

Eagle Eye Application Note – AN011

Considerations for Connecting Cameras Using RTSP

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RTSP Stream Overview

The Eagle Eye Cloud VMS can be connected to almost any IP camera via ONVIF but, in certain cases, it's necessary to connect the camera using Real Time Streaming Protocol (RTSP). This can be a single or dual stream. It is very important to understand and consider all technical limitations due to the connection type.

RTSP is a network protocol designed for use in entertainment and communications systems to control streaming media. The protocol was designed to create an easy way to access or manipulate a media stream. In CCTV and security camera systems, the media is a video stream that may or may not include audio. The protocol packs complex transcoding and programming together behind the scenes to transfer video over a network or to the Internet with an easy to use link.

Background

The main purpose of RTSP when it comes to security cameras is to assist with ONVIF compatibility. While RTSP can only send video and audio, it helps by providing another type of stream to use if ONVIF compatibility does not work with the devices being used. This occurs most often when someone attempts to use an IP camera with a third-party recorder. Most professional NVR or DVR systems provide alternate ways to add third-party manufactured cameras, and one of those ways is to access the RTSP stream from the camera.

Using “**IP H264**” as the camera type means that it will use ONVIF to connect the cameras, but choosing “**IP (Single Stream)**” means that it will use a single “RTSP stream” to connect. The processing power required to connect RTSP streams is almost four times higher than ONVIF because the Bridge/CMVR has to transcode the stream for high resolution and preview (H264 and MJPEG). For example, a 304+ Bridge can connect 12 cameras at 2MP via ONVIF, but the same bridge with the same quality settings can only connect 3 or 5 cameras using RTSP

streams.

Cameras can be connected via ONVIF and RTSP on the same bridge/CMVR, but care needs to be taken to make sure the bridge is able to handle it. The best way to make certain of this is by using the Eagle Eye Networks Product Wizard (<https://een.com/eevmswizard>) to perform the calculations and propose the proper devices to keep everything working correctly.

One important thing to take into account when using RTSP streams is that if it is possible to pull from the camera/device a H264 stream for the high resolution recording and a MJPEG MJPEG for preview, the processing power is not affected as there is no transcoding of any stream.

Functionality

The screenshot shows a dialog box titled "Add RTSP Camera". It includes a dropdown menu for "Connect to Bridge" (set to "Building 1 - Northeast Corner"), a "Camera Name" text field, and "Login (optional)" fields for "Username" and "Password". The "RTSP" section features an "IP Address" field, a checked "Dual Stream" checkbox, and two fields for "Video Resource URL (H264)" and "Preview Resource URL (MJPEG)". Below these are two "Examples:" sections with sample URLs. At the bottom right are "Cancel" and "Add Camera" buttons.

Image 1: Add RTSP cameras and details and then select Add Camera to start the connection

The RTSP URL must be known for the related camera that will be connected and each manufacturer is unique so please refer to the camera manufacturer's documentation for instructions on locating the RTSP URL of the camera.

Next, populate the following fields as follows:

- Name of the camera
- Login and password
 - In some cameras, an ONVIF user must be created

- RTSP
 - Fill in the IP address of the camera
 - Choose to select “Dual Stream” or not. This depends on the camera being used
 - 1st stream has to be H264
 - 2nd stream has to be MJPG (CIF-2CIF-HD at 8fps)
 - In the field “Video Resource URL” enter the part of the RTSP URL (usually the one after the IP address).
 - Example: For Dahua cameras, the RTSP URL of the main stream is “rtsp://user:pwd@<camIP>:554/cam/realmonitor?channel=1&subtype=0” In our field, only add “cam/realmonitor?channel=1&subtype=0”
 - For other manufacturers, it will be the same

Next, click on “Add Camera” to start the connection and it should then appear under the Bridge/CMVR where it’s configured as an ONVIF camera.

When adding a camera via RTSP, there is no ability to configure the stream resolution in the configuration menu. This needs to be done inside the camera web interface itself.

Application

By default, the RTSP stream connection is not activated and has to be manually enabled to be able to connect cameras. To do so, you have to go to account configuration and click on “Account Settings”:

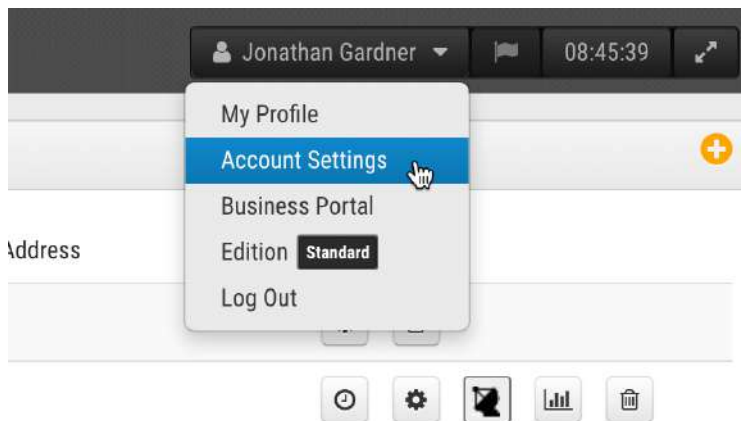


Image 2: Start with Account Settings, then select the Camera tab to enable RTSP cameras

From Account Settings, choose “Camera” and click the option “Enable RTSP cameras.” Add standard credentials the same credentials will be the same for all cameras but this is optional and this can be determined when connecting the camera later if desired.

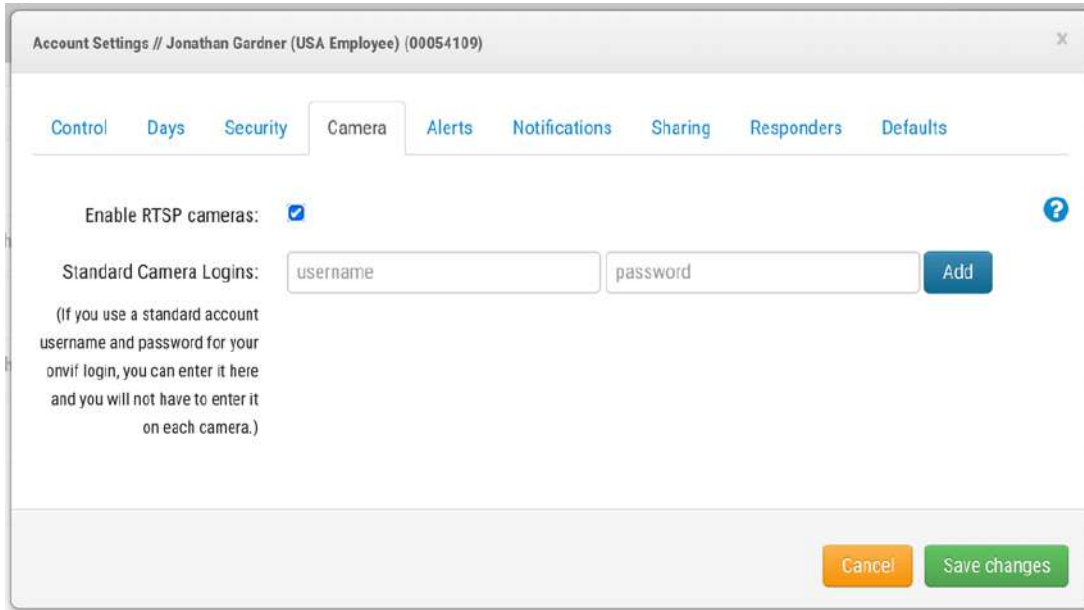


Image 3: From within the Camera tab, enable RTSP cameras

After enabling this parameter, cameras can be enabled manually from the Dashboard as can be seen below:

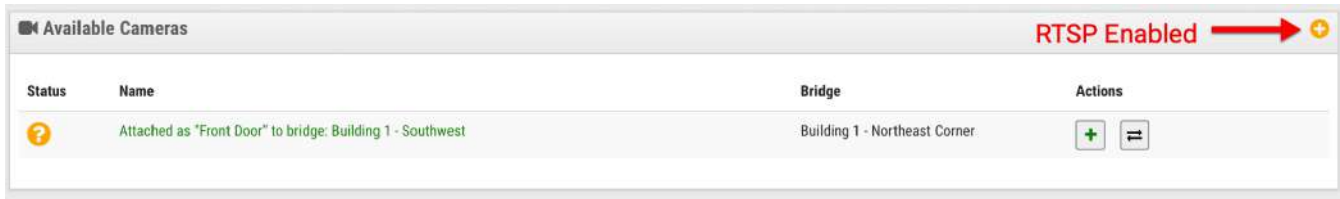


Image 4: Manually add cameras using the + icon

Now that the setup is complete, manually add cameras with the "+" icon as shown in the picture above.