August 14, 2024

Extron Media Processors and Encoders
Streaming to third parties using RTMP and RTMPS

The following notes provide guidance on setting up Extron Streaming Media Processors and Encoders for publishing live streams to third party services such as Wowza via RTMP. For more information, please call your Extron Applications Engineer.

Extron Products Affected:

SMP 111	60-1594-01
SME 211	60-1763-01
SMP 351	60-1324-01 / 60-1324-11
SMP 351 3G-SDI	60-1324-02 / 60-1324-12
SMP 352	60-1634-01 / 60-1634-11
SMP 352 3G-SDI	60-1634-12
SMP 401	60-1825-01
SMP 401 12G-SDI	60-1825-02

SPECIAL NOTES

Streaming to third party services requires a user to have an account with those services. Accounts with third party providers are the responsibility of those maintaining the stream and its content.

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TECH NOTE

Extron encoders support RTMP push streaming for publishing live video to third party services like YouTube, Wowza Video, Twitch, MS Stream, and others, as well as support for RTMPS for secure live video streaming.

Note: The examples in this document show the interface of the **SMP 401, SMP 352, SMP 111** and **SME 211,** which may look different, but the same settings apply.

Specific instructions apply only to the **SMP 401**.

To configure the Encoder for RTMP Push streaming to a live streaming provider:

1. Ensure your Encoder is connected to the network and has access to the internet.
    a. Open the web browser of the Encoder, **Troubleshooting, Diagnostic Tools.**
    b. Ping your live service, such as [wowza.com].
        i. If successful, a green checkmark is shown.

        ii. If results fail, verify network and DNS settings.

For **SMP 401**

    a. Open the web browser of the SMP 401, **Monitor**, **Diagnostics**
    b. Ping Network, Hostname or IP Address such as [wowza.com]
        iii. If successful, results shown

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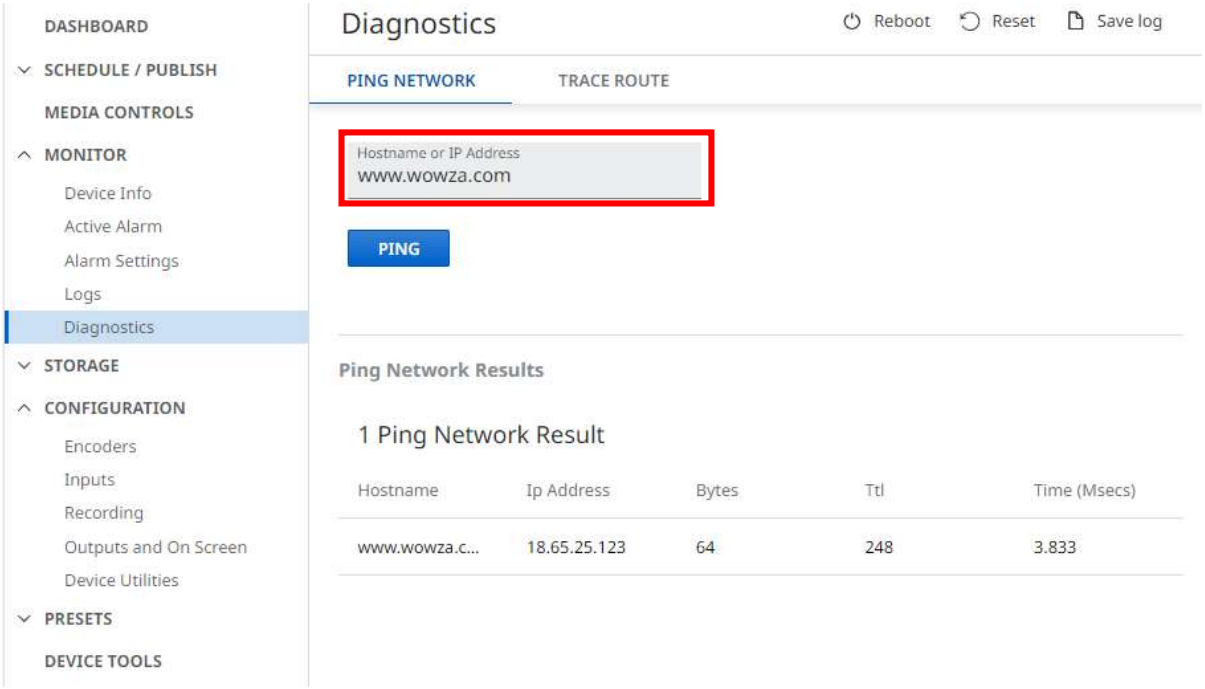
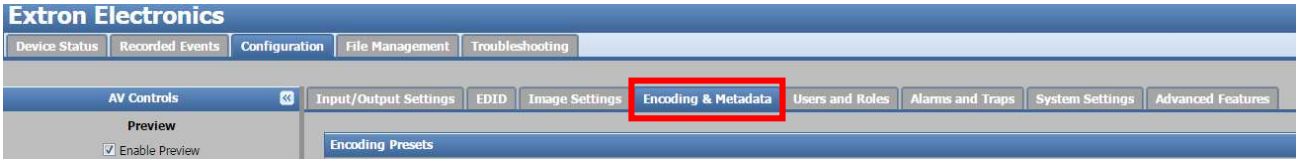


2. Open a web browser of the Encoder, **Configuration, Encoding, Encoding Presets:**



3. Confirm the Encoder is in Stop Mode. If needed, press stop on the front panel.
4. Select **PUSH** and **RTMP** from the streaming method and protocol options.

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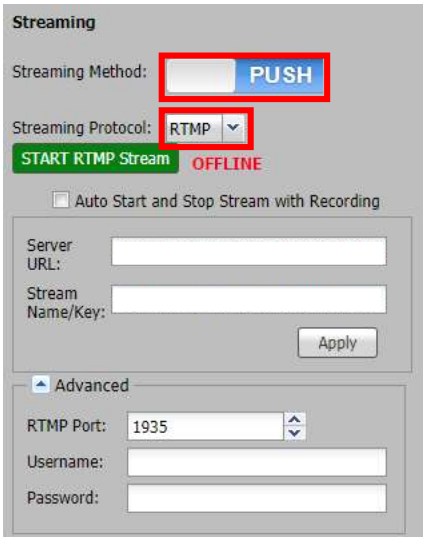
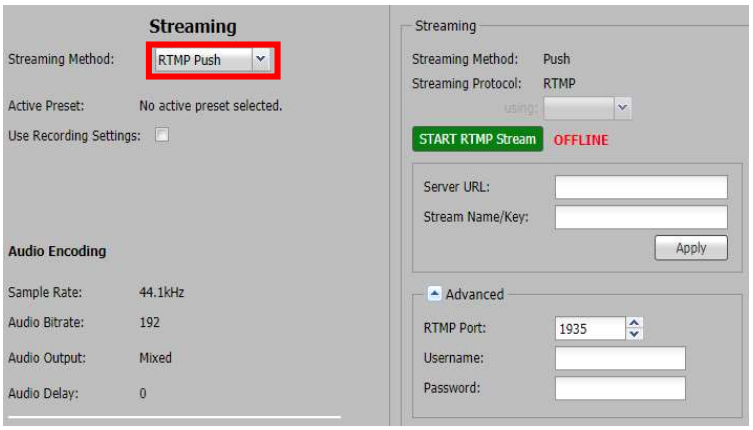
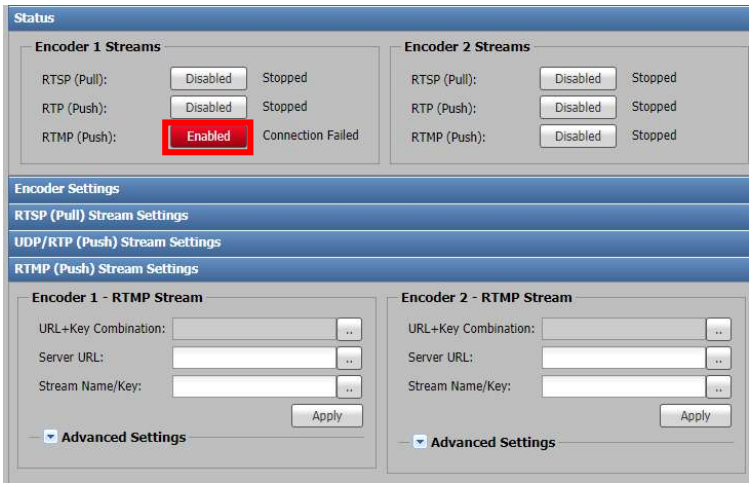


SMP 352 example



SMP 111 example



SME211 example

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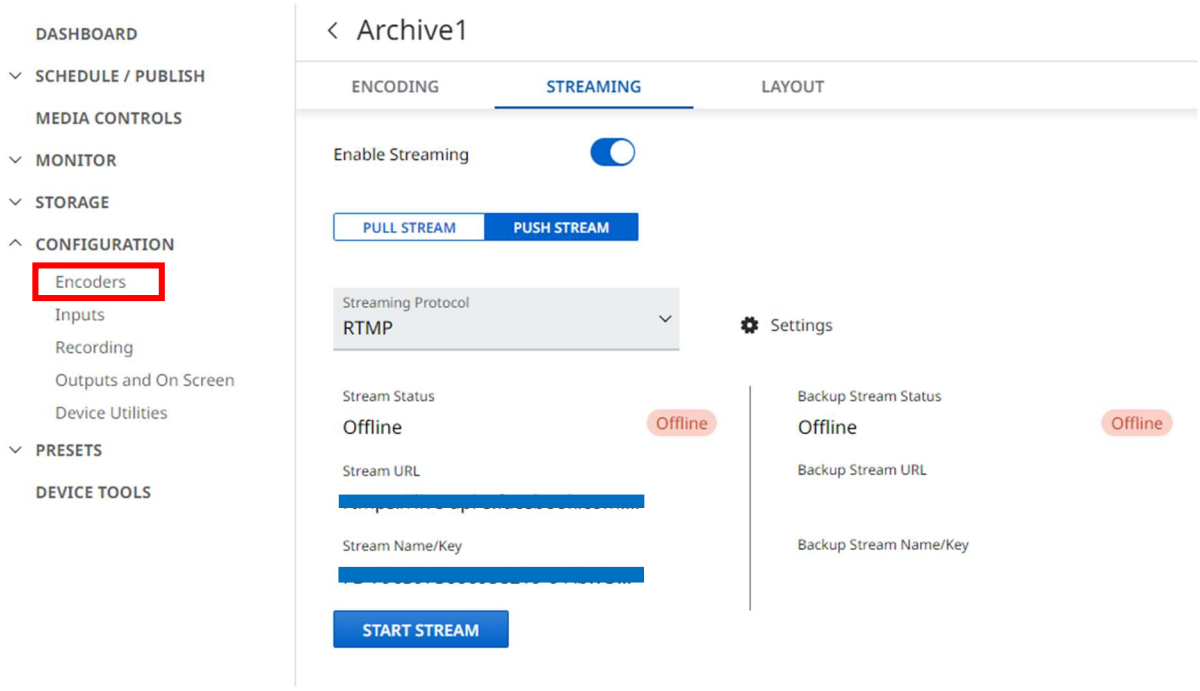
For **SMP 401**

Open the web browser of the SMP, **Configuration**, **Encoders**

- Select any of the 4 available encoders or 2 virtual inputs and open **Streaming tab**
- Select **PUSH STREAM** and select **RTMP** for the Streaming Protocol
- Open **settings** to input streaming information obtained in the next steps



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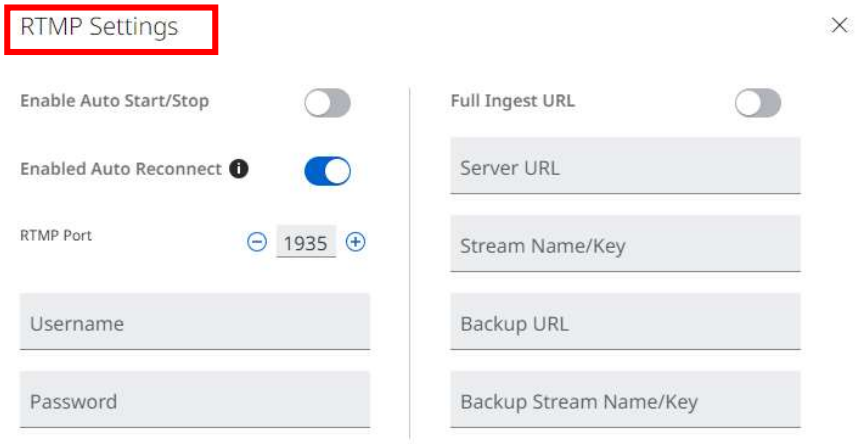

5. The **Server URL**, **Stream Name/Key** and optionally the **Username**, and **Password** information is needed:

    a. Follow the links below to obtain the fields from these services. Services other than those listed in this document will also require similar information.

6. For configuring SMP or SME **encoder settings**, reference the **Recommended Settings** section in this guide.

Streaming to Wowza Video

Quick start for an RTMP live stream in Wowza Video:
https://www.wowza.com/docs/quick-start-for-an-rtmp-live-stream-in-wowza-video

1. Login to Wowza Video with your account.
    - Access Wowza Video by navigating to app.wowza.com.
2. In Wowza Video, navigate to the **Live streams** page and click **Add new**.

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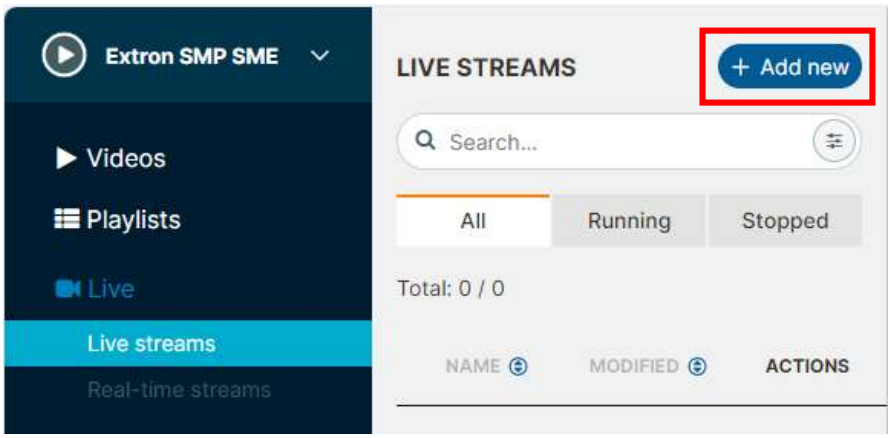
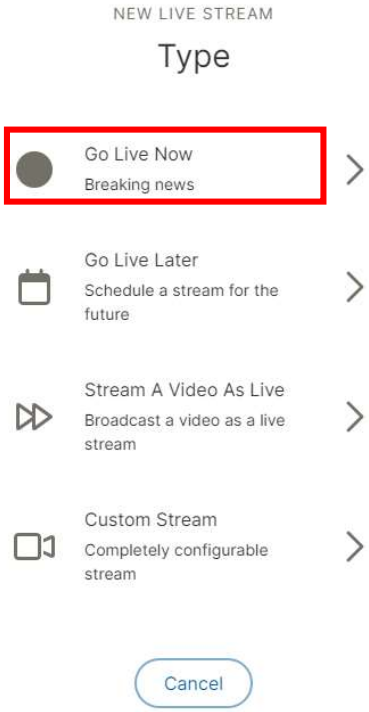


3. From the **Type** list, select **Go live now**.



4. Enter a title for your stream. You'll want it to describe the purpose of your streaming event, so it's easy to differentiate in your list of live streams.
5. Select the region closest to your broadcast location to get the best stream performance.
6. From **Stream input type**, select **RTMP** and make sure the default **Push** is selected.

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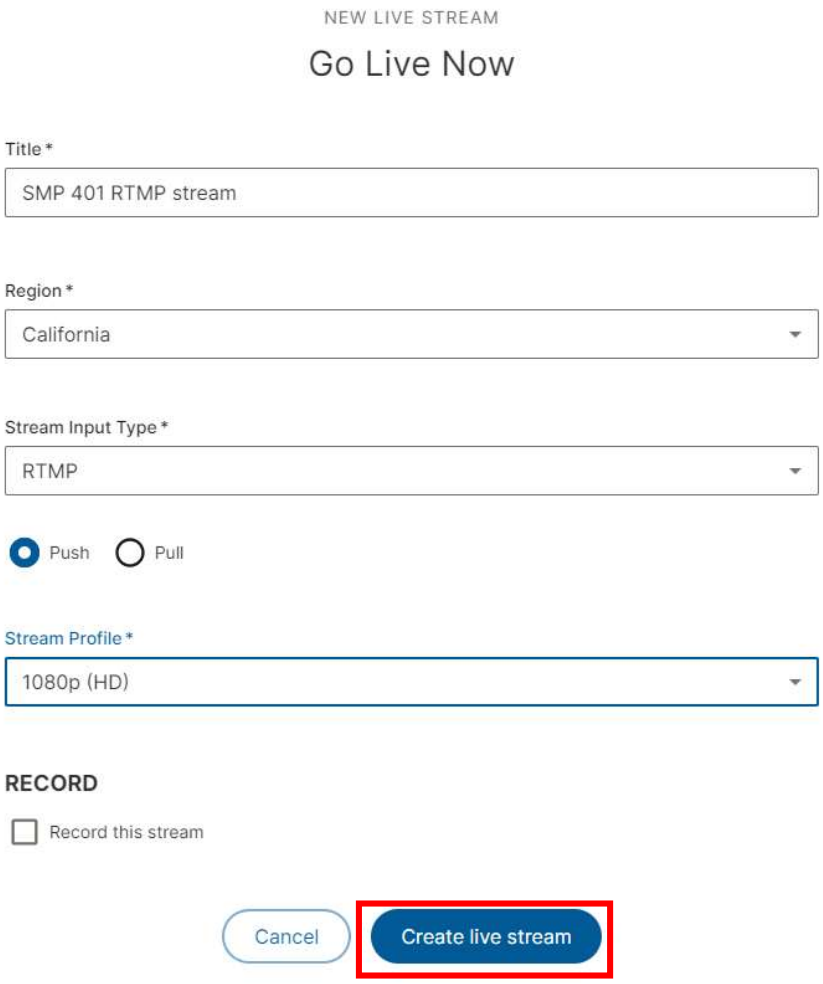
7. The default **Stream profile** is 1080p (HD).
    - Selecting the input resolution matters when you stream high-definition video and want the highest resolution available in the adaptive bitrate (ABR) ladder Wowza Video creates. Wowza supports resolutions up to 2160p (UHD).



8. Select **Create live stream**.
    - You will see in Wowza video the preview player ready to receive a stream

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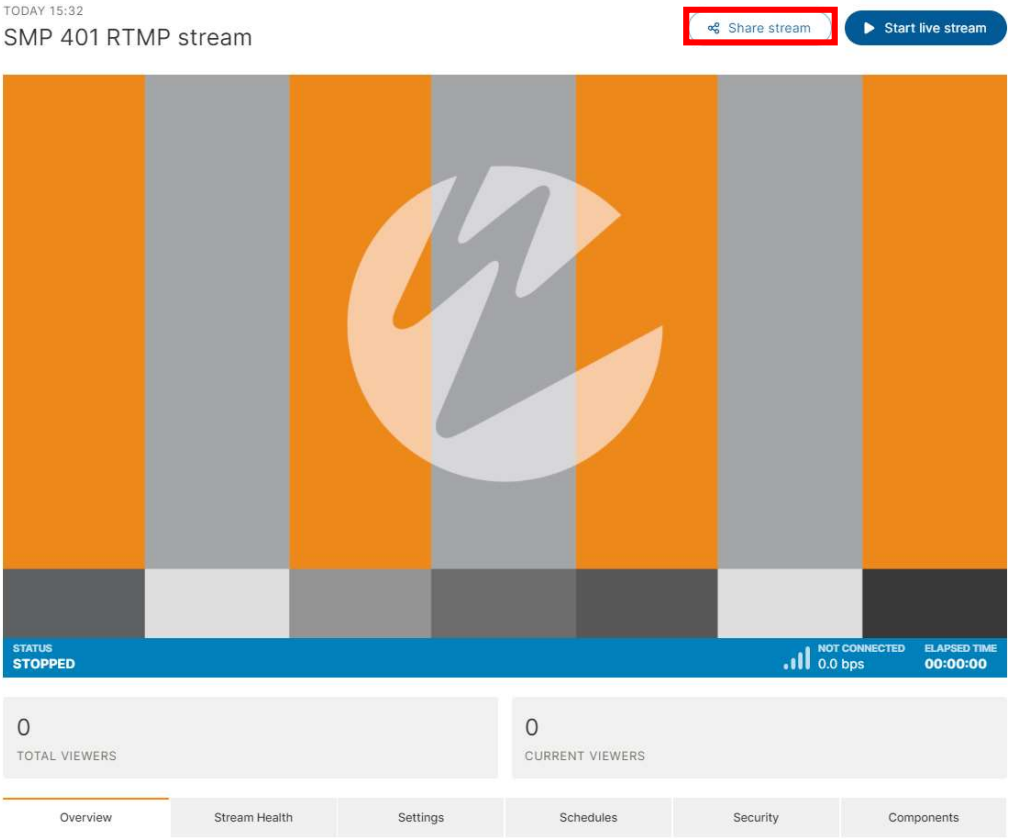

9. Set up your viewing experience
    - For this tutorial, we'll use the hosted page, an HTML page that Wowza generates and hosts, to view the stream.
10. After the stream is created, make sure you're on the live stream details page and click **Share live stream** to display the viewing formats provided.

11. Select the **Hosted page** tab.
12. Click the **Open link** button to open a browser tab with the hosted page. On the hosted page, you'll see your live stream title and a player that's embedded in the HTML. The player is already configured to use your live stream as the video source.

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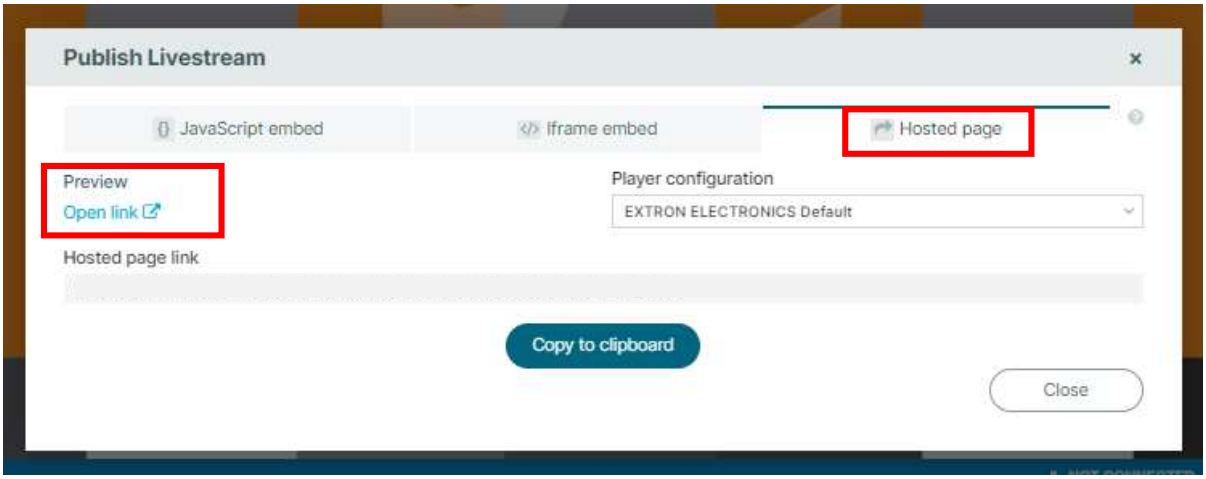

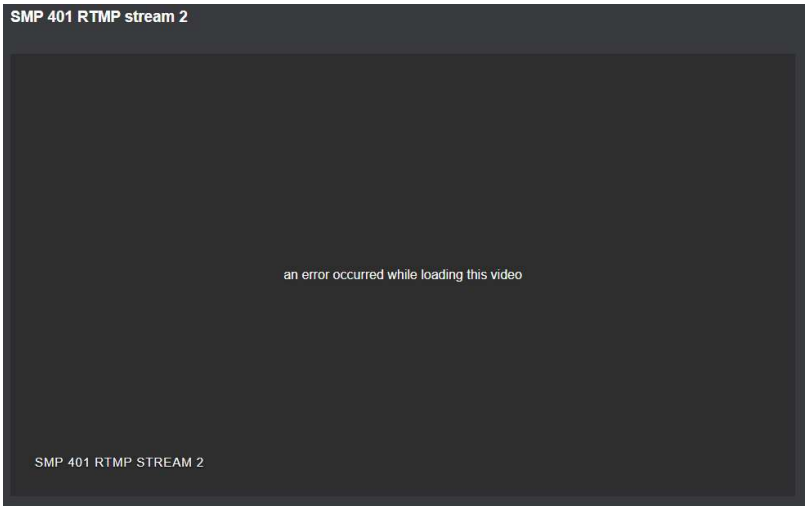

13. Connect an SMP or SME encoder to the stream created
    - In Wowza Video, on the **overview tab** for your live stream, locate the **Connection** section.

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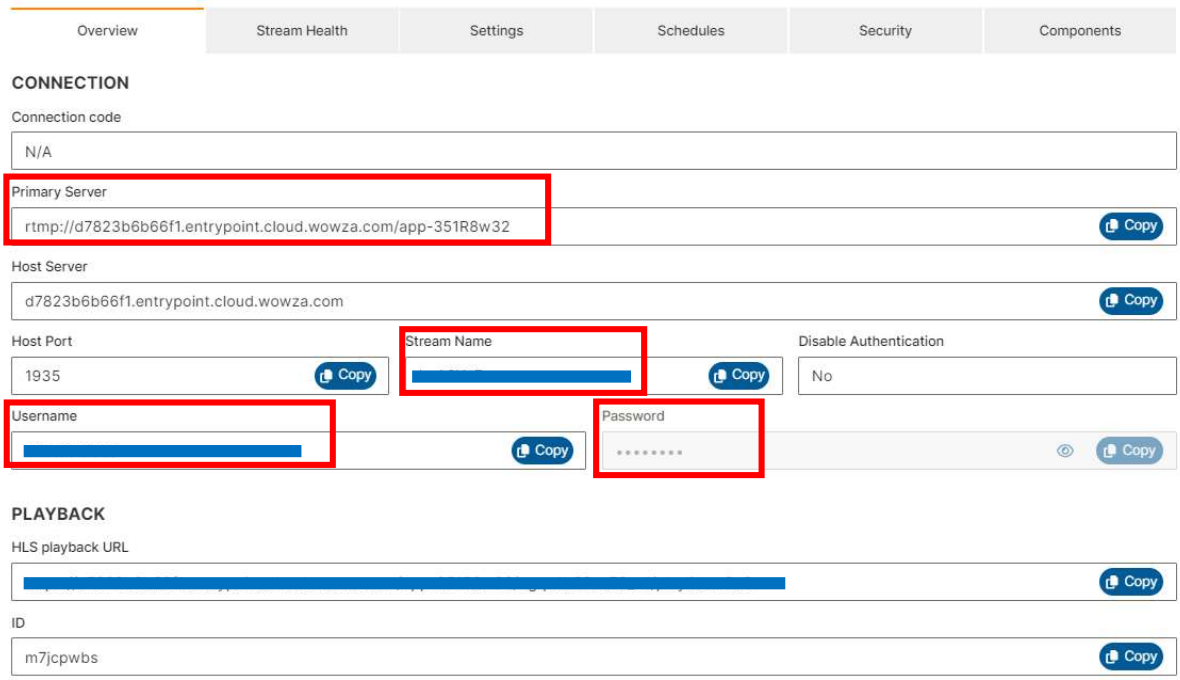
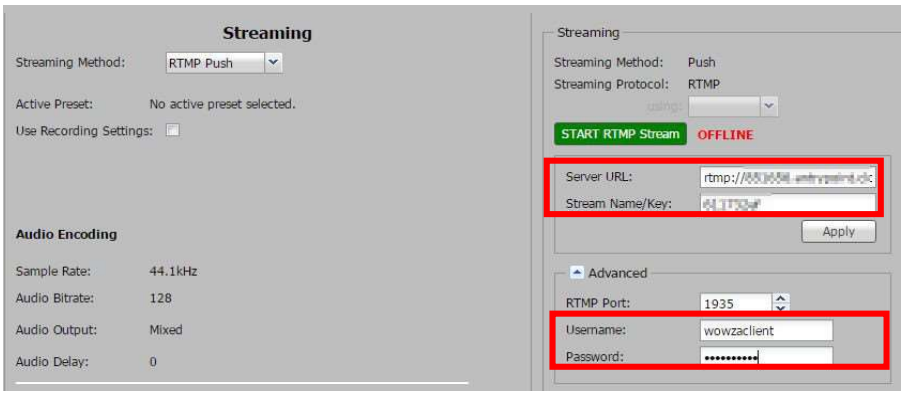


14. Copy the **Stream Name**, **Primary Server URL, Username**, and **Password** to the Encoder data fields. Click **Apply** or **Save** to save the stream URL and Key.
    - By default **Authentication** is **enabled**. If Authentication is not required it can be disabled from the security tab, username and password would then not be required.

For the **SMP 111** and **SMP 300 Series**



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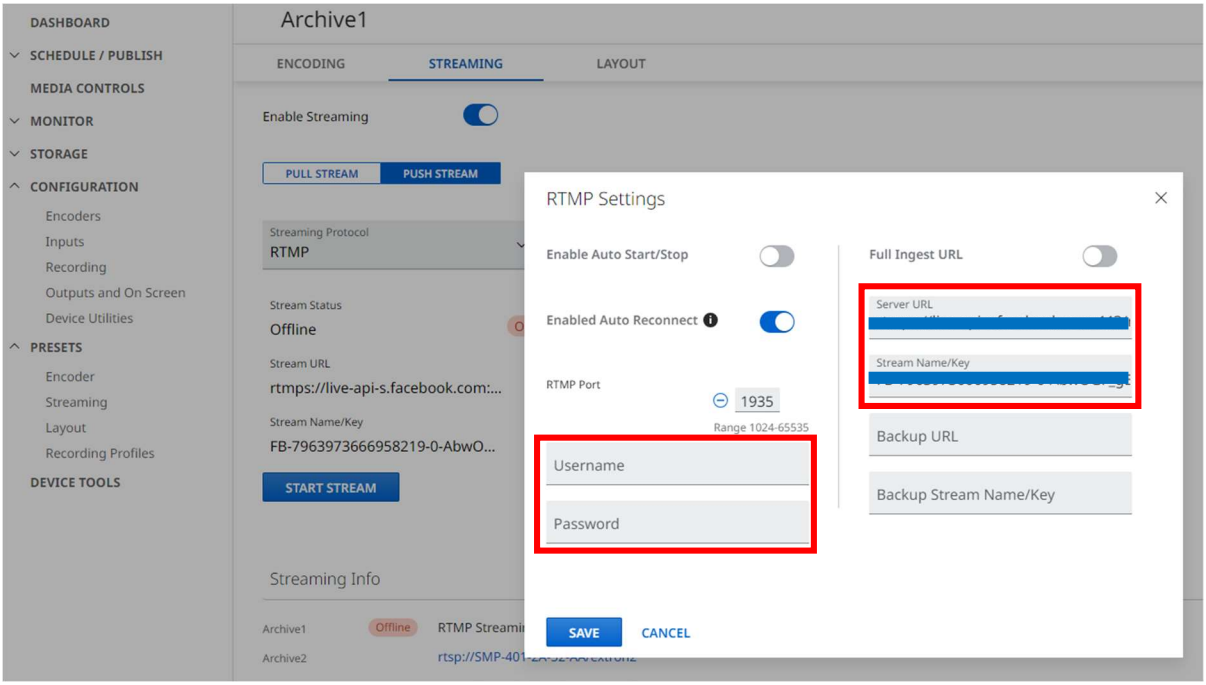
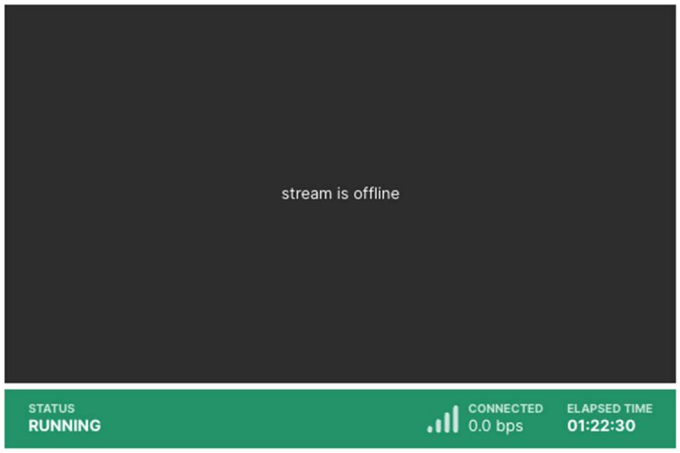
For the **SMP 401**



15. Back on the Wowza Video web page, select **Start live stream**. Wowza Video opens the stream and connects with the encoder.

16. When Wowza Video shows the stream status as **Running**, go back to the SMP or SME encoder, click “Start RTMP stream” button to activate the stream.



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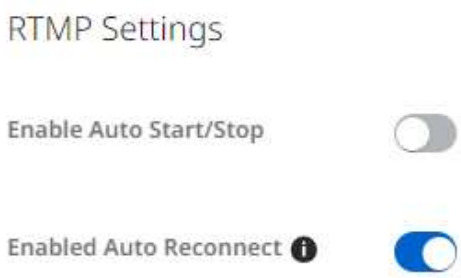
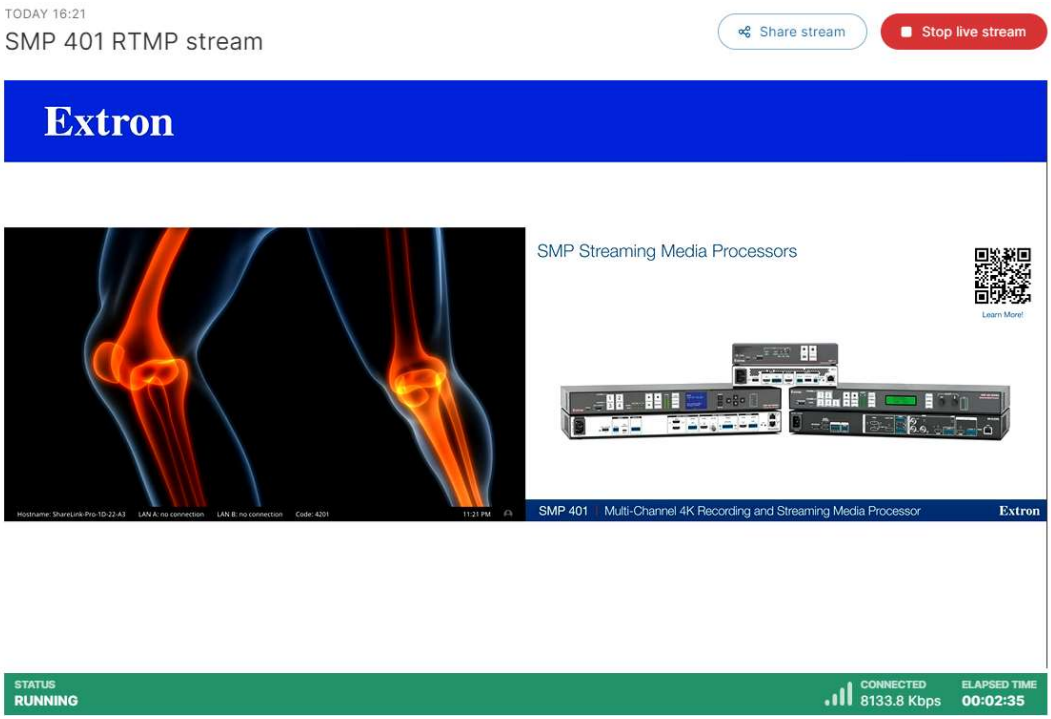
Notes:

- You can also select Auto Start which will start the stream automatically when recording starts.

For the **SMP 401**



17. The Wowza Video Live stream overview page shows a video snapshot and statistics for review.



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18. Test your stream playback
    - On the browser window you opened in step 12 with the hosted page, verify you see the stream playback.
    - If you sent the hosted page URL to your viewers, you're seeing their viewing experience.
19. Stop your stream
    - When you're done streaming, in Wowza Video, click **Stop live stream** at the top of the live stream page. Then stop the stream in the SMP or SME encoder.

Note: If you stop the Encoder before the Wowza Live Stream, the public will see an error.

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Recommended Settings:

Optimizing Video Encoding Settings for Your Use Case | Wowza

Audio Bitrate: 128 kbps
Audio Sample Rate: 44.1 kHz or 48 kHz
Resolution: Maximum 4K / 2160p @60fps
FPS: Max 60
GOP: Max 60 (ensure IDR interval ≤ 2 seconds)
Video Bitrate: Set for 80% of available bandwidth using speed test depending upon resolution.

- 4K/60: 10000 -35000 kbps
- 1080p/60: 6400 – 12000 bps
- 1080p/30: 3200 – 6000 Kbps
- 720p/30: 1600 – 4000 Kbps
- 480p: 500 – 2000 Kbps

Rate Control: CBR
H.264 Profile: Main/High

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GOP Information (Group of Pictures)

Use a GOP setting to set how often a full I frame is sent.

Formula: GOP/FrameRate = Interval

Frame rate = 30, and GOP = 30 then 30/30 = 1 seconds: an I frame every 1 second.
Frame rate = 30, and GOP = 60 then 60/30 = 2 seconds: an I frame every 2 seconds.
Frame rate = 15, and GOP = 60 then 60/15 = 4 seconds: an I frame every 4 seconds.

An additional setting is available for IDR frames (Instantaneous Decoder Refresh). This setting along with GOP determines how often an Interstitial frame is sent. IDR Frames are helpful for editing and seek playback.

Formula: (GOP/FrameRate) * IDR = Interval

Frame Rate =30, GOP =30, and IDR ratio =2:

I frames alternate with IDR frames, with an IDR frame being sent every 2 seconds, in the order IDR, I, IDR, I.

Frame Rate =30, GOP = 60, and IDR ratio = 1:

Every I frame is also an IDR frame and they are sent every 2 seconds, in the order IDR, IDR, IDR, IDR.

Frame Rate =30, GOP = 60, and IDR ratio =2:

I frames alternate with IDR frames, with an IDR frame being sent every 4 seconds, in the order IDR, I, IDR, I.

Frame Rate = 30, GOP = 20, and IDR ratio = 3:

Every third I frame is an IDR frame with an IDR frame being sent every 2 seconds, in the order IDR, I, I, IDR, I, I.

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