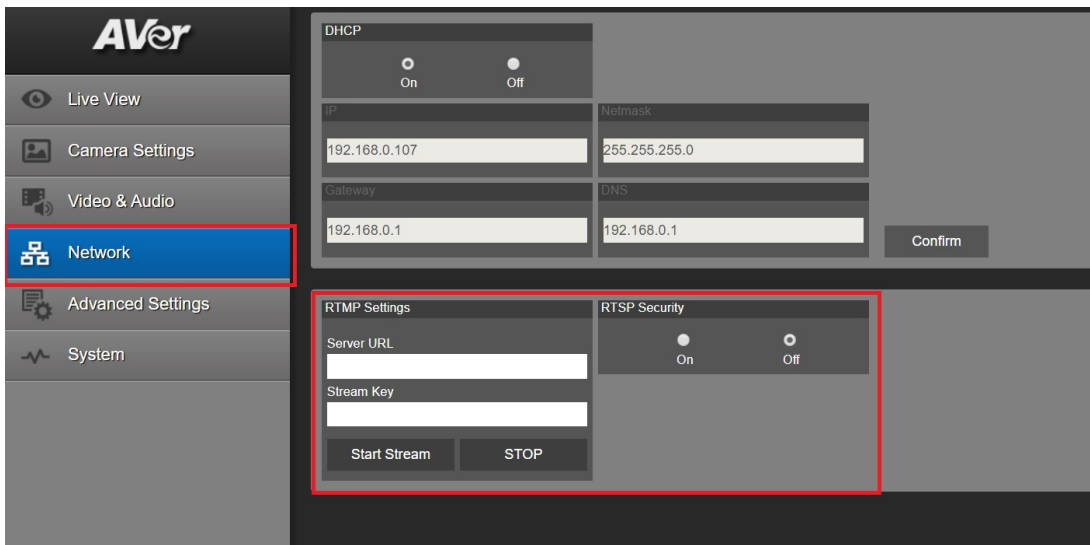
Playback requirements

- Both an audio and video stream must be present in order to playback content in Microsoft Stream.

Configuration tips

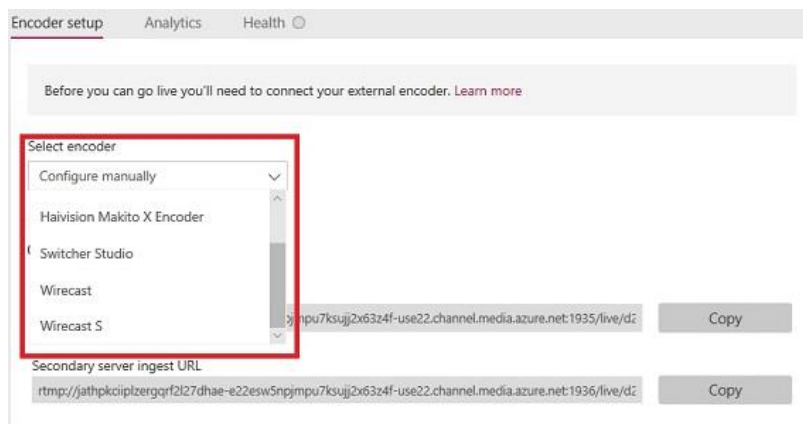
- Whenever possible, use a hardwired internet connection.
- A good rule of thumb when determining bandwidth requirements is to double the streaming bitrates. While this is not a mandatory requirement, it will help mitigate the impact of network congestion.
- When using software based encoders, close any unnecessary programs.
- Don't change your encoder configuration after it has started pushing. It has negative effects on the event and can cause the event to be unstable. If you want to do this before the event has started, you must disconnect using the producer controls in Microsoft Stream and start setup again.
- If the encoder is disconnected during the live event, reconnect it keeping the same timestamps of continuing process. Note that any discontinuity may cause audio or video issues on certain browsers and devices.
- Give yourself ample time to setup your event. For high scale events, it's recommended to start the setup an hour before your event.

- Next, select the *Network* setting; this is where you will enter the *RTMP Server URL* and *Stream Key*. *RTSP Security* to either “On” or “Off” depending if you want encryption when using *RTSP*.

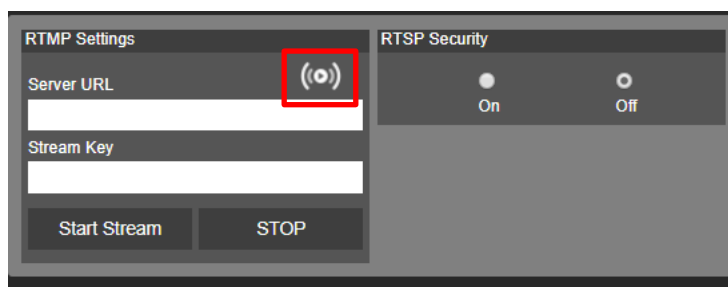


***Note:** Once streaming has started do not change the Stream Video Output on the fly, you will need to “Stop” streaming, change the Stream Video Output, then “Start” the stream again.

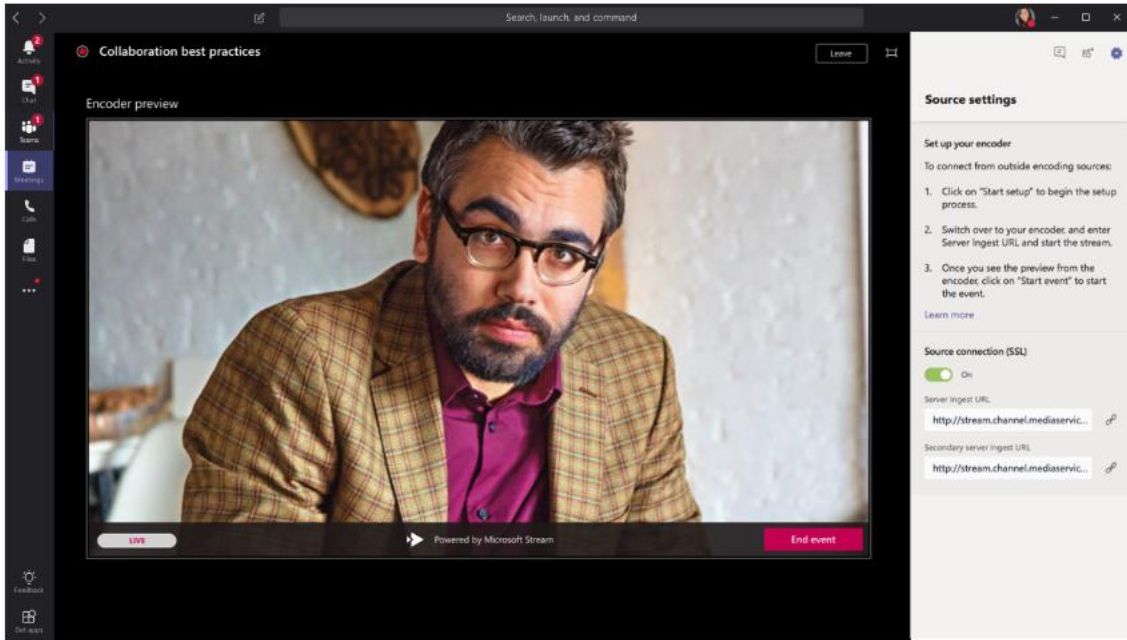
- Next, go to your Microsoft Stream account and login to obtain the *Server URL* and *Stream name/key*. Once obtained, you will copy that information and paste it into the PTZ Camera *Server URL* and *Stream Key* fields.



- Next, go back to the PTZ WebLogin and select *Start Stream*; this will begin the stream to Microsoft Stream. You should see a *Streaming* icon appear to indicate the process has started.



- To verify, go to Microsoft Stream and verify you are able to see the preview of the video feed from the PTZ330 camera in **Encoder preview**.



- To end the streaming feed from the PTZ camera, go to the WebLogin and select “STOP”.
- To verify, go back to your Microsoft Stream preview, it should now be displaying “nothing”.

Microsoft Teams configuration

In a Teams live event, you can stream video from an external encoder to Microsoft Stream if the encoder supports Real-Time Messaging Protocol (RTMP).

- In Teams, select **Calendar Meetings button**, then your live event, and **Join**.
- Until you start the event, you'll see the title, date, and time in the **Encoder preview** window.
- Click **Start setup**. ***Note:** Setup may take some time to complete.
- Once you see the message **Ready to connect**, go to the **Settings** tab and copy the Server ingest URL into the encoder (PTZ Camera) to start ingesting.
- Once you start streaming from the PTZ camera to *Stream* using the ingest URL, you should see the preview of the video in **Encoder Preview**.
- Once satisfied with the setup and video preview, click **Start event**. Once the live event starts, the video from the PTZ camera is broadcast to the event.
- To end the event, click **End event**. ***Note:** Once the live event ends, it cannot be restarted.
- This concludes the AVer PTZ330 Camera Streaming with a Microsoft setup.

AVer TR 320/530 Camera integration with Microsoft Teams and Skype

Here are the steps to configure the AVer Camera while using the Microsoft Teams platform.

The TR camera has various outputs for video and an audio Line-in; Microsoft can support any one of these audio/video connections.

They are:

- HDMI
- 3G-SDI (x2) (Coaxial connection, SMPTE 424M)
- IP - Network - RTMP (RJ45 network connection)
- Audio Line-In (Use with Powered Mic or Audio Mixer, 1vrms)

We can combine the outputs into 2 main groups of emphasis:

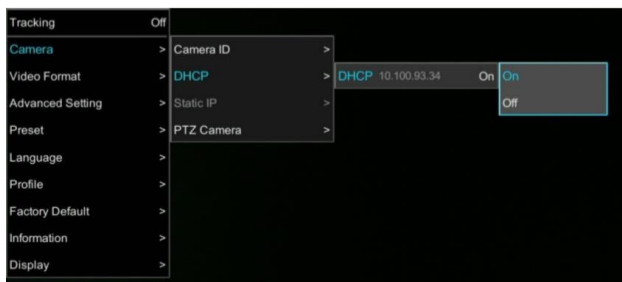
1. **HDMI/SDI connection type**
2. **IP/Streaming (RTMP) connection type**

TR Camera *HDMI/SDI/USB* Output to Microsoft Teams

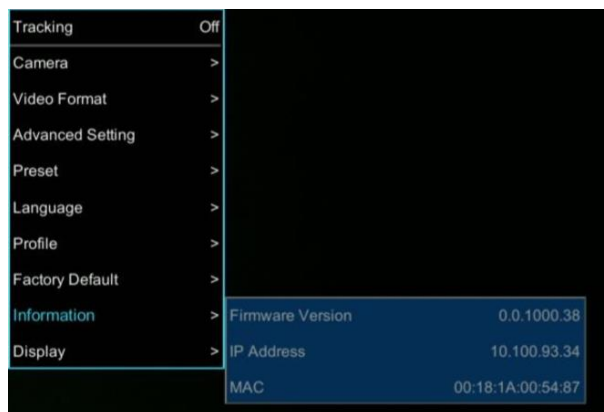
If you are using a laptop to capture video, a portable HDMI to USB dongle like the AVer Media BU110 and BU111 provides a high speed, high quality connection.

1. Connect the TR530 camera via RJ45 Network Cat5E (or better) cable; verify IP address of Camera in order to connect via Web browser. If IP address is not known, locate the remote, select the “Menu” icon and navigate to the “**Camera->DHCP->**” setting, verify DHCP is set to “On” in order to grab an available IP address. If you are reserving IP addresses, verify it is set to “OFF” and that the correct IP address has been set.

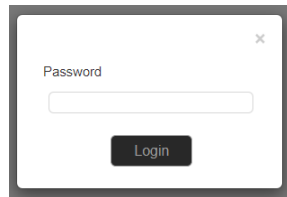
Go to **Camera > DHCP > DHCP >On**.



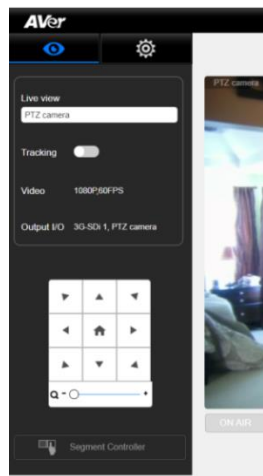
After turning DHCP on, go to **Information** to view the IP address.




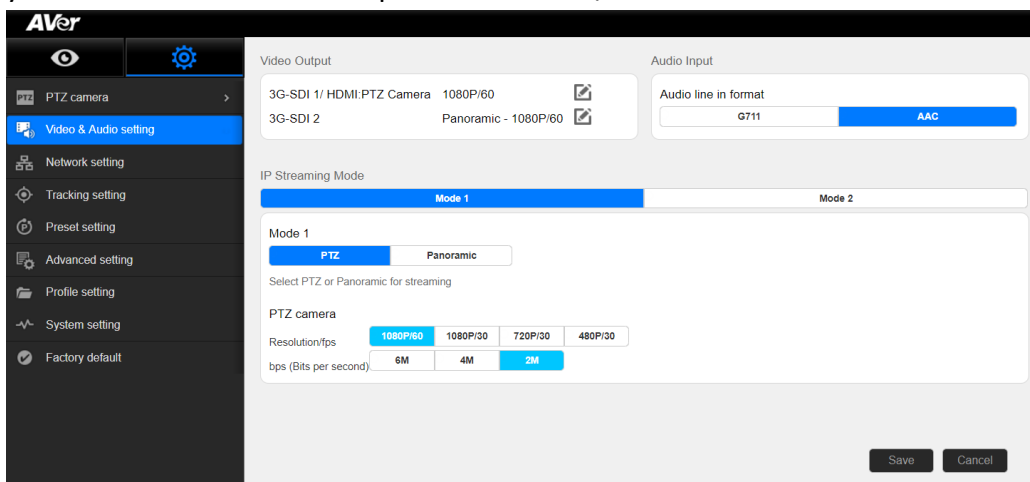
- Another way to find the Camera IP address (On same Subnet) is to use the AVer IPCam Utility to find the camera. AVer software can be found here: <https://www.aver.com/download-center>.
- Next, type the IP address in your Chrome browser (Setup on same subnet) and you should now see a login to the TR320/530 camera shown below.



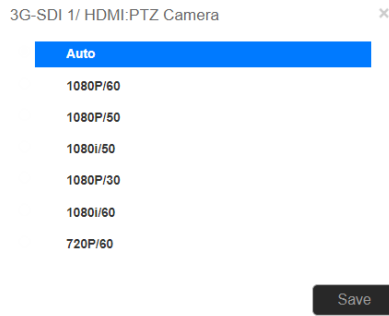
- The default password is "admin".
- Next, you should now see the main login screen with a "Live View" of the TR Camera.



- Next, select the settings gearbox , then select **Video & Audio setting**, this is where you can select the Video Output of the TR320/530.



- Next, selecting 3G-SDI / HDMI will open the following window, allowing you to choose which video standard or the ability to set it to *Auto*.



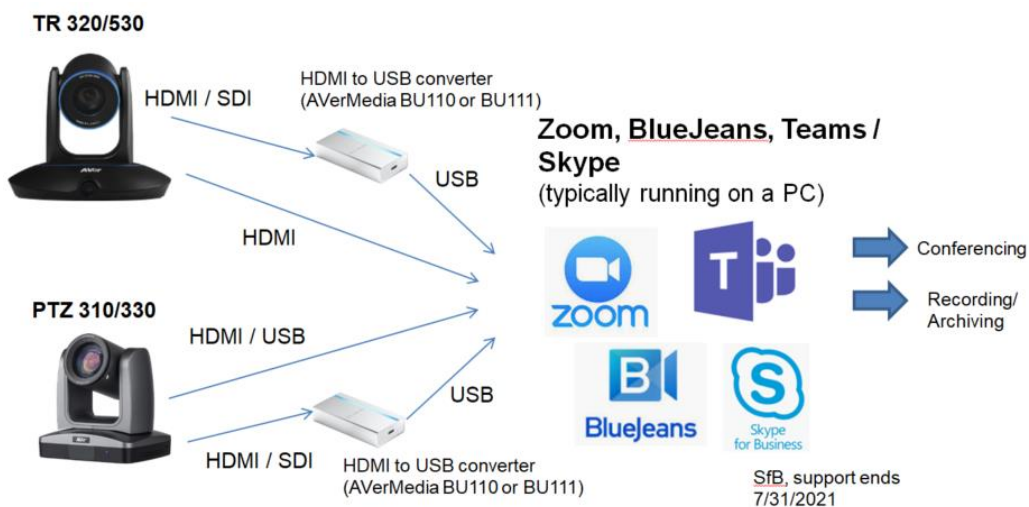
***Note:** Only the standards listed are currently available, no 29.97/59.94 selection.

TR320/530 Camera HDMI/SDI connection to Microsoft Teams

The TR camera does not offer a direct USB output, like the PTZ camera does. If the PC you are using happens to have an HDMI Input connection, you can direct connect to it. If there is no HDMI Input and you are using a laptop to capture video, a portable HDMI/SDI to USB dongle like the AVer Media BU110 and BU111 provides a high speed, high quality connection.

Likely Scenario:

- HDMI / SDI connection using an AVer Media converter to USB



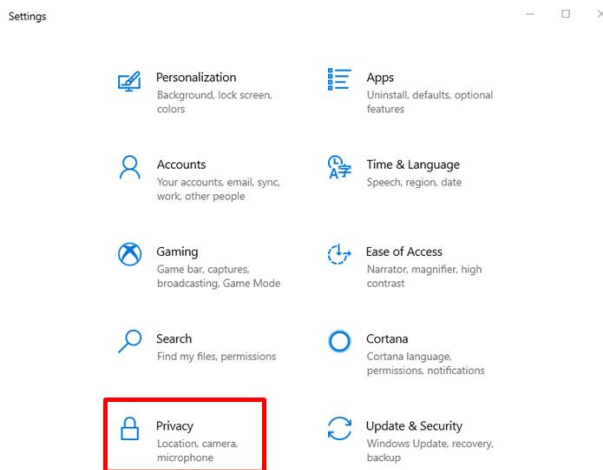
Microsoft OS Device Manager

Once the AVer TR320/530 Camera has been connected to a USB port on the PC using the HDMI to USB converter, verify that Windows does see the camera in the “Device Manager” window under Cameras.

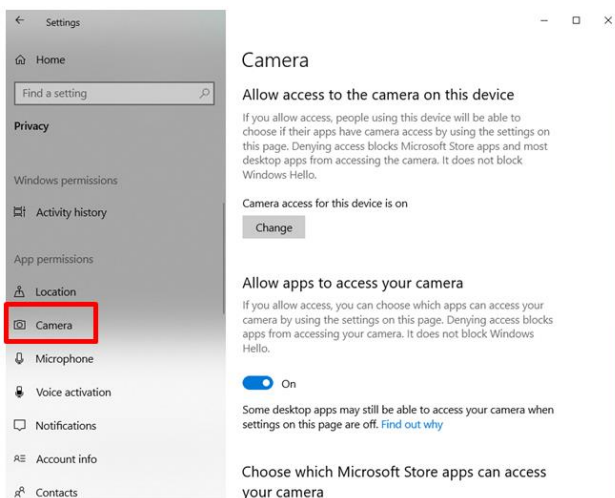


Microsoft Teams Desktop App

1. One of the very first things to check is if Microsoft Teams has permission to access your camera and microphone. There are instances where the App will not detect your camera if left disabled in your PC’s settings.
2. Press the **Windows Key** and **I** key together. This will bring up the **Windows Settings** page.



3. Next, look for the **Privacy** setting and select it.
4. Next, from the left sidebar, under **App permissions** click on **Camera**.



5. Next, on the **Camera** page, you want to make sure the option **Allow Apps to access camera** is turned **On**.

6. You also want to make sure that under **Choose which app can access your camera**, that **Microsoft Teams** is turned **On**.
7. Now Microsoft Teams will appear here in this list if you have the Microsoft Teams desktop app installed.

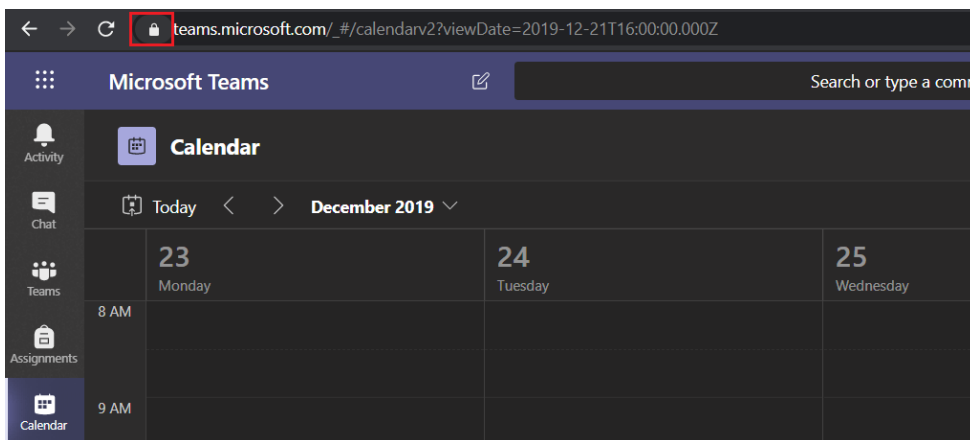
Microsoft Teams Web App

If you are using your web browser instead of using Microsoft Teams Windows app, you will need to make sure that the site has given permission to use your camera.

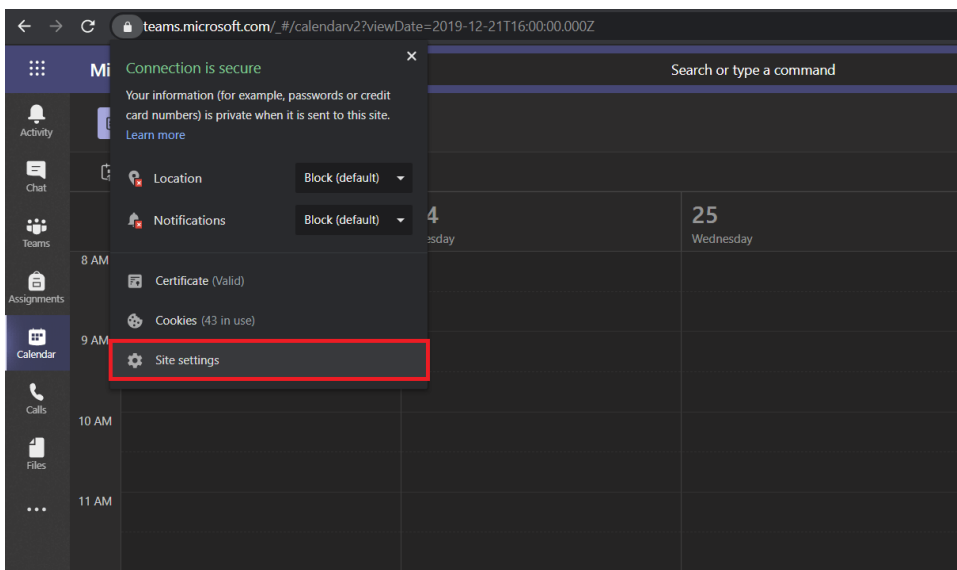
1. Go to **Microsoft Teams** using your search browser (Google Chrome or Mozilla Firefox).
2. Depending on your search browser, proceed with its appropriate steps:

Google Chrome

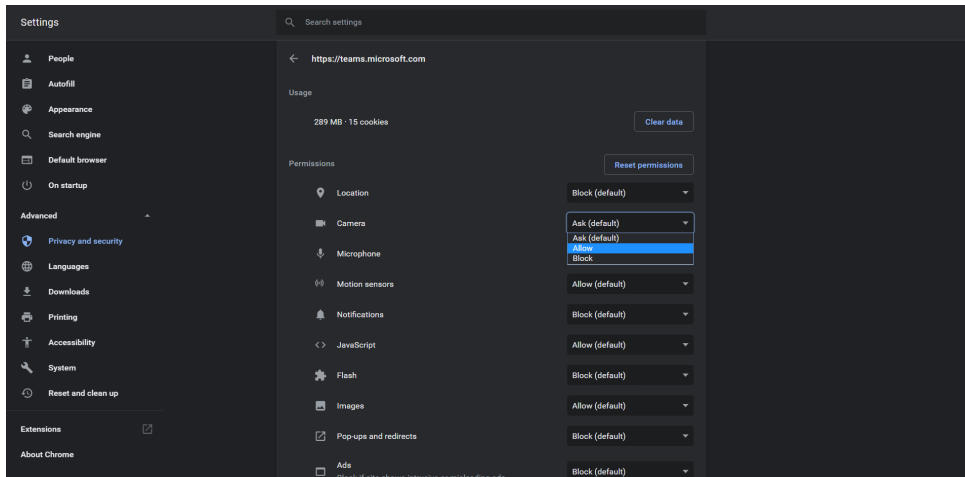
You need to click on the lock icon in the search URL box (at the top) as shown below.



3. Next, click **Site Settings**.




4. You will be brought to your Google Chrome settings where under **Permissions** you will want to make sure that **Camera** is set to **Allow** rather than **Block** or **Ask**.



Ask is a secure option if you do not want your camera turned on without being prompted every time you access Microsoft Teams. **Block** prevents Microsoft Teams from accessing or even detecting your camera.

Mozilla Firefox

You need to click on the Firefox menu button  Mozilla Firefox menu and select **Options**.

1. Next, click **Privacy & Security** from the left menu.
2. Then scroll down to the **Permissions** section and click the **Settings...** button for the **Camera** option.
3. Now enter the website URL in the search field for the site that you want to access your camera. In our case, we will need to enter <https://teams.microsoft.com/> to allow **Microsoft Teams** access to our camera. Hit the **Enter** key.

Firefox makes it a secure and straightforward way to handle the websites that you want to provide access and the ones to not. You can remove it at any time by selecting it from the list and clicking the **Remove Website**. Finally don't forget to select the **Save changes** button!

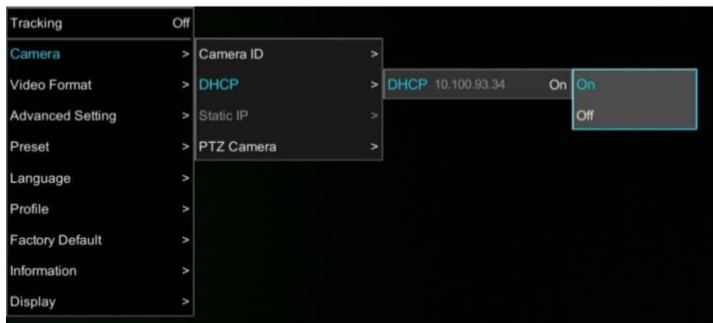
4. Try testing to see if your camera works after enabling the camera access for Microsoft Teams web app.

TR320/530 Camera RTMP Output to Microsoft Teams using Microsoft Stream

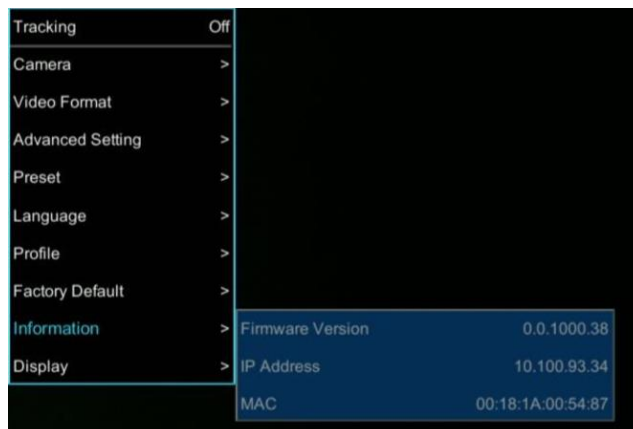
Microsoft Stream accepts live feeds from a variety of different encoders that output RTMP or RTMPS. Below we will cover how to configure the PTZ camera manually for a Live event.

1. Connect the TR530 camera via RJ45 Network Cat5E (or better) cable; verify IP address of Camera in order to connect via Web browser. If IP address is not known, locate the remote, select the “Menu” icon and navigate to the “**Camera->DHCP->**” setting, verify DHCP is set to “On” in order to grab an available IP address. If you are reserving IP addresses, verify it is set to “OFF” and that the correct IP address has been set.

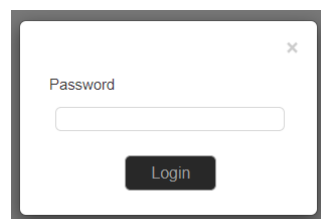
Go to **Camera > DHCP > DHCP >On**.



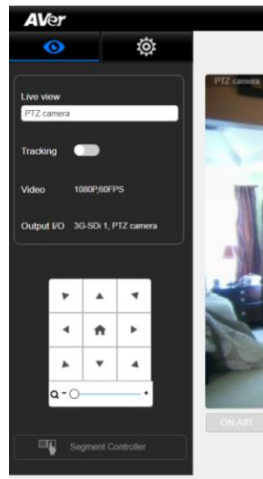
After turning DHCP on, go to **Information** to view the IP address.




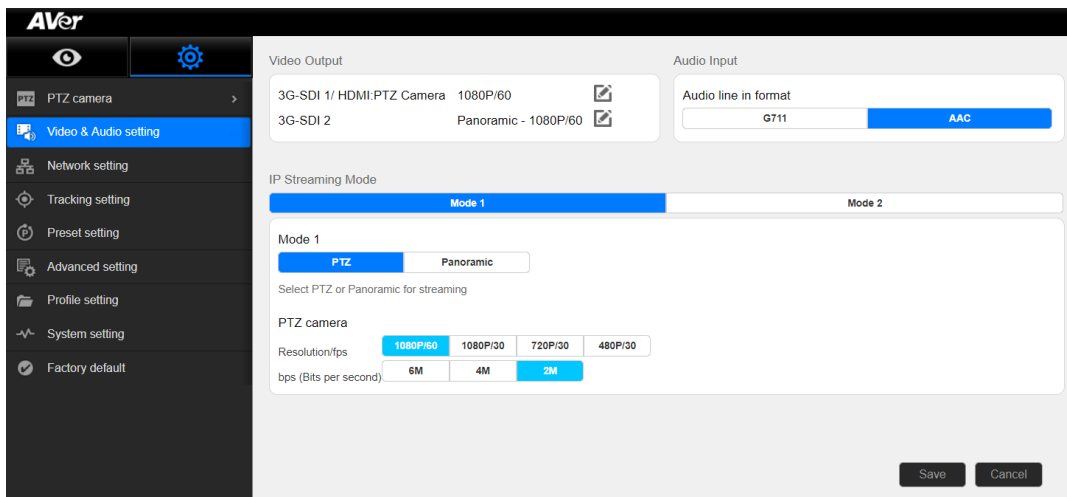
2. Another way to find the Camera IP address (On same Subnet) is to use the AVer IPCam Utility to find the camera. AVer software can be found here: <https://www.aver.com/download-center>.
3. Next, type the IP address in your Chrome browser (Setup on same subnet) and you should now see a login to the TR320/530 camera shown below.



4. The default password is “admin”.
5. Next, you should now see the main login screen with a “Live View” of the PTZ Camera.

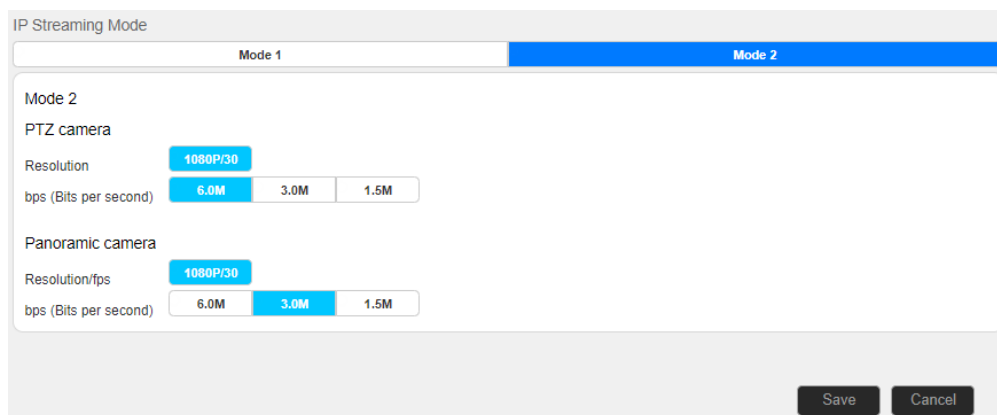


6. Next, select the settings gearbox , then select *Video & Audio setting*, this is where you can select Video Output, Audio, and the type of Streaming mode to use and Streaming video standard. ***Note:** This *IP Streaming Mode* is used for RTSP and RTMP Streaming.



Mode 1: You will use either the PTZ Camera OR Panoramic Camera view for your stream with varying video selections.

Mode 2: There will be 2 simultaneous streams from PTZ and Panoramic views set to (1080p/30) with adjustable **bps** (bits per second) if selected.



Recommended settings from Microsoft

Ingest protocols

- Single bitrate RTMPS or RTMP

Video format

- Codec: H.264
- Profile: High (Level 4.0)
- Bitrate: Up to 5Mbps (5000 kbps)
- Strict Constant Bitrate (CBR)
- Keyframe/GOP: 2 seconds

There must be an IDR frame at the beginning of each GOP

Frame Rate: 29.97 or 30fps

Resolution: 1280 x 720 (720P)

Interlace Mode: Progressive

- Pixel Aspect Ratio (PAR): Square

Audio format

- Codec: AAC (LC)
- Bitrate: 192 kbps
- Sample Rate: 48 kHz or 44.1 kHz (recommend 48 kHz)

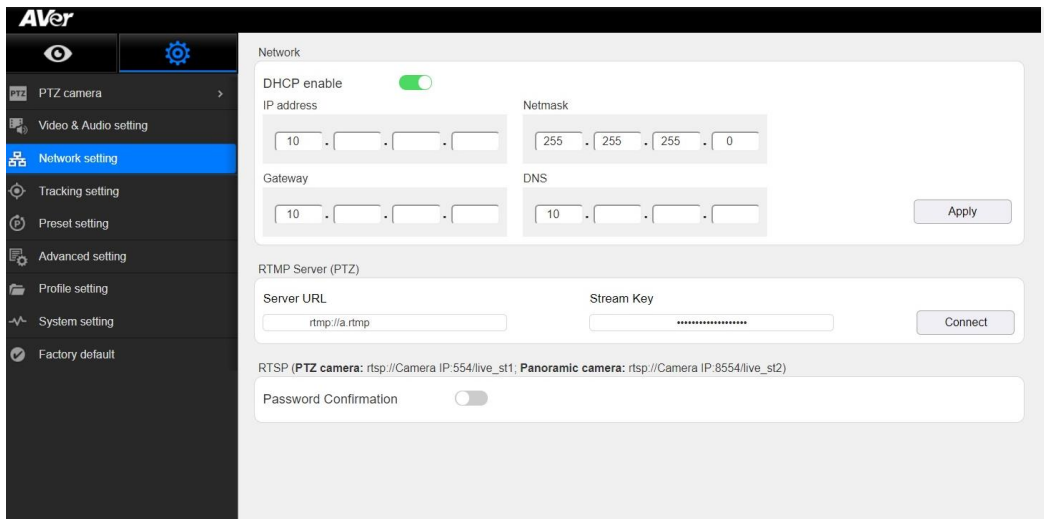
Playback requirements

- Both an audio and video stream must be present in order to playback content in Microsoft Stream.

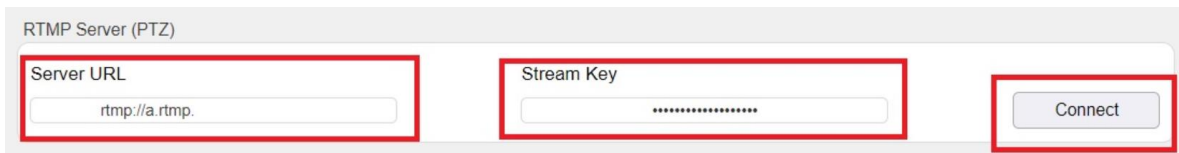
Configuration tips

- Whenever possible, use a hardwired internet connection.
- A good rule of thumb when determining bandwidth requirements is to double the streaming bitrates. While this is not a mandatory requirement, it will help mitigate the impact of network congestion.
- When using software based encoders, close any unnecessary programs.
- Don't change your encoder configuration after it has started pushing. It has negative effects on the event and can cause the event to be unstable. If you want to do this before the event has started, you must disconnect using the producer controls in Microsoft Stream and start setup again.
- If the encoder is disconnected during the live event, reconnect it keeping the same timestamps of continuing process. Note that any discontinuity may cause audio or video issues on certain browsers and devices.
- Give yourself ample time to setup your event. For high scale events, it's recommended to start the setup an hour before your event.

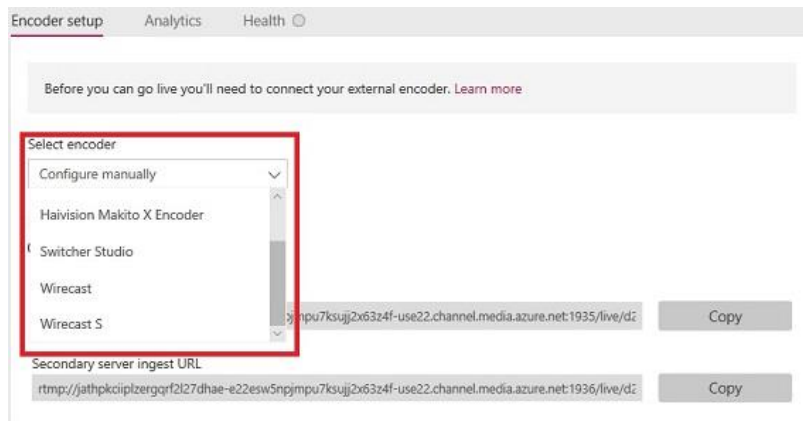
7. Next, select *Network Setting*. You should now see the following information displayed.



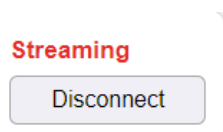
1. Next, notice the *RTMP Server URL* selection, this is where you will “paste” the URL string from *Microsoft Stream* as well as the *Stream Key* from *Microsoft Stream*. ***Note:** The RTMP Stream will use the *PTZ IP Stream Mode* output configuration.



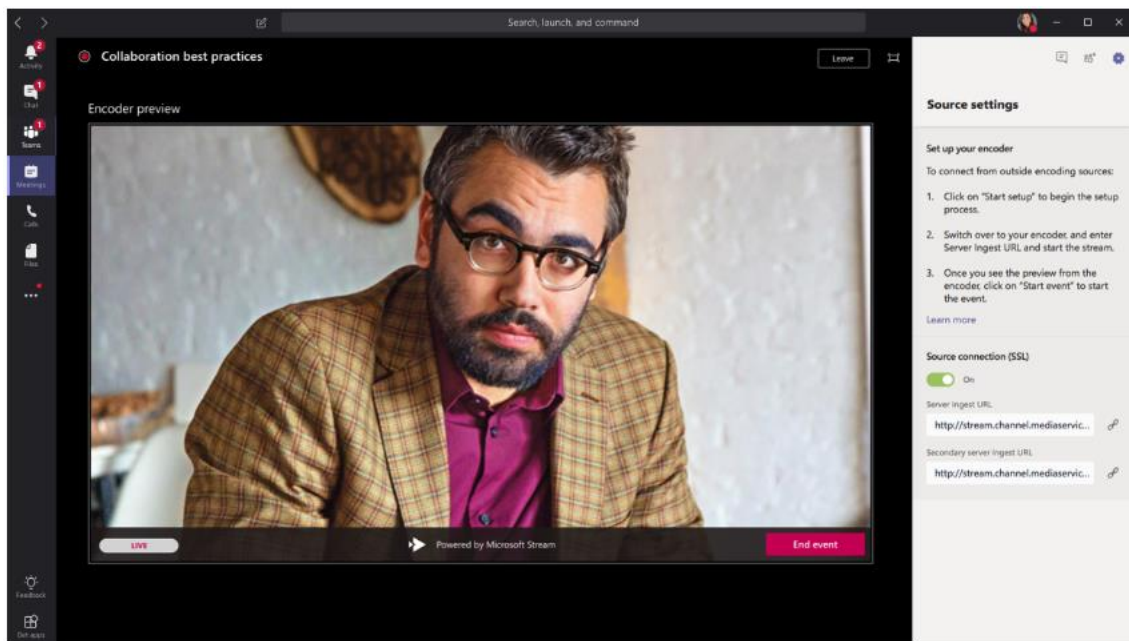
2. Next, go to your Microsoft Stream account and login to obtain the *Server URL* and *Stream name/key*. Once obtained, you will copy that information and paste it into the TR Camera *Server URL* and *Stream Key* fields.



3. Next, to begin the Stream from the TR Camera, select *Connect*, you should see a red “Streaming” text appear, to indicate you are now streaming. This is where you would also “Disconnect” from the stream.



12. To verify, go to Microsoft Stream and verify you are able to see the preview of the video feed from the TR320/530 camera in **Encoder preview**.



13. To end the streaming feed from the TR camera, go to the WebLogin and select *“Disconnect”*.
14. To verify, go back to your Microsoft Stream preview, it should now be displaying *“nothing”*.

Microsoft Teams configuration

In a Teams live event, you can stream video from an external encoder to Microsoft Stream if the encoder supports Real-Time Messaging Protocol (RTMP).

1. In Teams, select **Calendar Meetings button**, then your live event, and **Join**.
2. Until you start the event, you'll see the title, date, and time in the **Encoder preview** window.
3. Click **Start setup**. ***Note:** Setup may take some time to complete.
4. Once you see the message **Ready to connect**, go to the **Settings** tab and copy the Server ingest URL into the encoder (TR Camera) to start ingesting.
5. Once you start streaming from the TR camera to *MS Stream* using the ingest URL, you should see the preview of the video in **Encoder Preview**.
6. Once satisfied with the setup and video preview, click **Start event**. Once the live event starts, the video from the TR camera is broadcast to the event.
7. To end the event, click **End event**. ***Note:** Once the live event ends, it cannot be restarted.
8. This concludes the AVer TR320/530 Camera Streaming with a Microsoft setup.