

# BEGIN

## User Guide

Version 1.0.0

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## Document Revision History

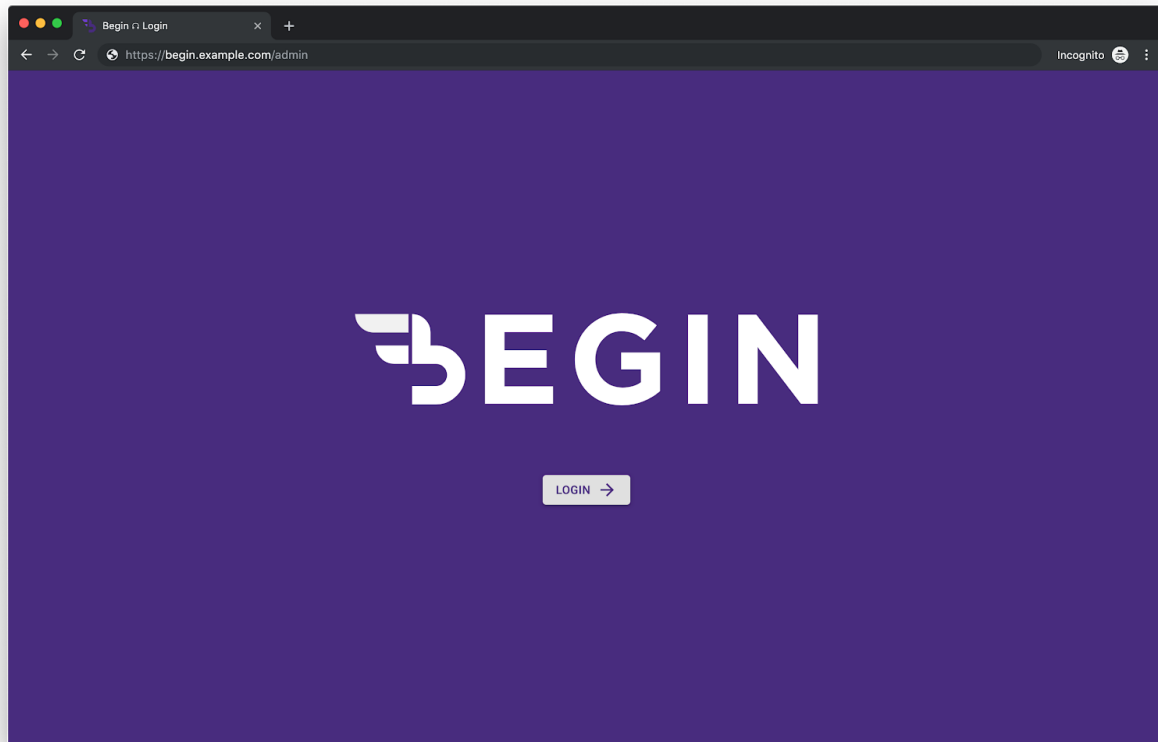
**Monday, June 10th, 2019**

- Initial release of documentation.

## Logging In

Visit the HTTPS **/admin** path from the Biblio web address. If the Biblio web address were **https://begin.example.com**, the address would be **https://begin.example.com/admin**.

Click **Login** to continue.

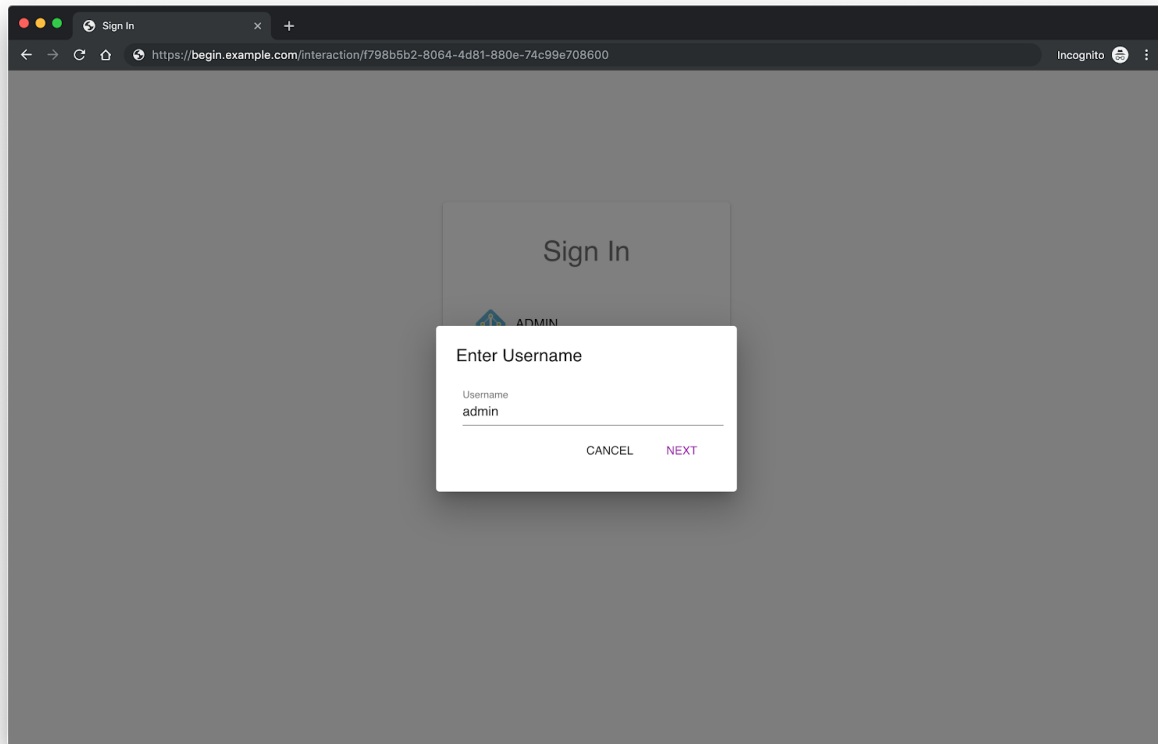


On the Sign In page, enter the default username in the Username field and click **Next**.

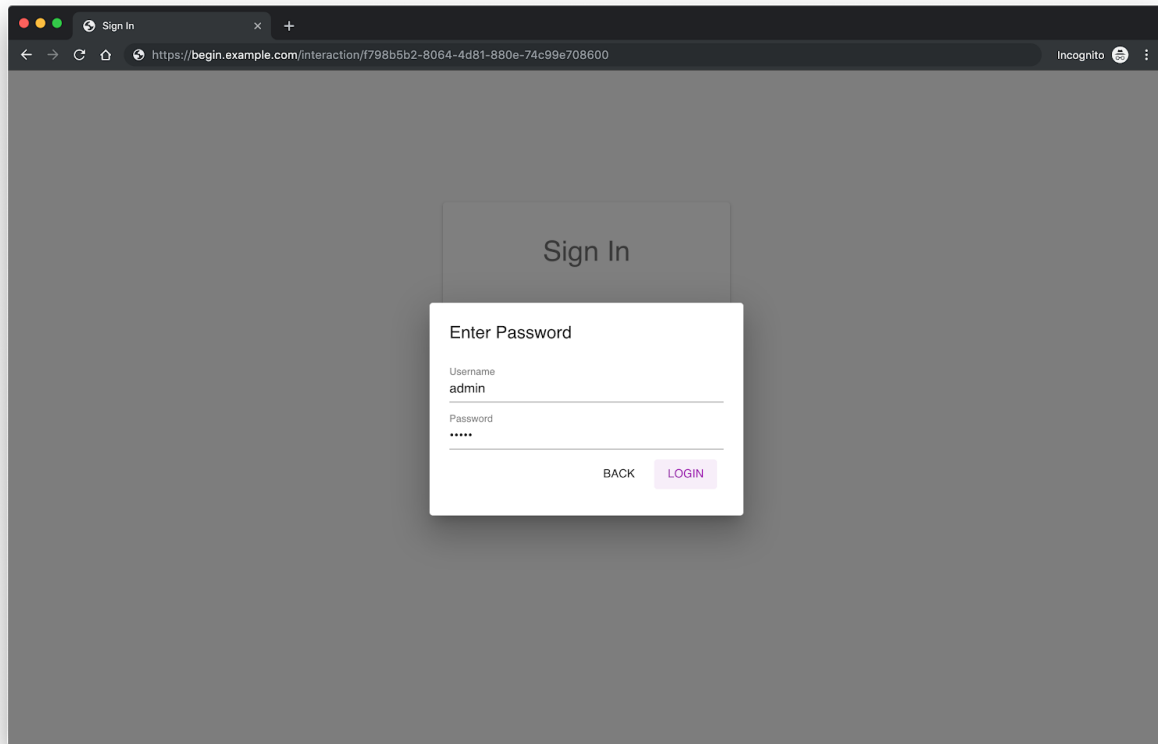
## Default User Credentials

**Username:** admin

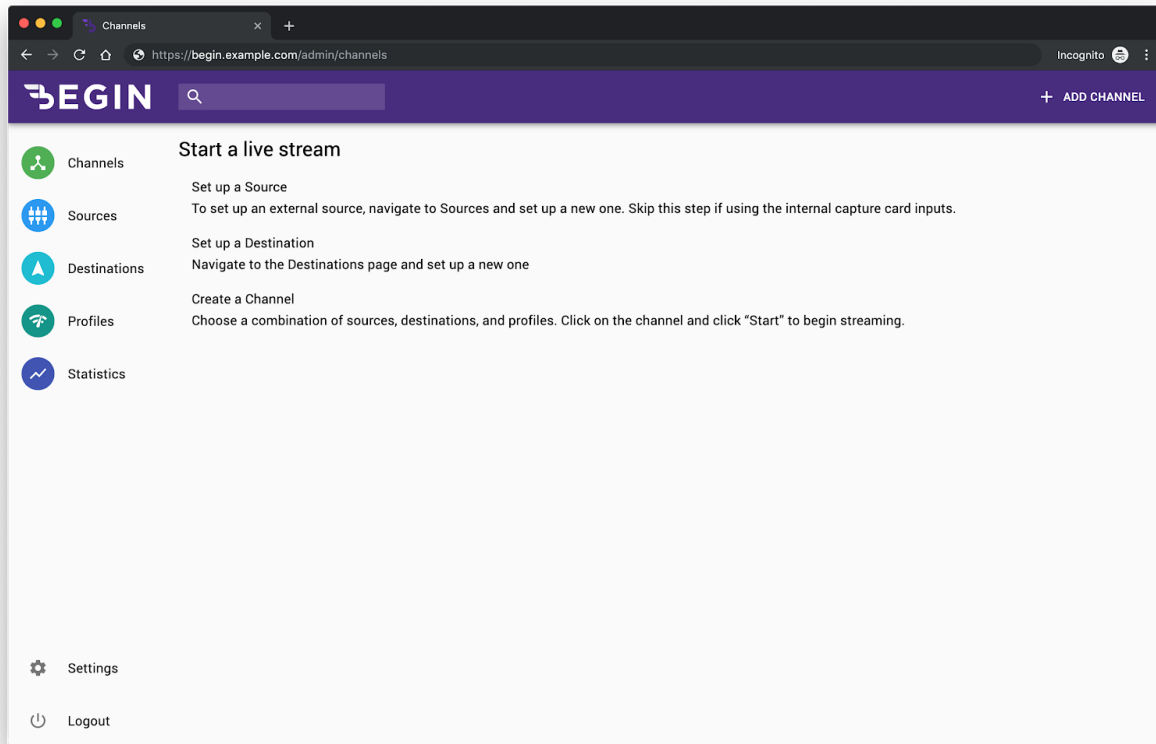
**Password:** admin



Enter the password for the default user and click **Login**. The password of the default user would be **admin**.



After logging in successfully page is redirected to begin client administration dashboard.



# Sources

## Overview

Sources page shows the list of video, audio input streams available to the begin encoder. On the Sources page user can:

- Add new media source
- Update existing media source
- Delete media sources

## Supported Input Sources

### Over Network

The following input source formats are supported on the begin encoder,

- HLS
- Dash
- RTSP
- RTP
- UDP Mpeg Transport stream

#### HLS

HLS input sources that are hosted on Web server or CDN are supported. HLS streams are in the following format,

**http:** //<server\_hostname>/<path\_to\_hls>/<playlist\_name> .**m3u8**

**https:** //<server\_hostname>/<path\_to\_hls>/<playlist\_name> .**m3u8**

#### Dash

Dash sources that are hosted on web server or CDN are supported. Dash playlist are in the following format,

**http:** //<server\_hostname>/<path\_to\_dash\_stream>/<playlist\_name> .**mpd**

**https:** //<server\_hostname>/<path\_to\_dash\_stream>/<playlist\_name> .**mpd**

#### RTSP

RTSP Input sources that are hosted on RTSP stream server are supported. RTSP streams are in the following format,

**rtsp:** //<server\_hostname\_or\_ip\_address>/<path\_to\_stream>



## RTP

RTP Input streamed over network to the begin encoder either via unicast or multicast protocol are supported. For example, the RTP stream input URL would be the URL to SDP file that's hosted on a web server.

**http://<server\_hostname>/<path\_to\_rtp\_stream>/<playlist\_name>.sdp**  
**https://<server\_hostname>/<path\_to\_rtp\_stream>/<playlist\_name>.sdp**

For example if begin is hosted on begin.example.com, then the sample SDP file would look like,

```
v=0
o=- 0 0 IN IP4 127.0.0.1
s=Sample Stream
t=0 0
a=tool:libavformat 58.20.100
m=video 6970 RTP/AVP 96
c=IN IP4 begin.example.com
a=rtpmap:96 H264/90000
a=fmtp:96 packetization-mode=1
m=audio 6980 RTP/AVP 97
c=IN IP4 begin.example.com
b=AS:96
a=rtpmap:97 MPEG4-GENERIC/48000/2
a=fmtp:97
profile-level-id=1
```

## UDP MPEGTS

UDP stream in **mpegts** format streamed over the network either via unicast or multicast protocol are supported. For example, If the server name of begin encoder is **begin.example.com** and the port is **18500** then the sample UDP stream input url would look like,

### Unicast

**udp://begin.example.com:18500**

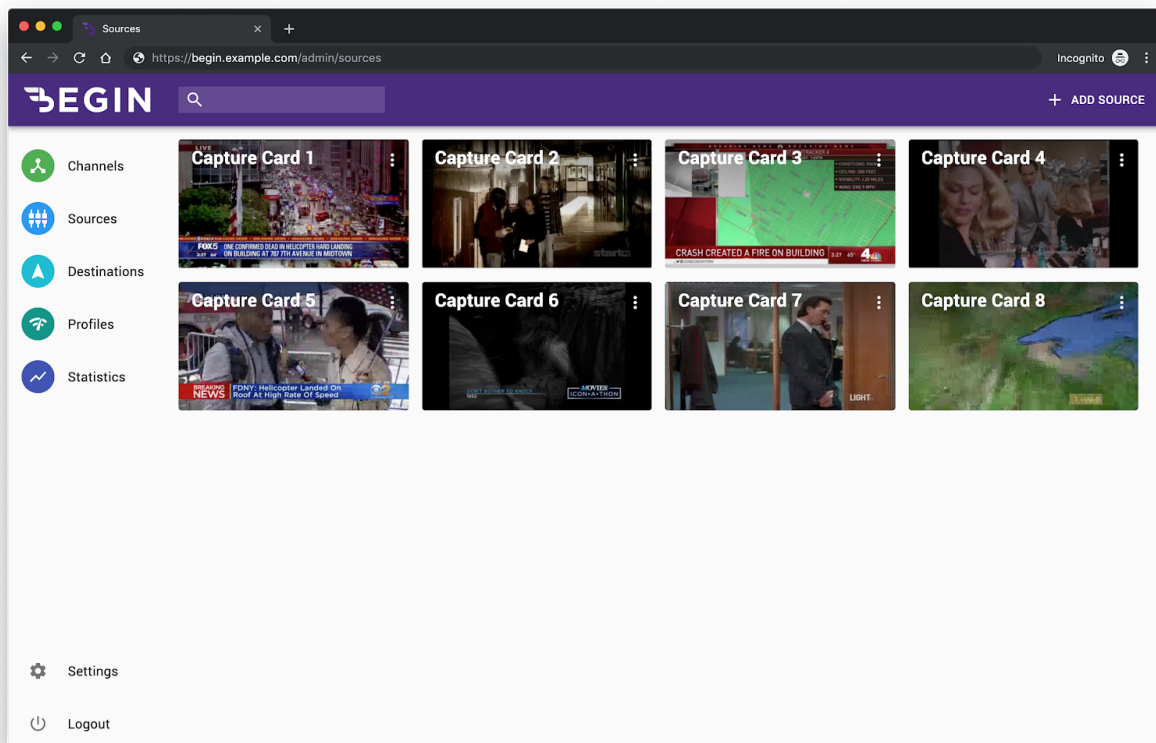
### Multicast

**udp://239.255.0.1:18500**

## HDMI Capture

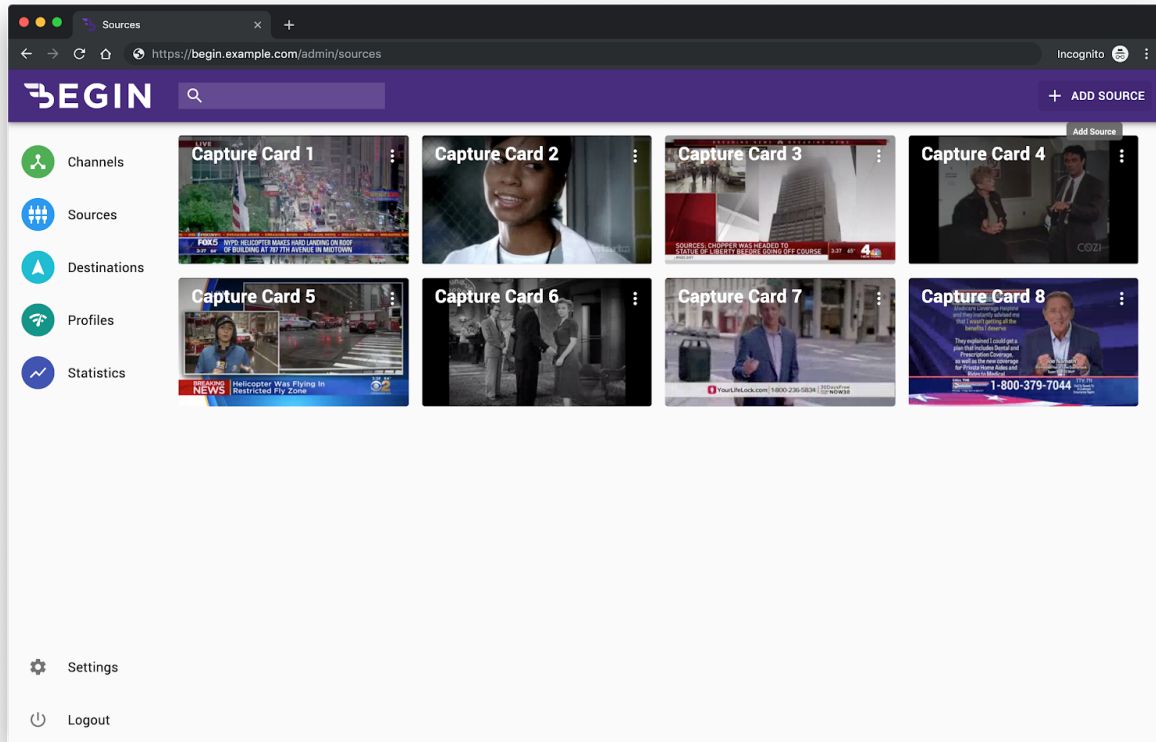
Begin encoder has **8 HDMI** input ports available, If a media device is plugged into the available HDMI inputs then the corresponding input source titled Capture Card X starts to play the media available through the HDMI source.

For example, If the HDMI signal is connected to begin encoder on **port 1**, then the media stream starts to play on **Capture Card 1**.



## Adding Source

Input sources can be added by clicking on the + **Add Source** button located at the top right hand corner of Sources page.



Enter the following details in the Add Source dialog to add a source,

**Name**

Name of the source that can be used to identify the input source on Sources page.

**Description** (Optional)

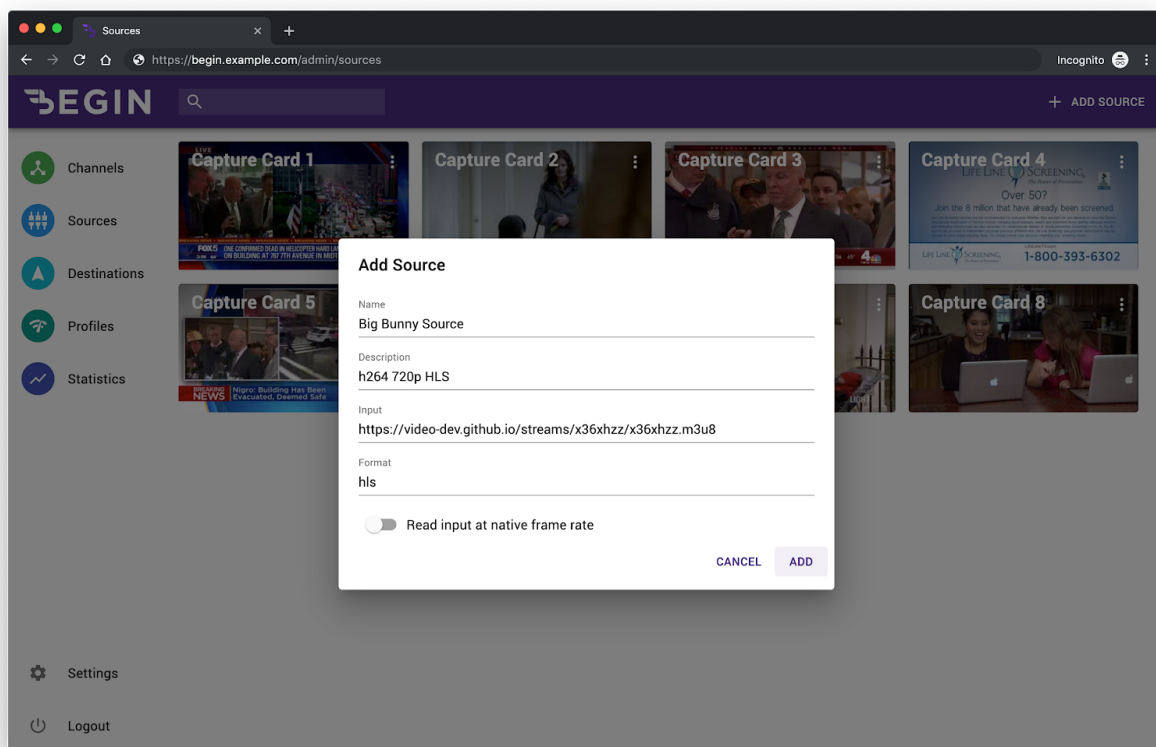
Description of the input source.

**Input**


URL of the input source. The URL can be in any of the available formats, See [Available Inputs](#)

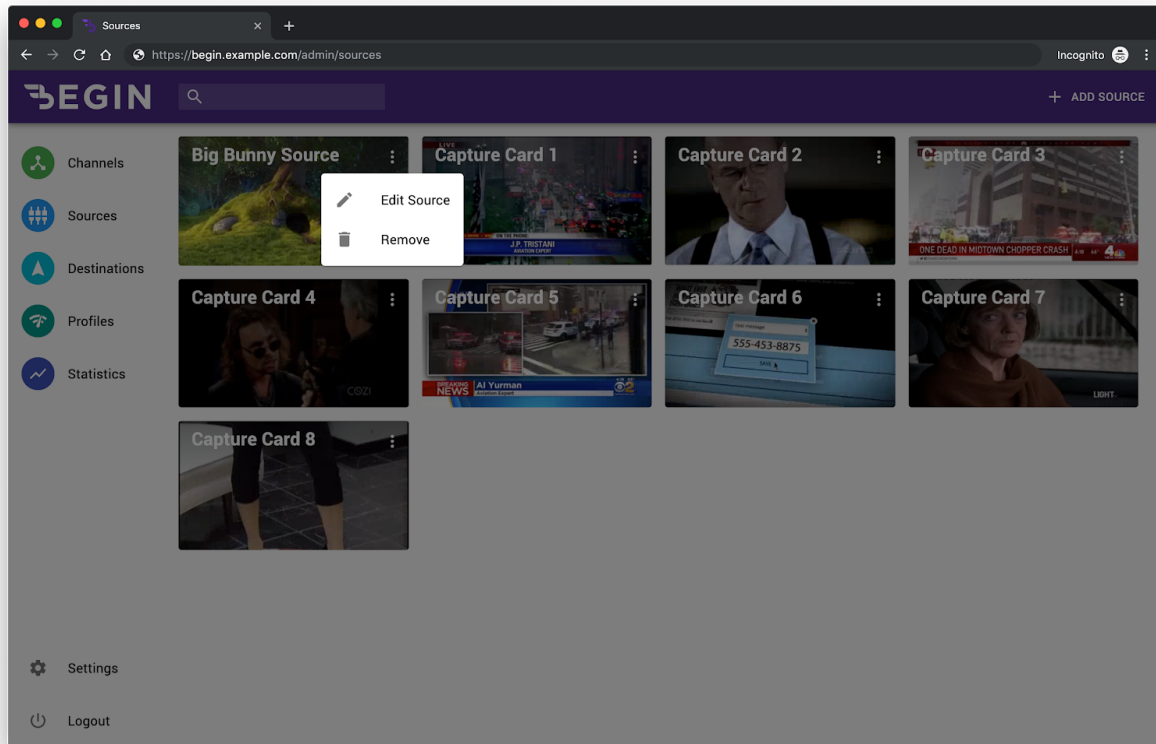
**Format**

Media format type of the input source.

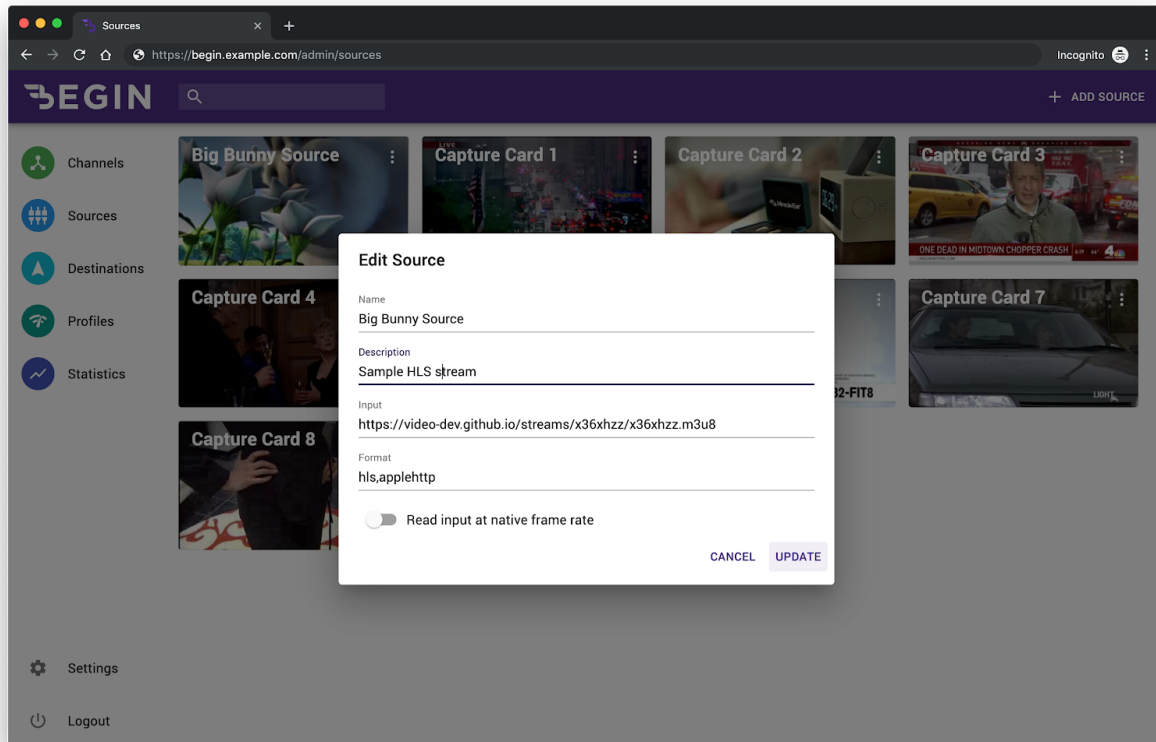


## Updating Sources

Input Sources can be updated by clicking on the  icon on the top right corner of the input card.

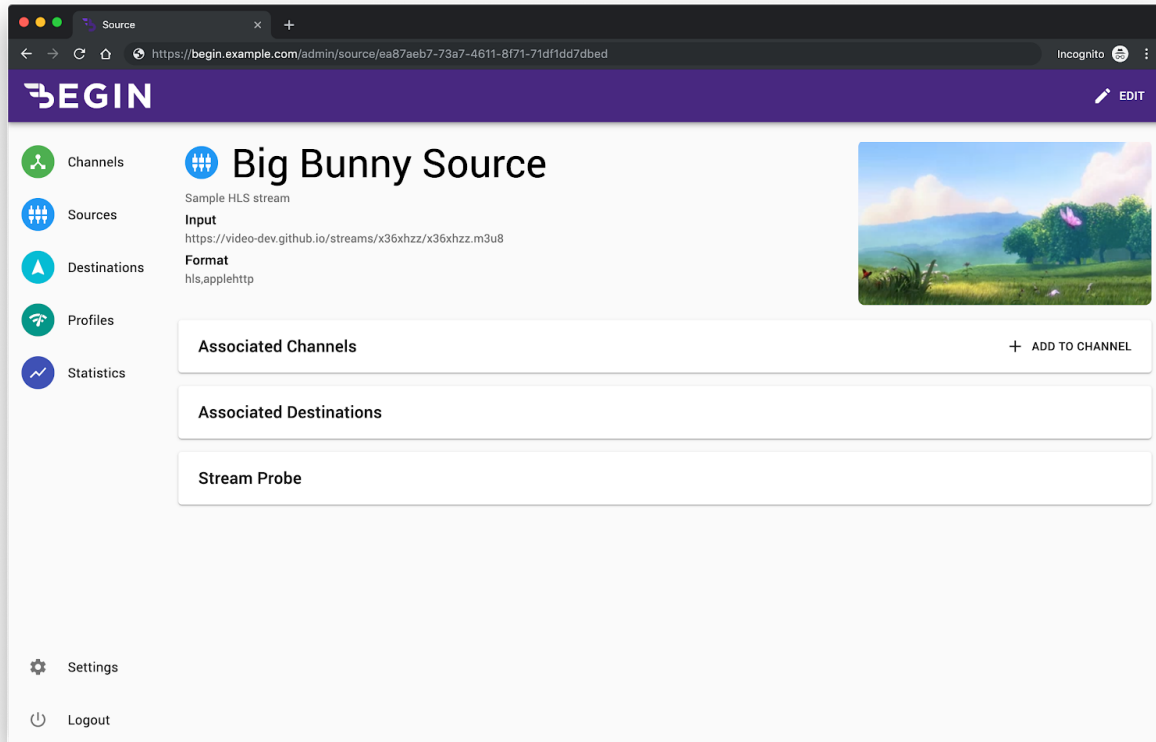


Make changes to the fields in the **Edit Source** dialog and click on the **Update** button to apply the changes.




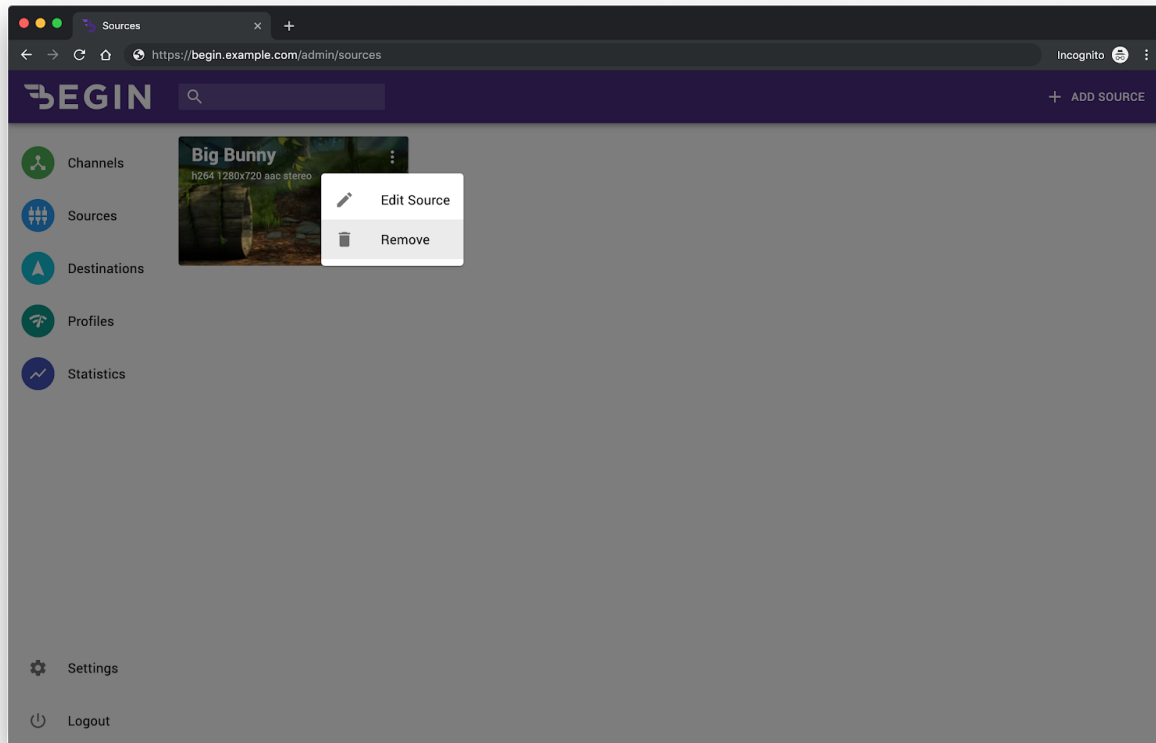
Sources can also be updated on specific input source page by clicking on the input source card playing the stream on the Sources page.

Click on the **Edit** icon at the top right hand corner of the page to update the source.



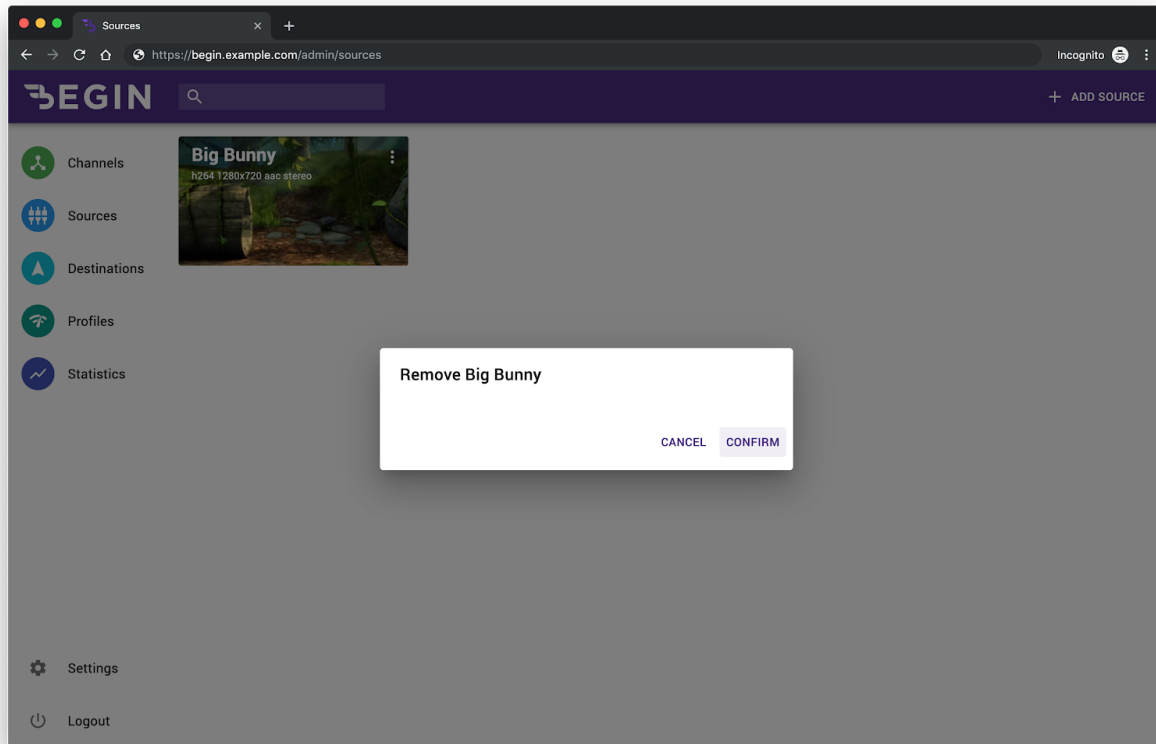
## Removing Sources

Input sources can be removed by clicking on the  icon on the input source card, click on the **Remove** button on the more dialog.





Click on the **Confirm** button on the confirmation dialog to delete the input source.



# Destinations

## Overview

Destinations page shows the list of output streams from begin encoder that can be consumed by other applications. On destinations page users can:

- Add destination stream
- Update destination stream
- Remove destination stream

## Supported Formats

The destination streams can be configured with the following formats,

- HLS
- DASH
- RTP
- MPEG-TS
- RTSP

### HLS

HLS destination streams are hosted on the begin server for 3rd party to consume. For example If the server name of the begin encoder is **begin.example.com** then the destination stream URL would look like,

**`https://begin.example.com/storage/<stream_id>/playlist.m3u8`**

### DASH

DASH destination streams are hosted on begin server for 3rd party to consume, If the begin server is hosted on begin.example.com then the destination dash stream url would look like,

**`https://begin.example.com/storage/<stream_id>/manifest.mpd`**

### RTP

RTP destination streams are streamed to 3rd party over the network via unicast or multicast formats. For example if the server name of the begin encoder is begin.example.com then the SDP file URL for the destination RTP stream would look like,

**`https://begin.example.com/storage/<stream_id>/stream.sdp`**

### MPEG-TS

MPEG-TS destination streams are streamed to 3rd party over the network via unicast or multicast formats. For example, if the IP address of the 3rd party device that's consuming the stream is **10.121.32.100** and port is **44351** then the destination stream URL would look like,

**`udp://10.121.32.100:44331`**

**`udp://<multicast_ip_address>:44331`**

### RTSP

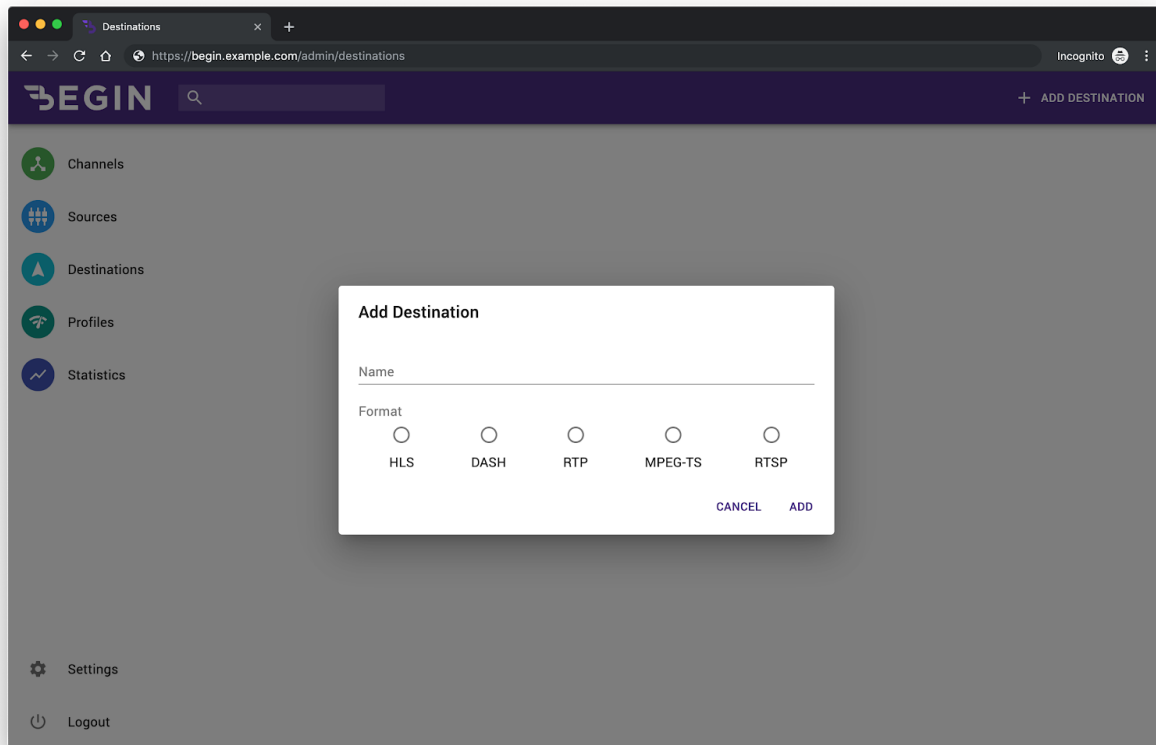
RTSP destination streams are hosted on the begin server for 3rd party to consume. For example If the server name of the begin encoder is **begin.example.com** then the RTSP destination stream URL would look like,

**`rtsp://begin.example.com:8554/live/<stream_id>`**

## Adding Destinations

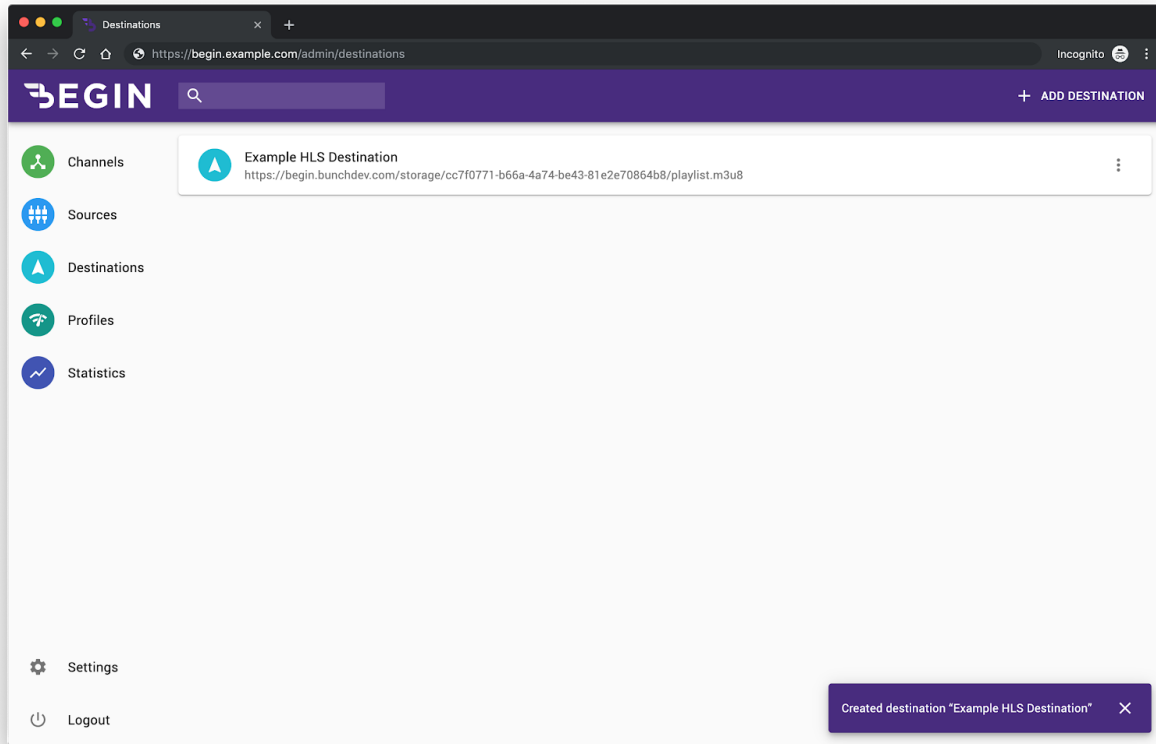
### HLS, Dash, RTSP

Destinations can be added by clicking on the **+ Add Destination** button on the top right hand corner of the Destination page.

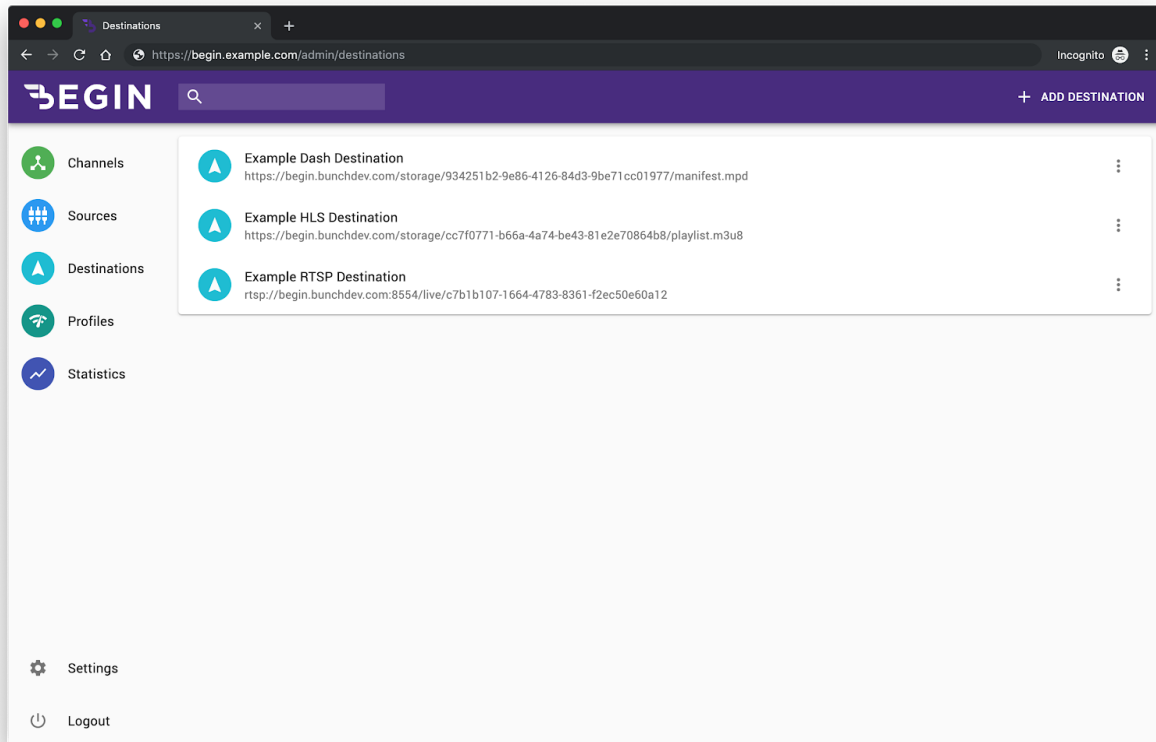


Enter the name of the destination and choose one of the available formats as the destination stream format. Click on the **Add** button to save the destination stream.

For example, If the destination stream has to be in HLS format then choose **HLS radio button** and click **Add**.



Similarly to add Dash, RTSP destination streams, Enter the name of the destination stream, click on the respective radio button and click **Add** to save the destination stream.



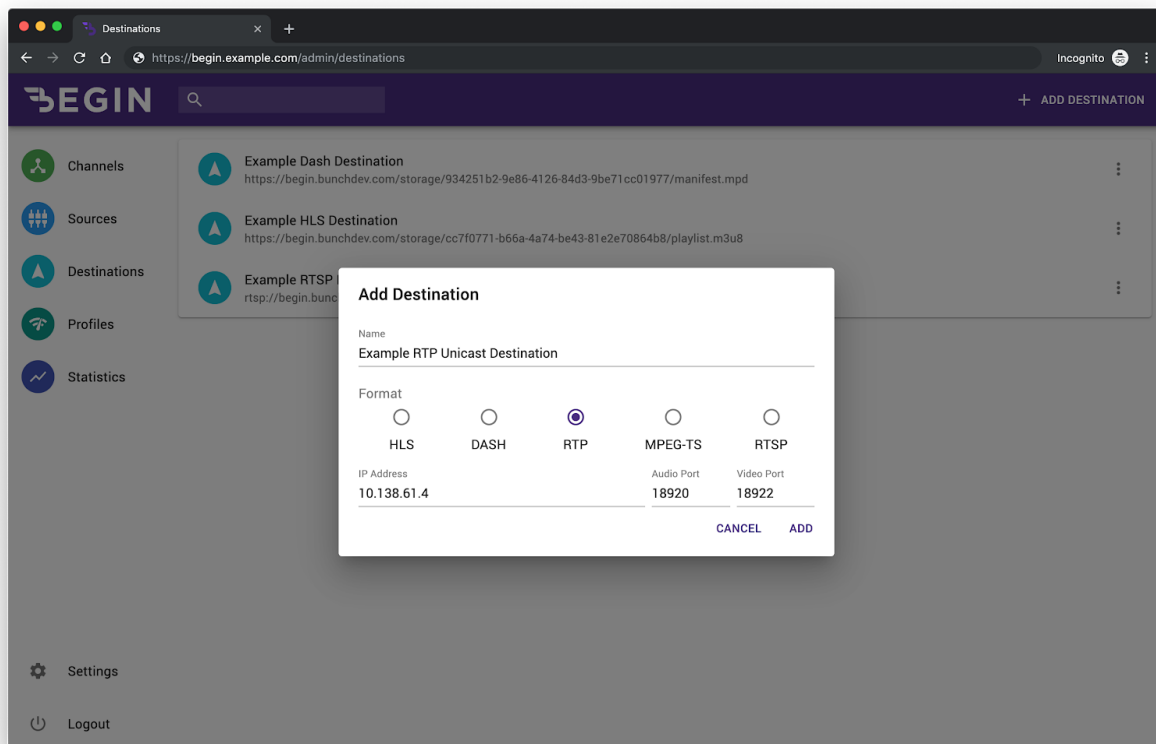
## RTP

### Unicast

RTP destination requires the IP address, audio port and video port of the 3rd party that's going to consume the stream.

Enter the name of the destination stream, choose the RTP radio button and enter the IP address, audio port and video port in their respective fields. Click on the **Add** to save the destination stream.

For example, If the IP Address of the 3rd party is **10.138.61.4**, 18920, 18922 are the audio and video ports respectively,

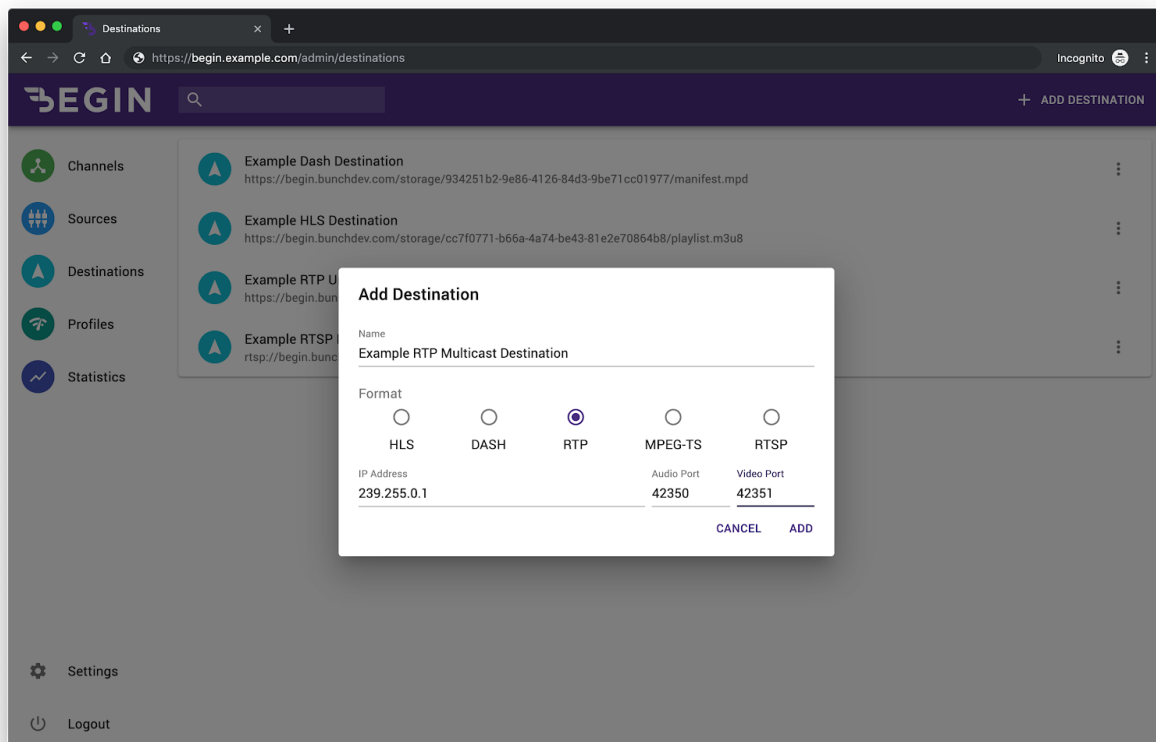


## Multicast

RTP destination stream over multicast requires a multicast IP address, audio port and video port.

Enter the name of the destination stream, choose the RTP radio button and enter the multicast IP address, audio port and video port in their respective fields. Click on the **Add** button to save the destination stream.

For example, if the destination stream is served on the local network with the multicast IP address as **239.255.0.1** and **42350, 42351** as the audio, video ports respectively,





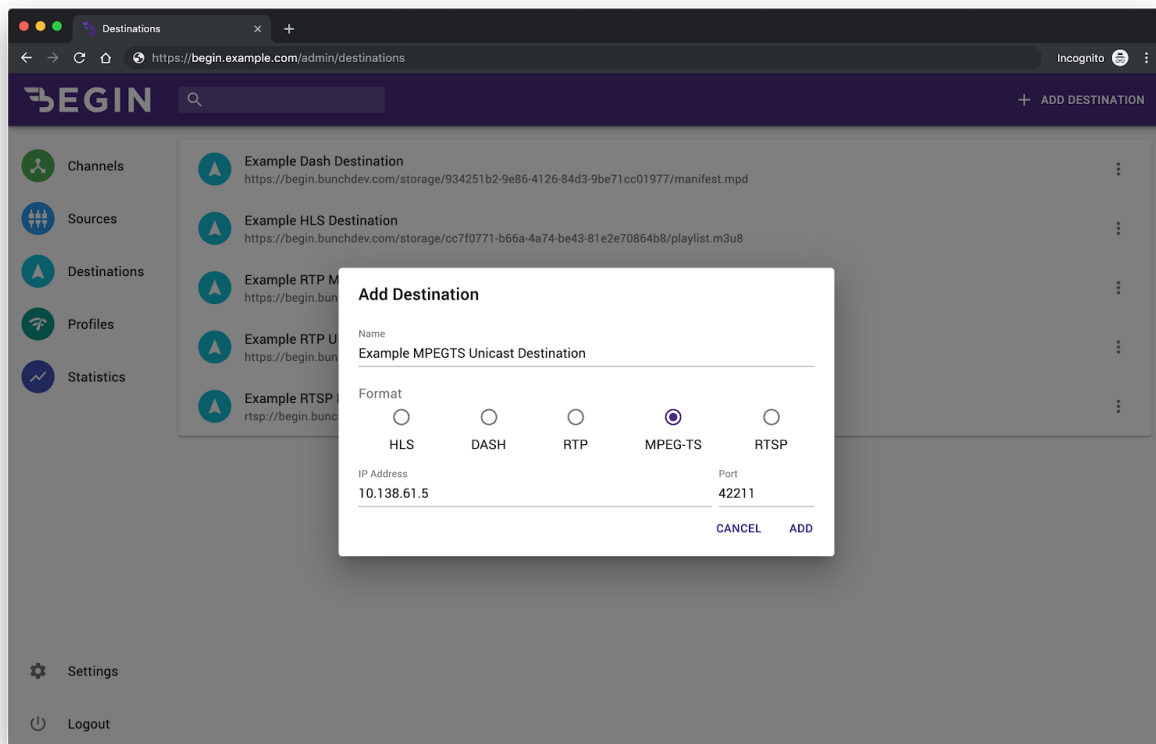
## MPEG-TS

### Unicast

MPEG-TS destination stream over unicast IP requires the IP address and a port of the 3rd party that will consume the stream.

Enter the name of the destination stream, choose the **MPEG-TS radio button** and enter the IP address, port of the 3rd party in their respective fields. Click on the **Add** button to save the destination stream.

For example, If the IP address and port of the 3rd are **10.138.61.5**, **42211**, then the destination stream would be,

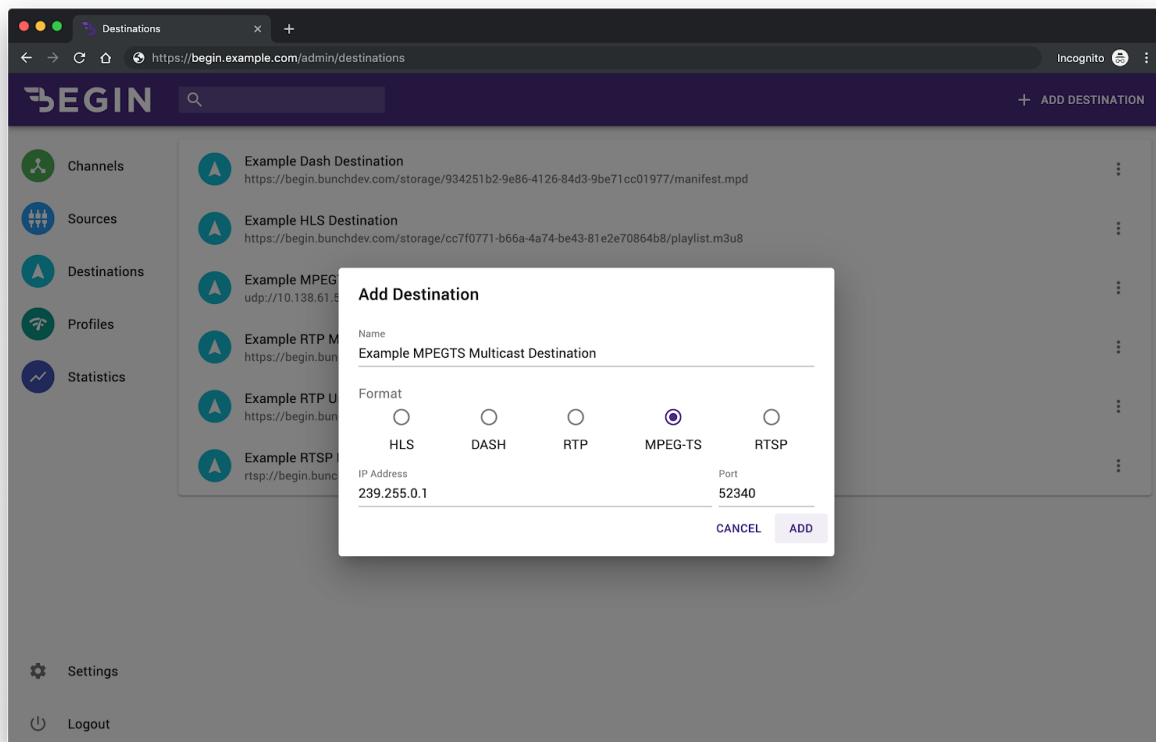


## Multicast


MPEG-TS destination stream over multicast requires a multicast IP address, port.

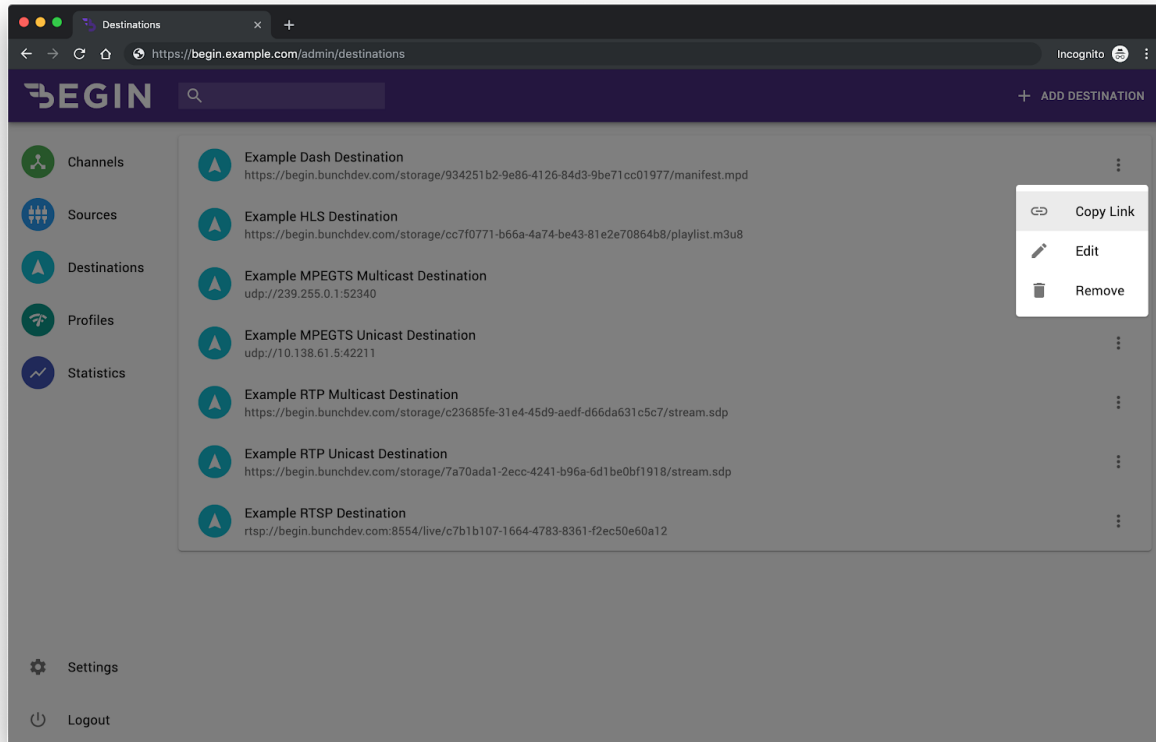
Enter the name of the destination stream, choose the **MPEG-TS radio button** and enter the multicast IP address, port in their respective fields. Click on the **Add** button to save the destination stream.

For example, if the destination stream is served on the local network with the multicast IP address as **239.255.0.1** and **52340** as the port respectively,




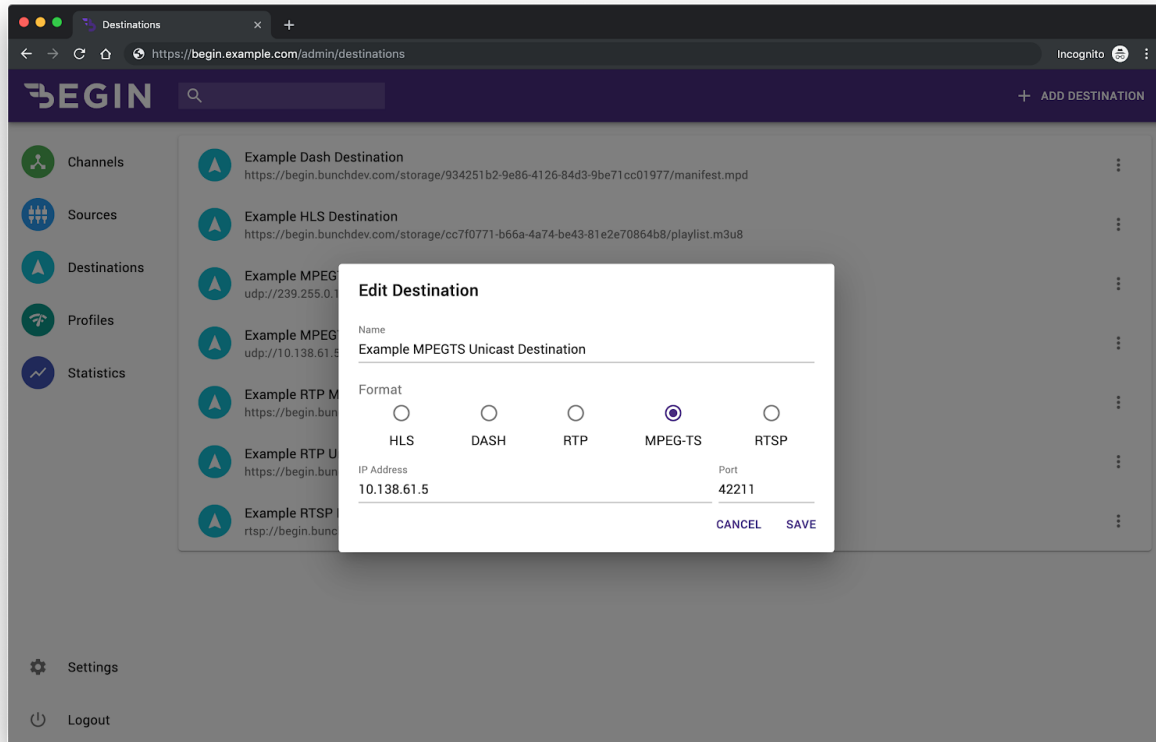
## Copy Destination Stream URL

Destination stream URL can be copied to the clipboard by clicking on the  icon on the right side of the destination, click on **Copy Link** on the options dialog.

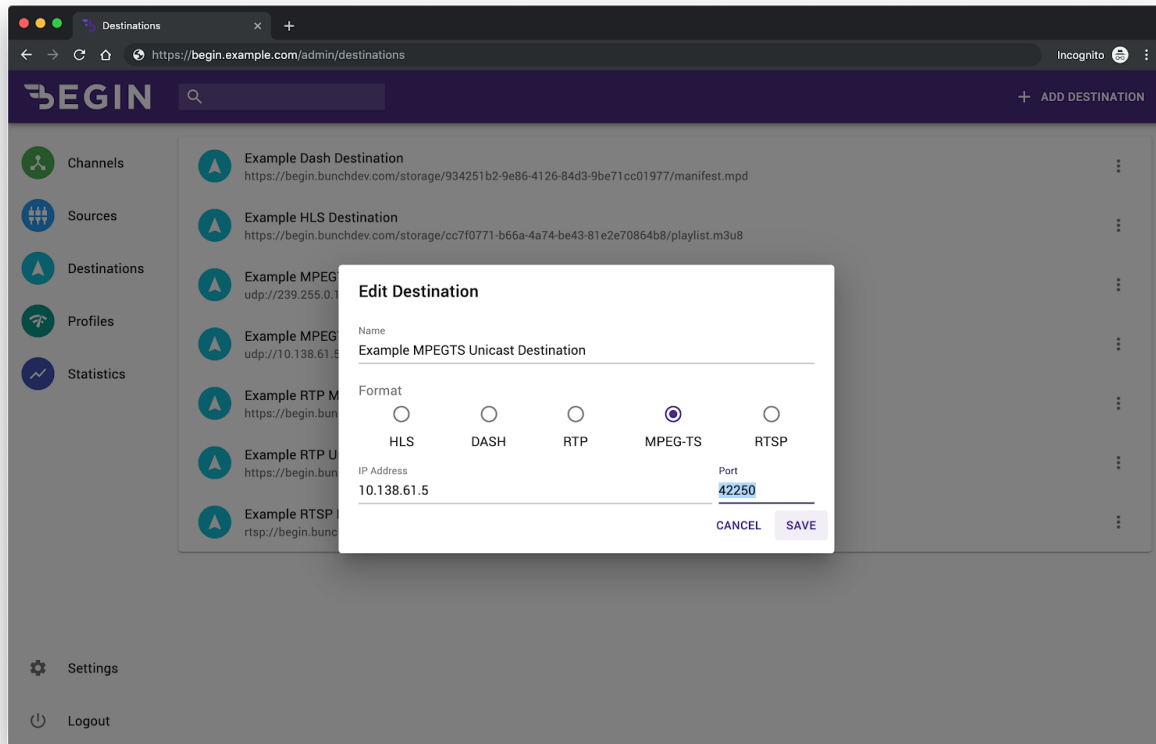


## Updating Destinations

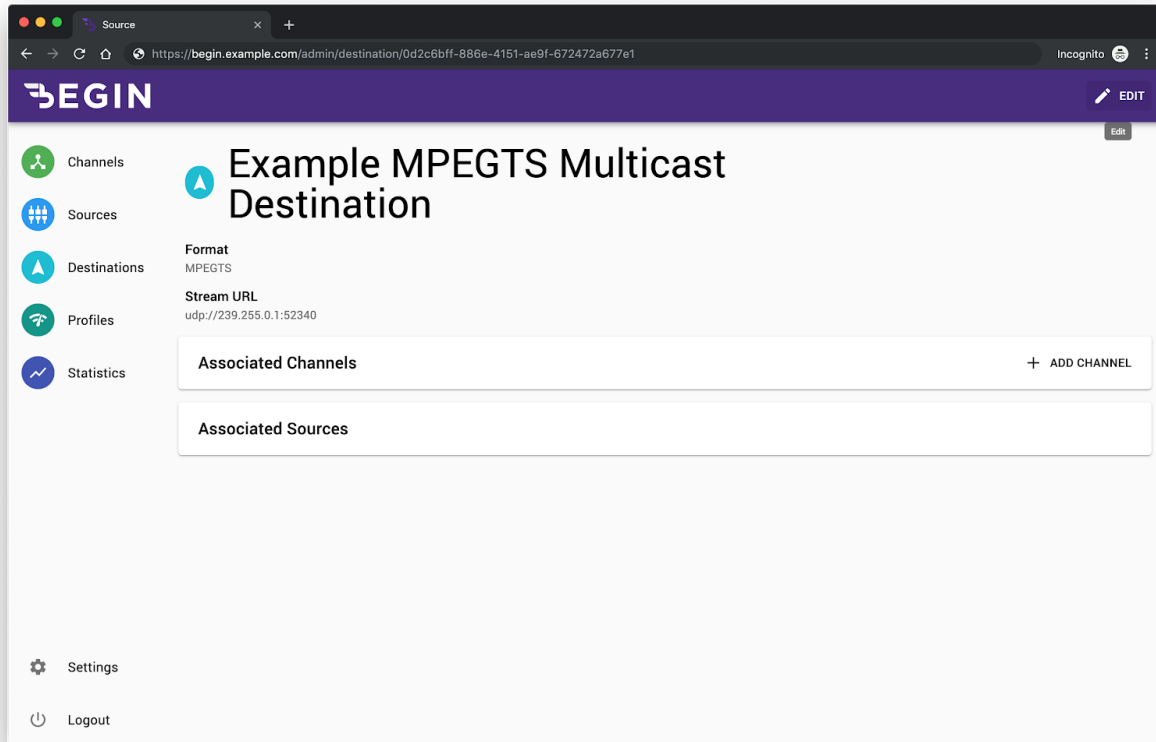
Destinations streams can be updated by clicking on the  icon on the right side of the destination, click on the **Edit** on the options dialog.




Make the necessary changes and click on the **Save** button to save those changes.

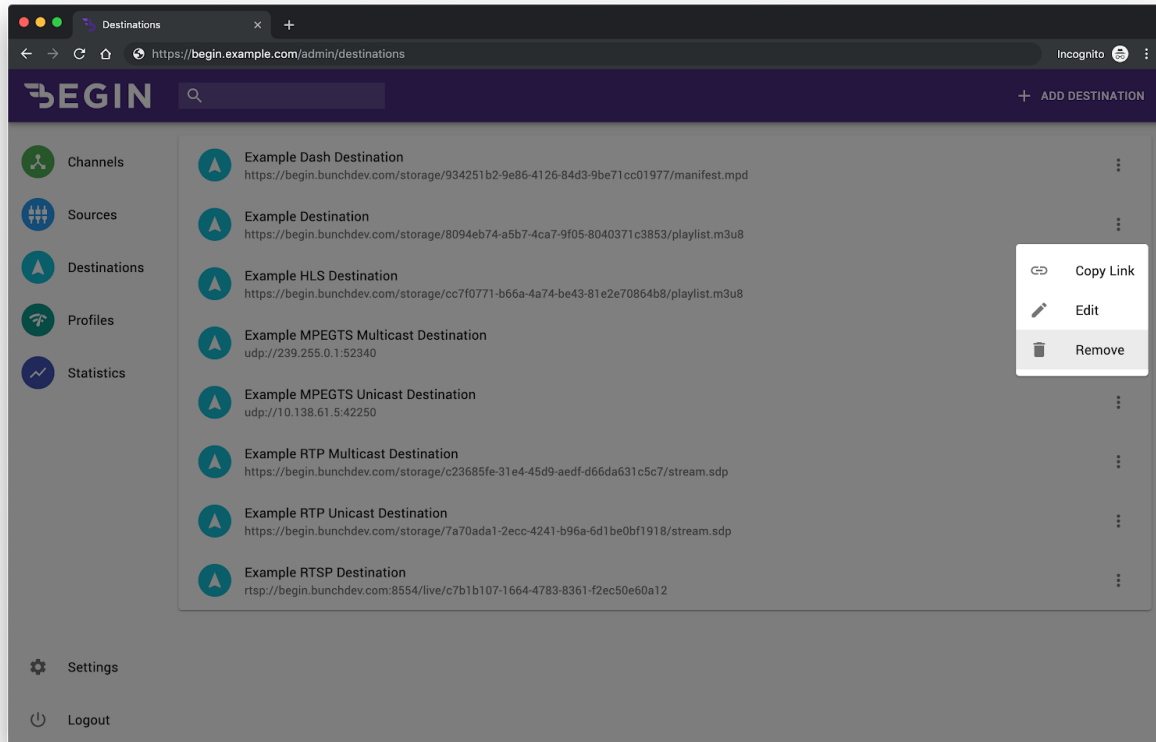


Destination streams can also be updated on the individual destination page. Click on the destination on **Destinations** page to navigate to the individual destination page. Click on the **Edit** button at the top right hand corner of the individual destination page to open the Edit destination dialog.

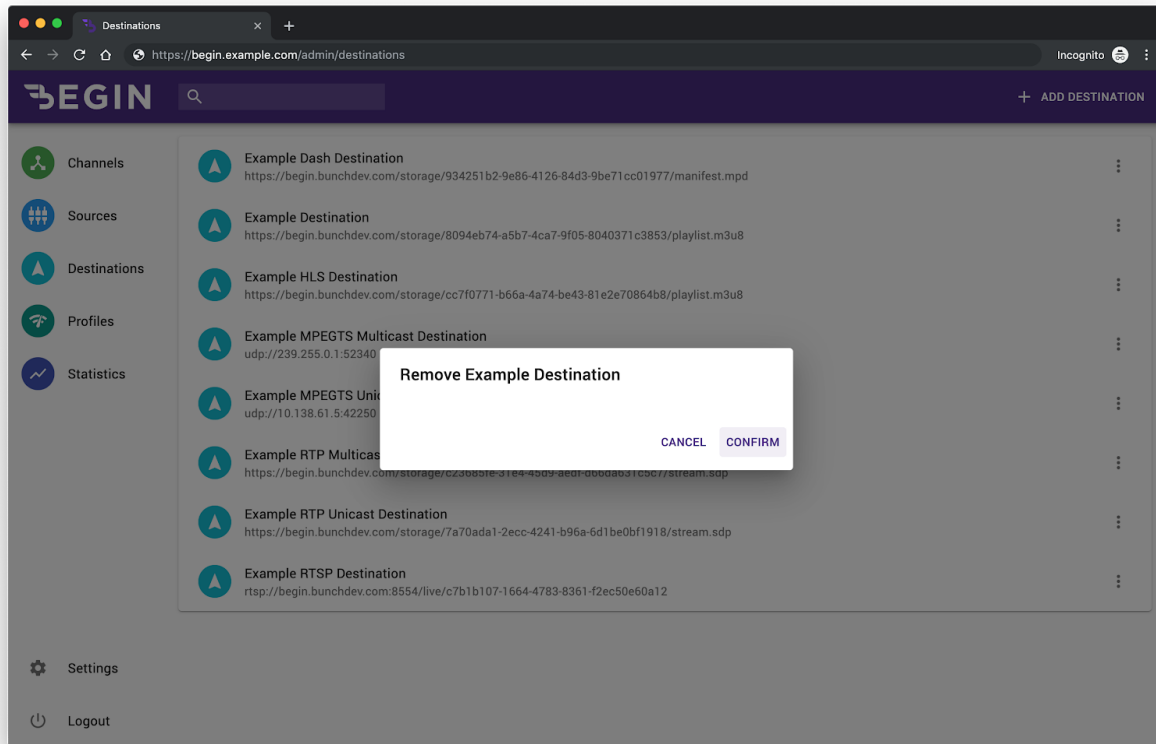


## Removing Destinations

Destinations can be removed by clicking on the  icon located on the right hand side of the destination to open options dialog. Click on **Remove** on the options dialog to remove the destination.



Click on the **Confirm** button on the confirmation dialog to remove the destination.





# Profiles

## Overview

Profiles page shows the list of available audio, video profiles that can be applied on the input sources. On profiles page users can:

- Add audio, video profile
- Edit profile
- Duplicate profile
- Delete profile

## Default Profiles

Begin encoder has a set of optimized audio, video profiles.

### Audio Profiles

Audio profile ships with AAC audio format with the following bitrates,

- 48kbps
- 96kbps
- 128kbps
- 192kbps
- 256kbps

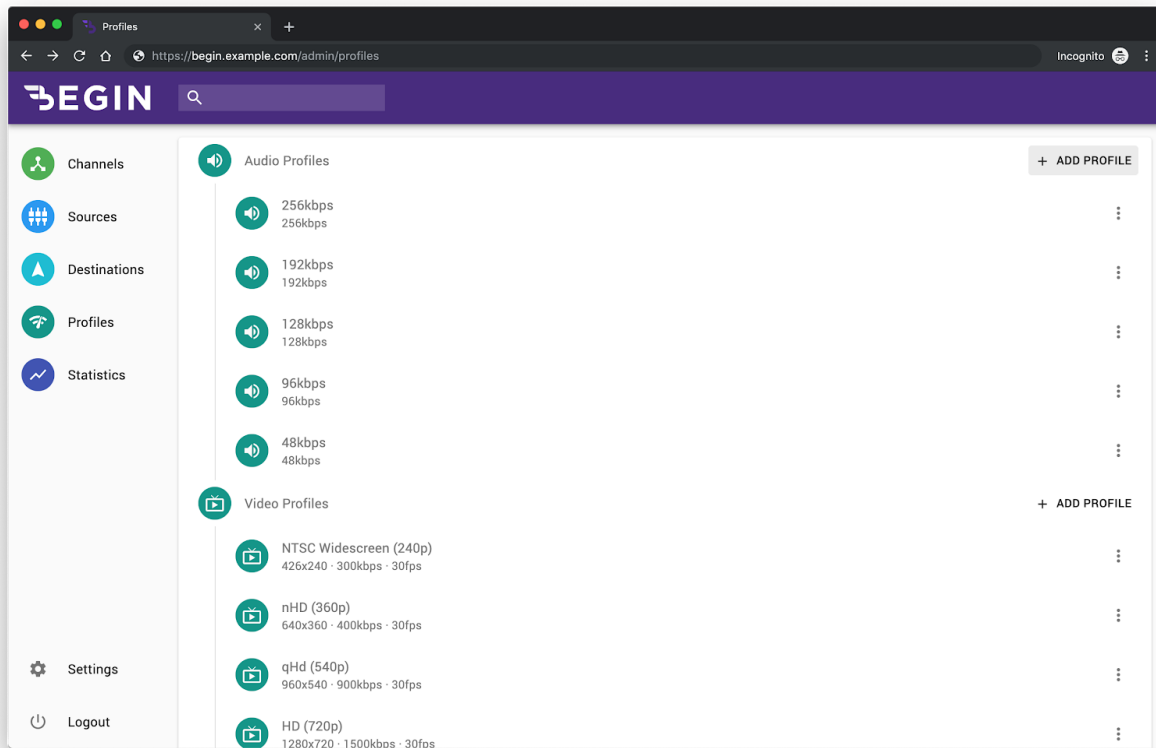
### Video Profiles

Video profile ships with H264 video format with the following video size, bitrate and frames per second,

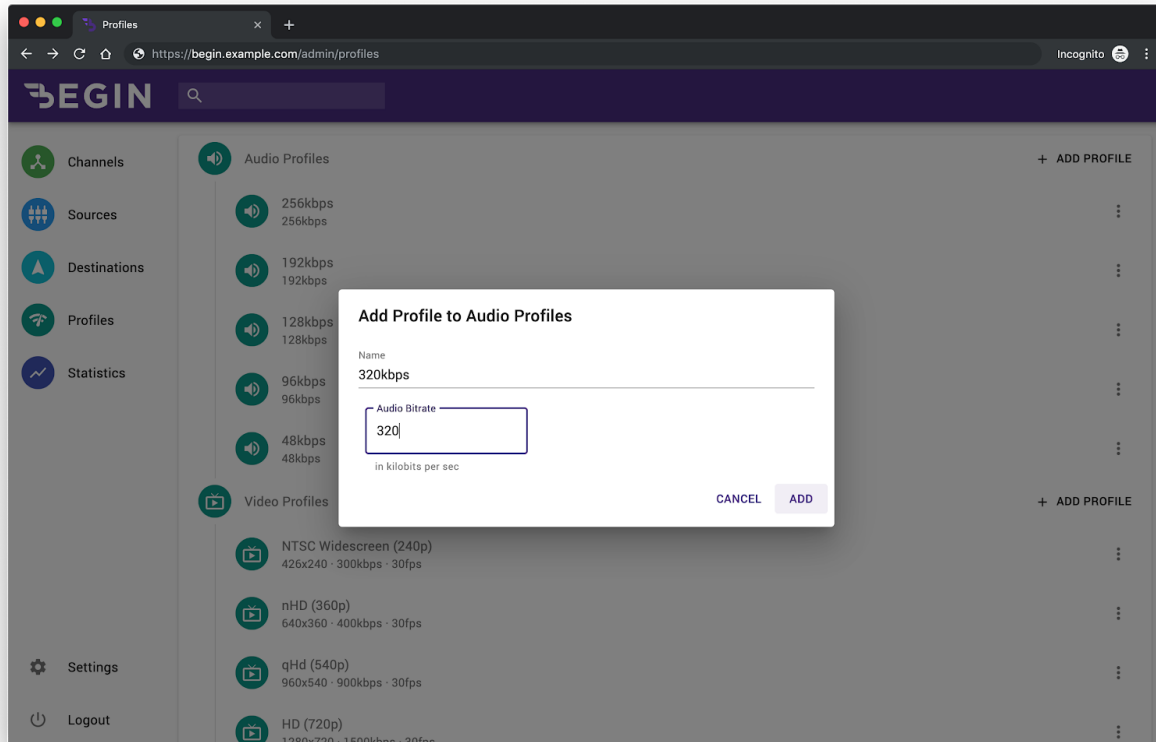
| Name            |       | Resolution | Bitrate (kbps) | Frames per sec |
|-----------------|-------|------------|----------------|----------------|
| NTSC Widescreen | 240p  | 426x240    | 300            | 30             |
| nHD             | 360p  | 640x360    | 400            | 30             |
| qHD             | 540p  | 960x540    | 900            | 30             |
| HD              | 720p  | 1280x720   | 1500           | 30             |
| Full HD         | 1080p | 1920x1080  | 3000           | 30             |

## Adding Audio Profiles


Click on + **Add Profile** button on the right hand side of **Audio Profiles**.

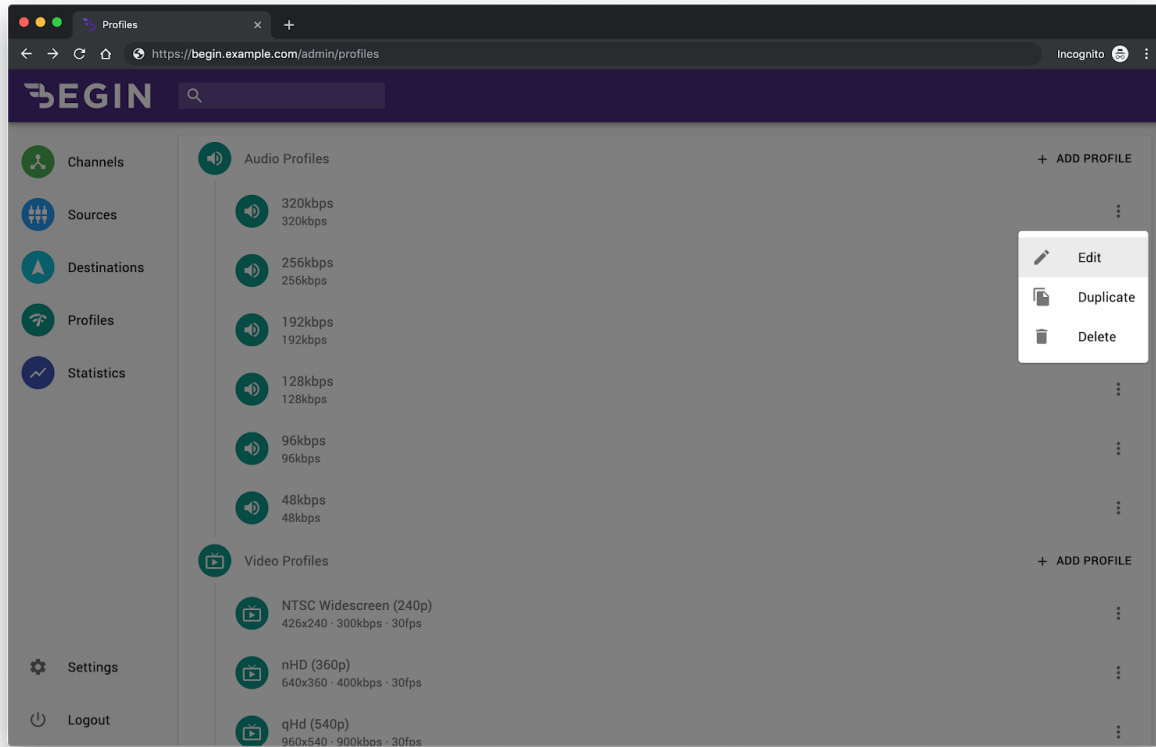


Enter the name of the audio profile and the audio bit rate. For example if the bitrate of the audio is **320kbps** then enter **320** in the Audio Bitrate field. Click on the **Add** button to save the audio profile.

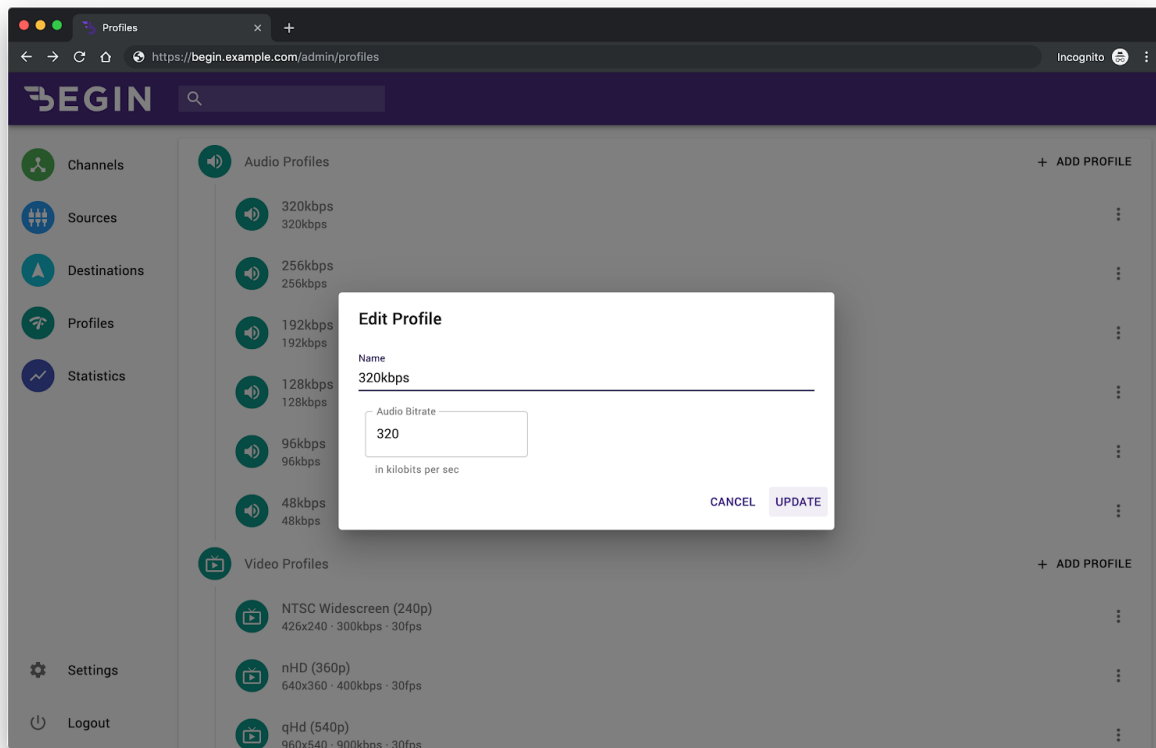


## Editing Audio Profiles

Click on the  icon located on the right hand side of the audio profile to open the options dialog. Click **Edit** in the options dialog to edit the audio profile.

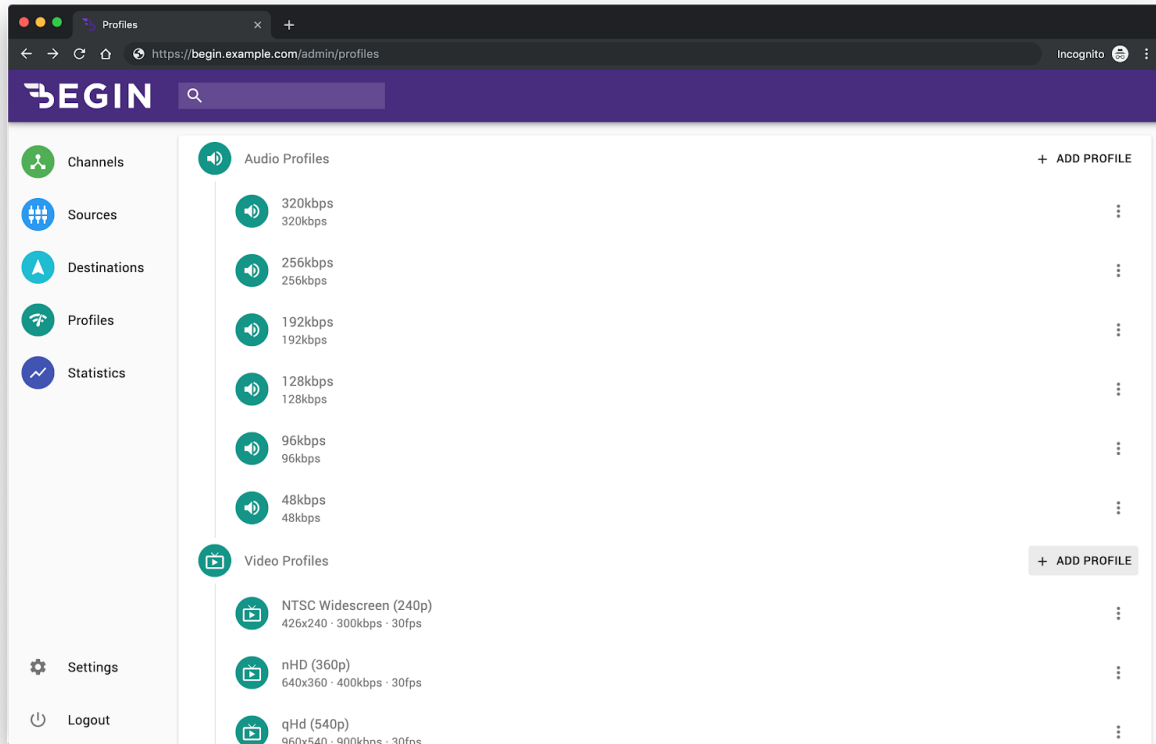


Make the necessary changes and click on the **Update** button to save the updated profile.



## Adding Video Profile

Click on **+ Add Profile** button on the right hand side of **Video Profiles**.



Enter the name of the profile and the following details. Click on the **Add** button to save the profile.

### Width

Width of the video stream, For example, if the desired destination stream to be **2540x1440**, then the width is **2560**.

### Height

Height of the video stream, For example, if the desired destination stream to be **2540x1440**, then the height is **1440**.

### Video Bitrate

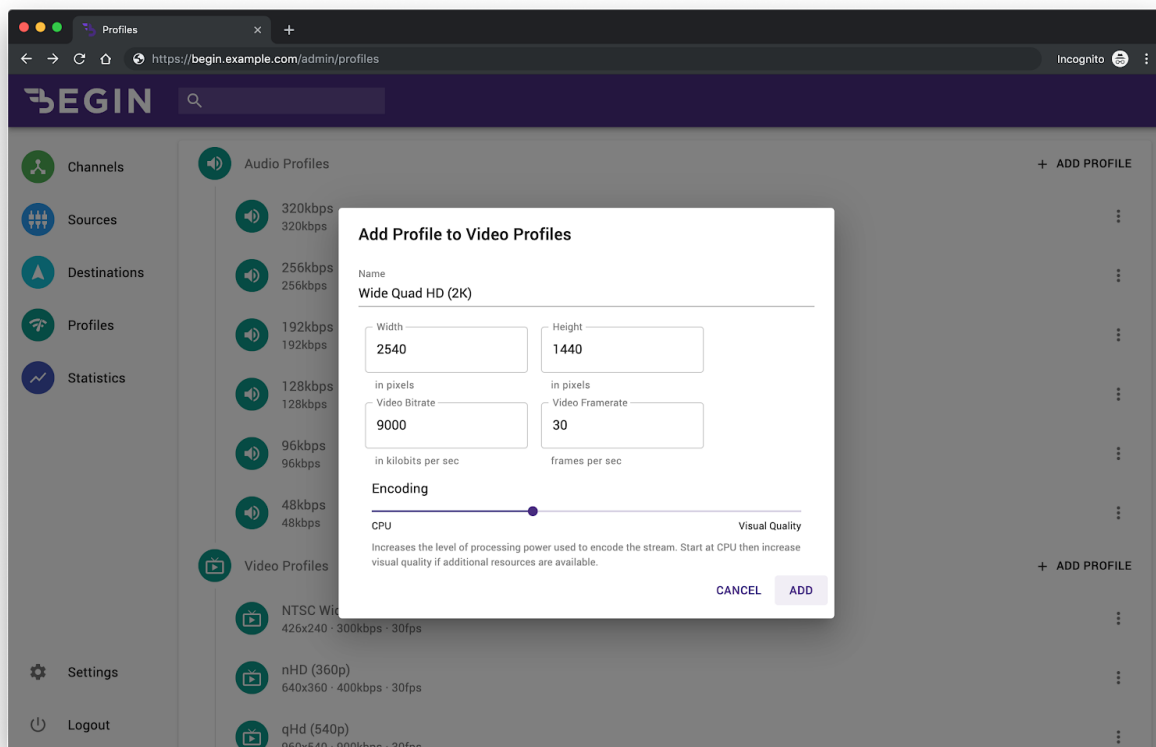
Bitrate of the destination video stream. Quality of the stream is dependent on bitrate.

### Video Frame rate

Frames per seconds of the destination video stream.


### Encoding

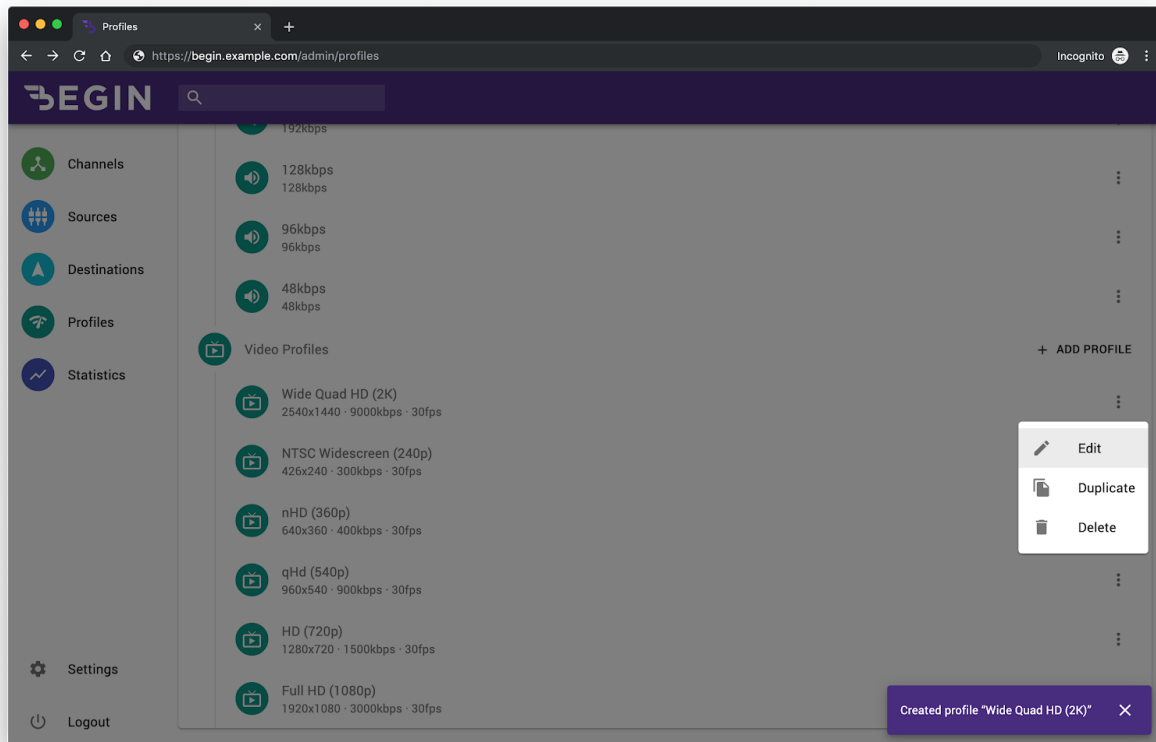
Quality of the desired destination stream. Adjust the value based on available CPU resources and current quality.



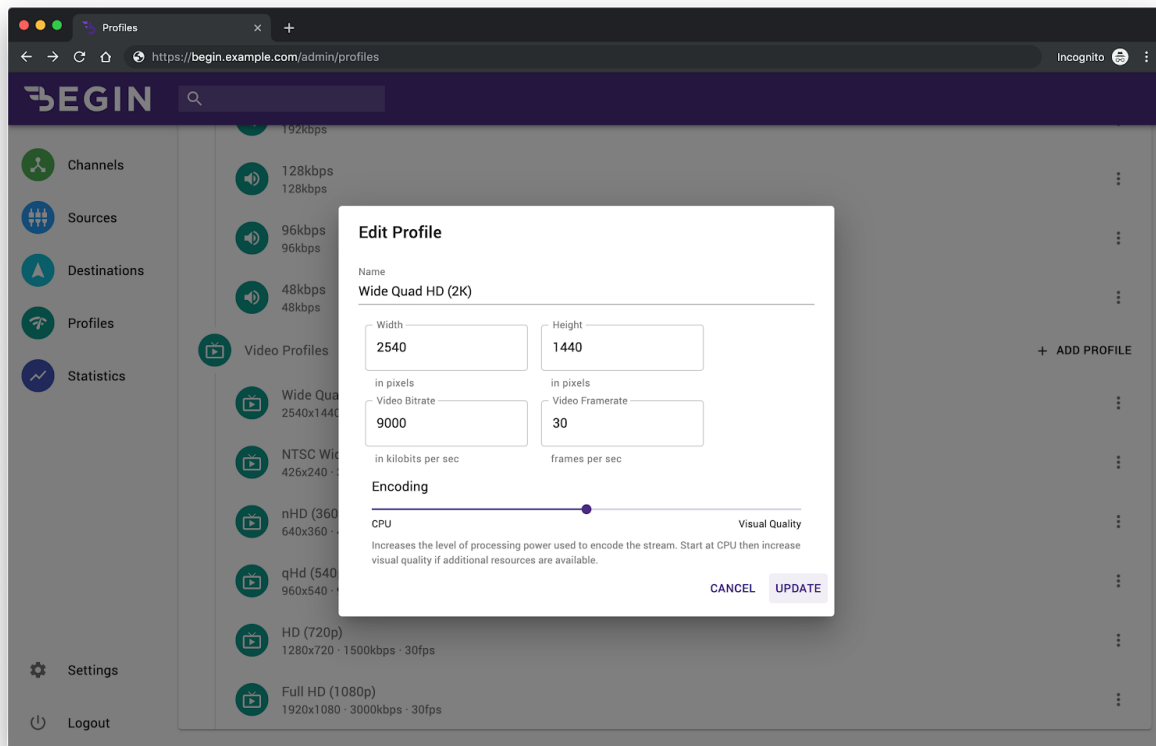


## Editing Video Profile


Click on the  icon located on the right hand side of the video profile to open the options dialog. Click **Edit** in the options dialog to edit the video profile.

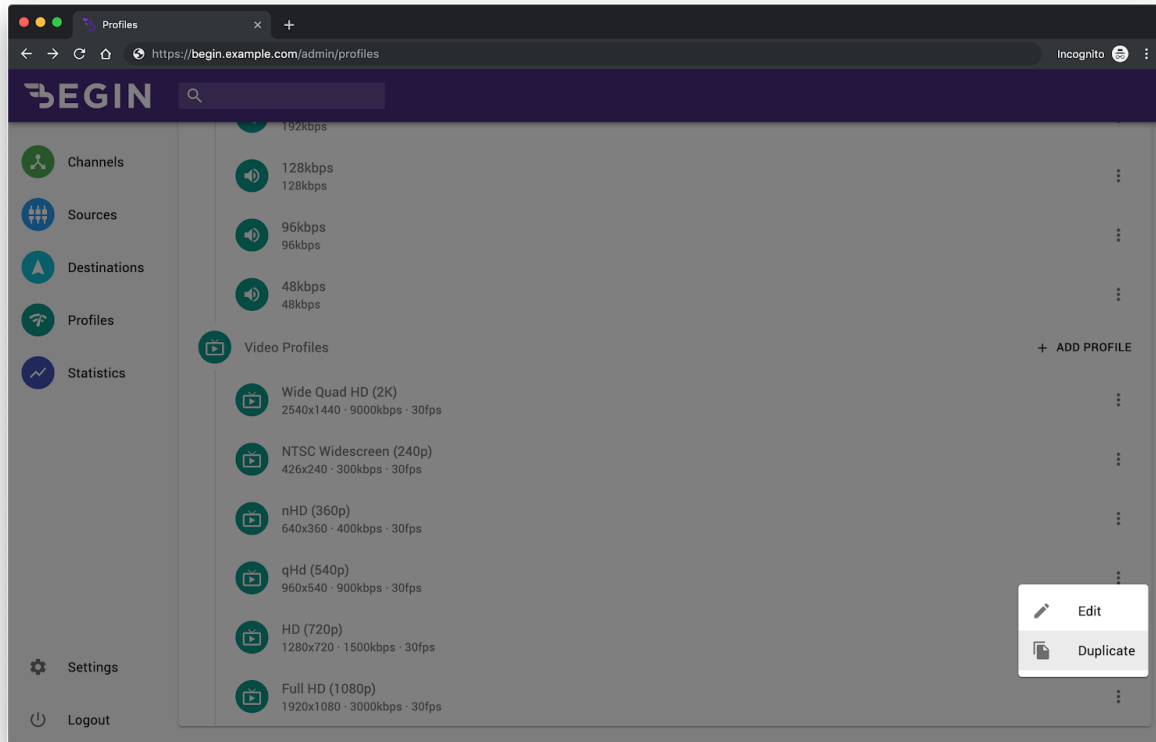


Make the necessary changes and click on the **Update** button to save the updated video profile.

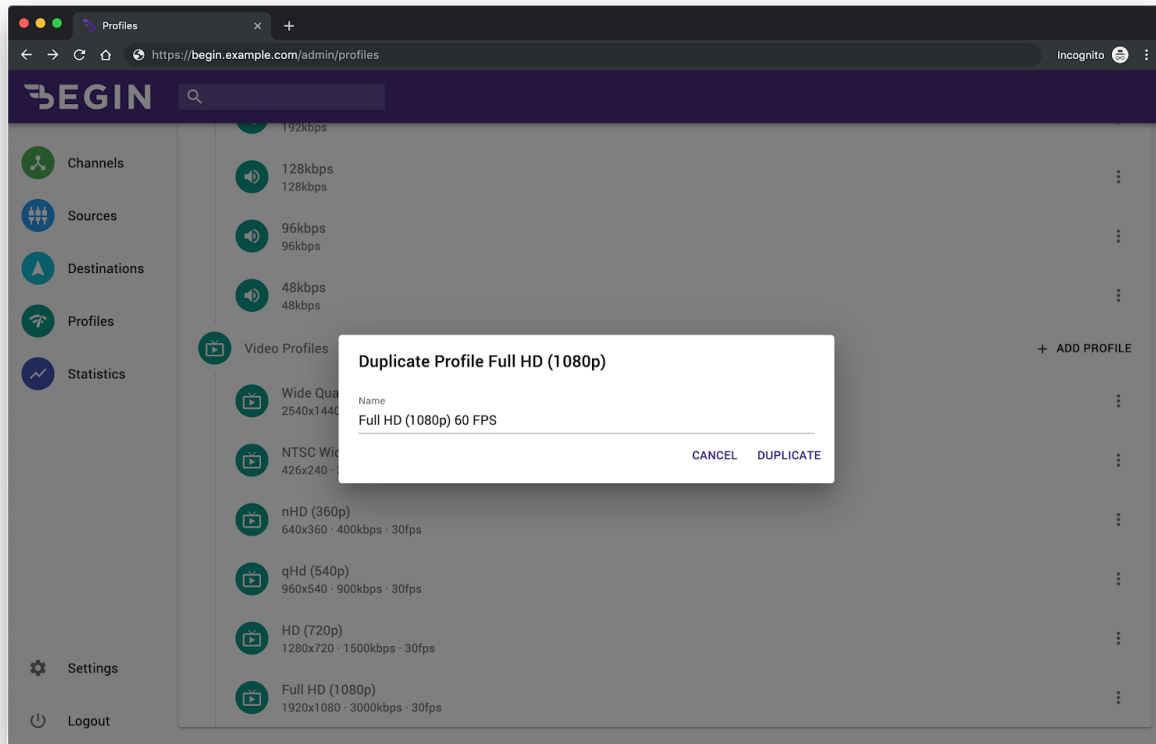


## Duplicating Profile


Click on the  icon located on the right hand side of the profile to open the options dialog. Click **Duplicate** in the options dialog to duplicate the profile.



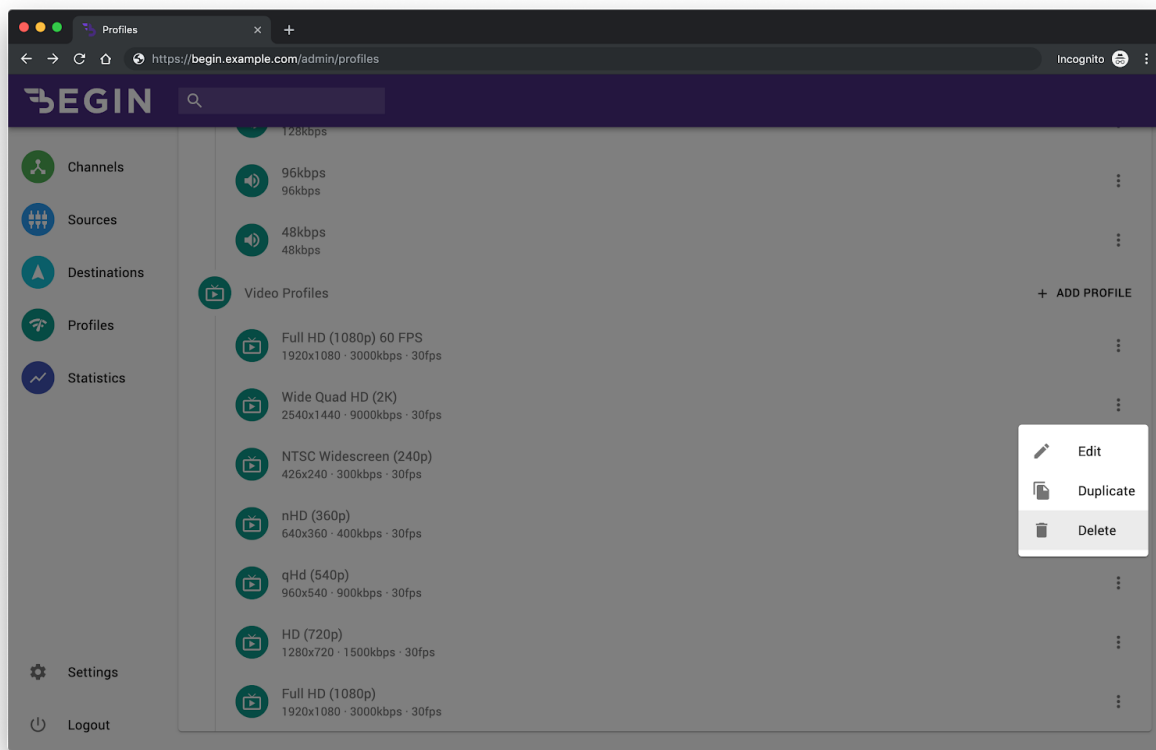
Enter the name of the profile and click on the **Duplicate** button to duplicate the profile.



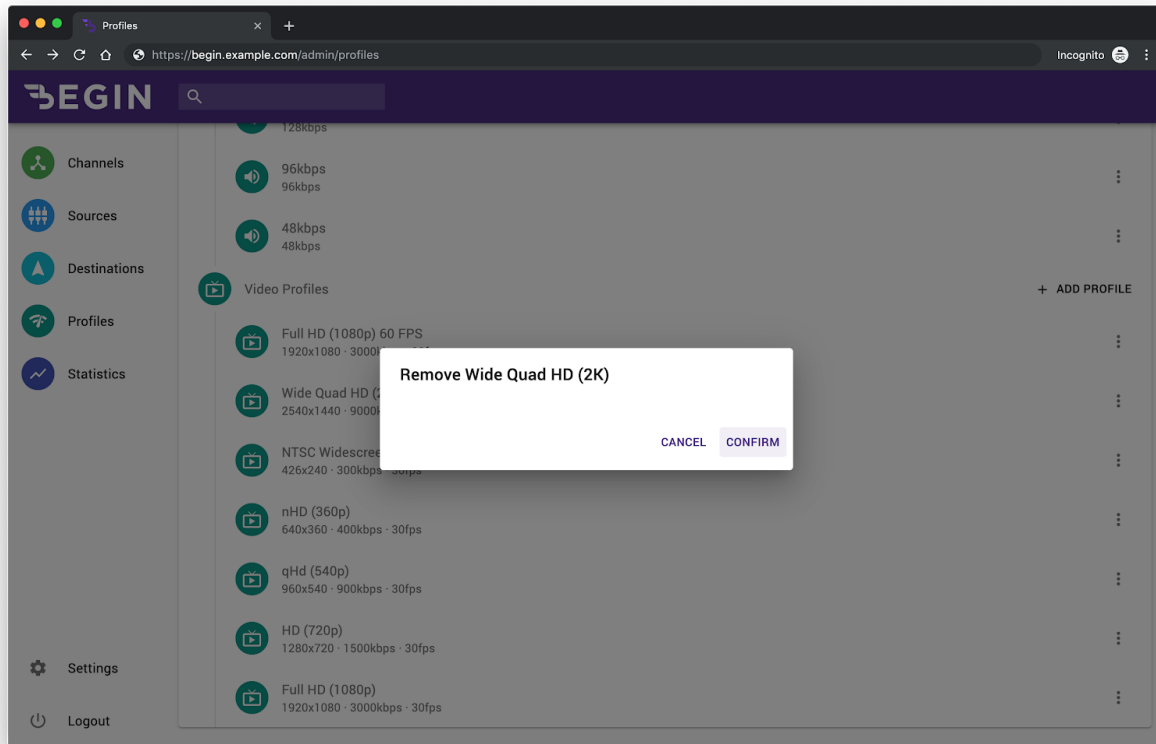
## Deleting Profile

Click on the  icon located on the right hand side of the profile to open the options dialog. Click **Delete** in the options dialog to delete the profile.

If the **Delete** option is **missing**, it represents the profile is a default profile. Default profiles cannot be deleted, only the ones created by the user or duplicated from the default profiles can be deleted.



Click on the **Confirm** button on the confirmation dialog to remove the profile.

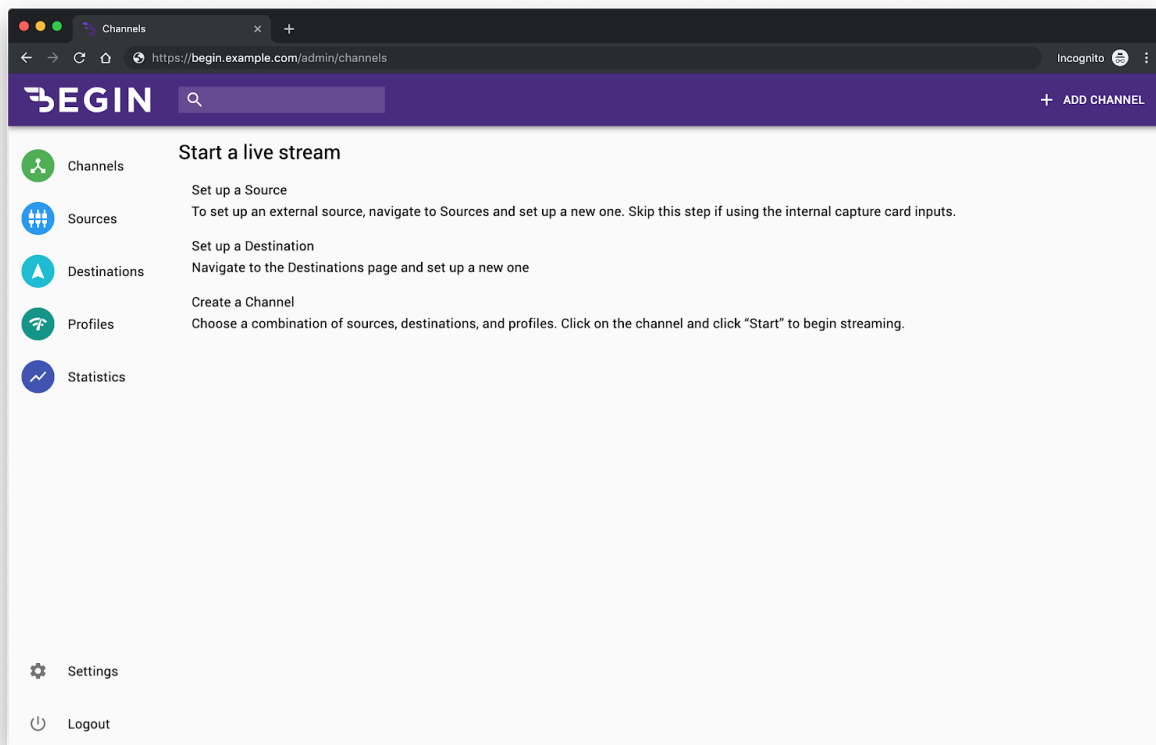


# Channels

## Overview

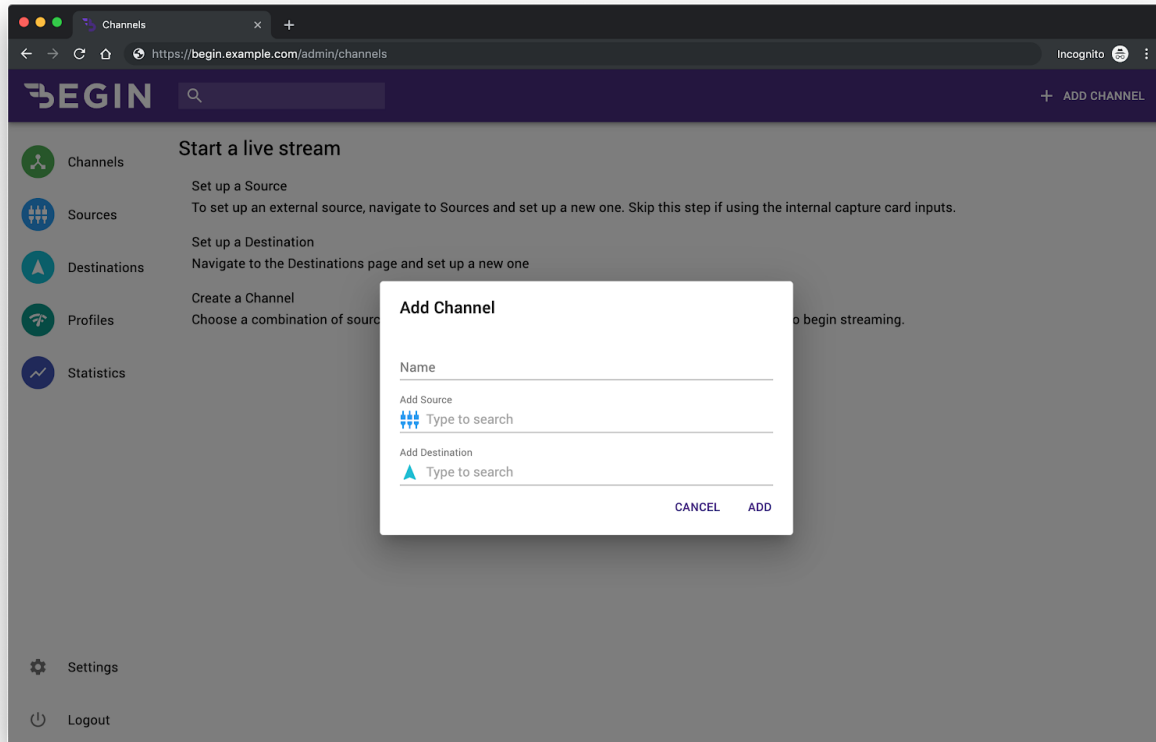
The Channels page shows the list of available channels on begin encoder. User can:

- Add Channel
- Start Channel
- Stop Channel
- Edit Channel
- Delete Channel



## Adding Channel

Click on + **Add Channel** button on the top right hand corner of the Channels page to add channel.

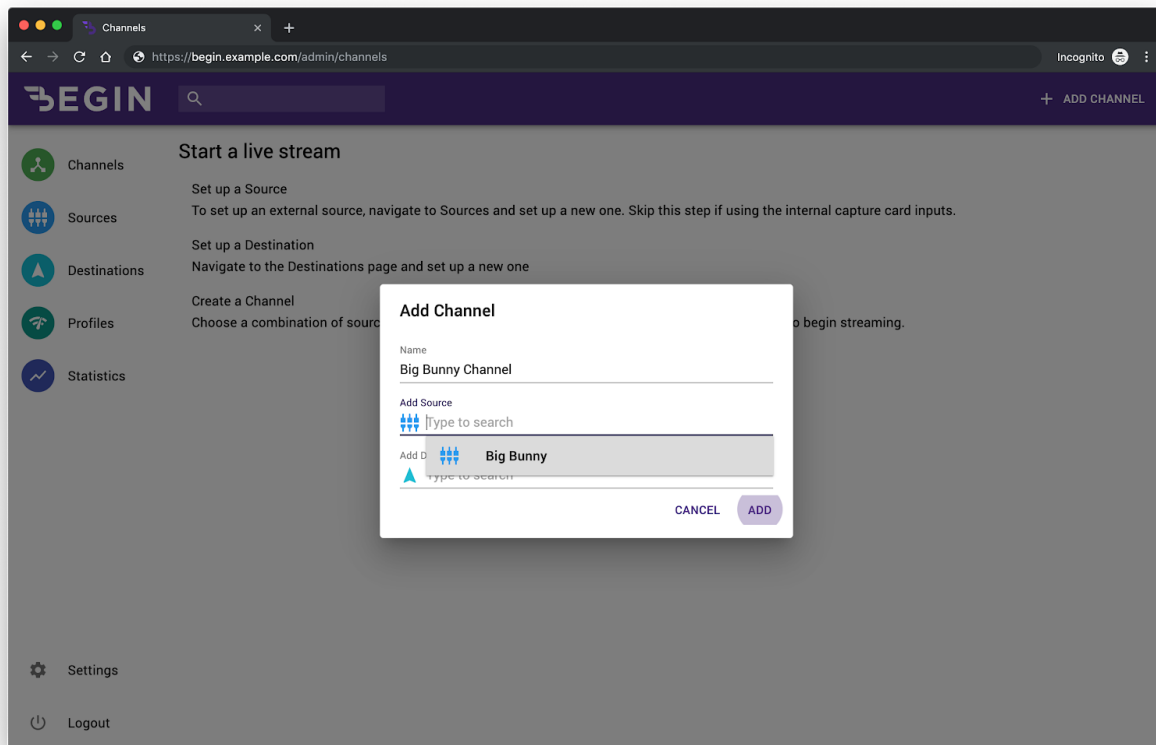




Enter the name of the channel.

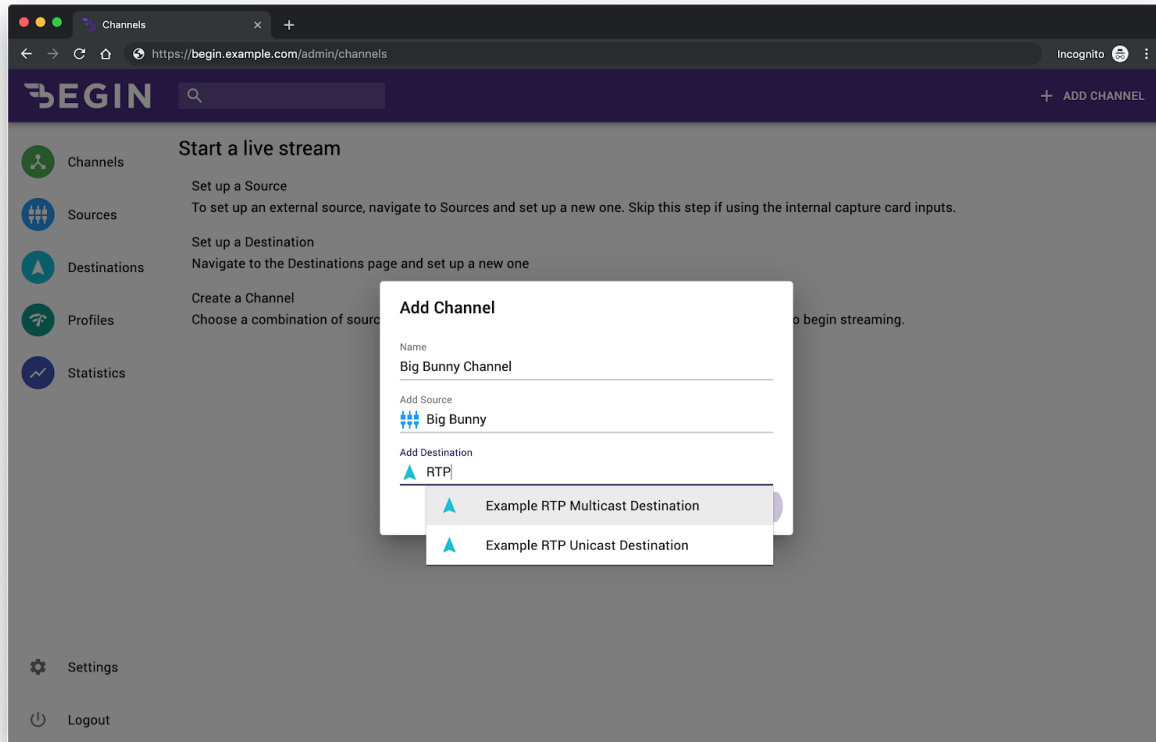
Click on **Add Source** input field to see the list of available sources and select one source by clicking on popup.

Alternatively, type the name of the source to narrow the list of sources shown as popups.



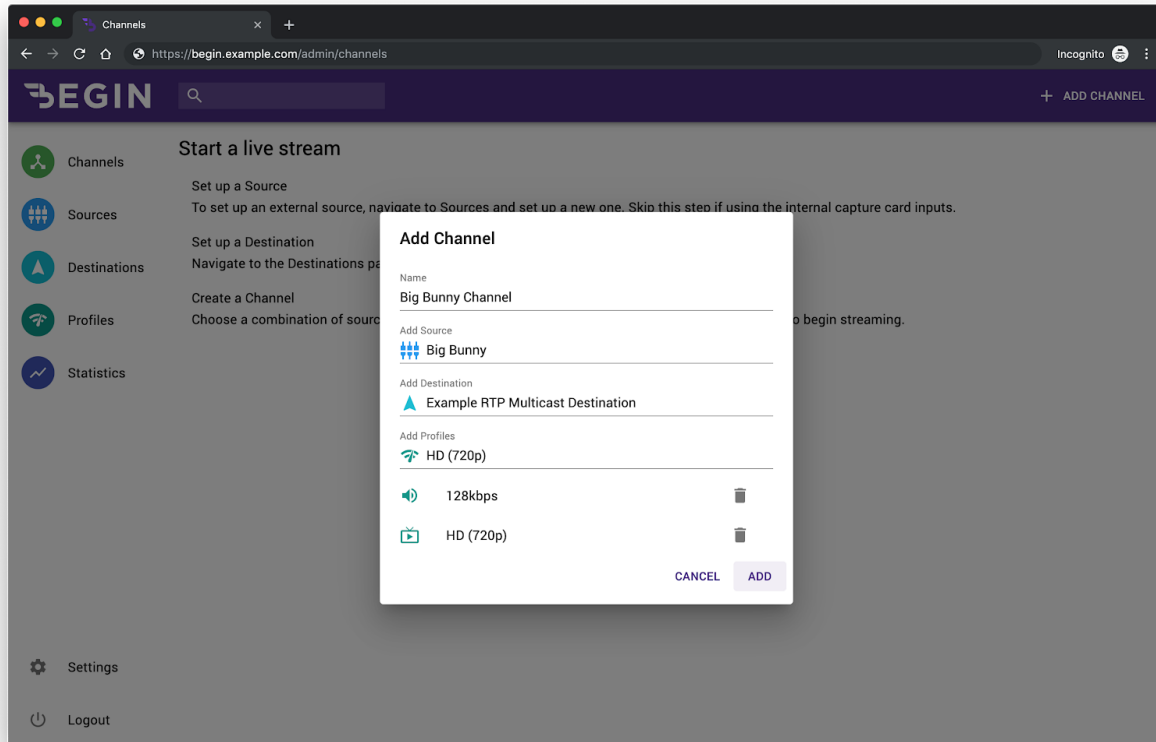
Click on **Add Destination** input field to see the list of available destinations and select one destination by clicking on popup.

Alternatively, type the name of the destination to narrow the list of destinations shown as popups.

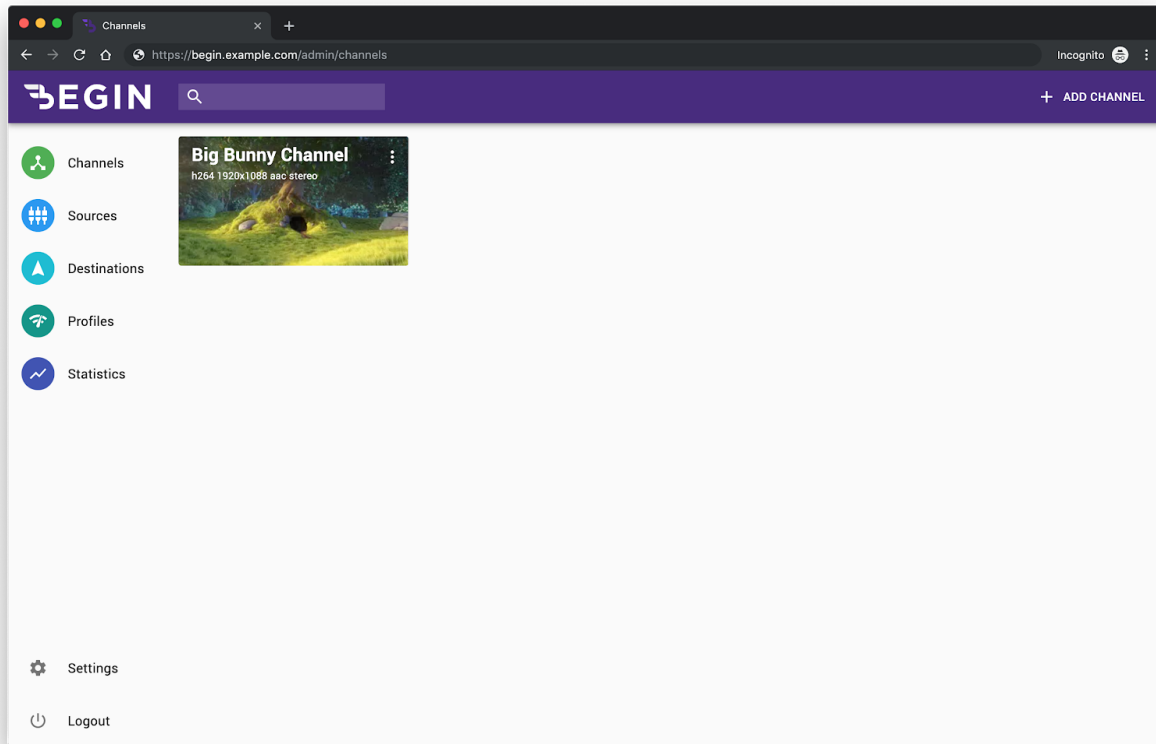


Click on **Add Profiles** input field to see the list of available audio, video profiles and select one or more profiles by clicking on the popups. Alternatively, type the name of the profile to narrow the list of popups displayed.

Channel must have at least one audio or video profile to start the stream.




Click on the **Add** button to add the channel.

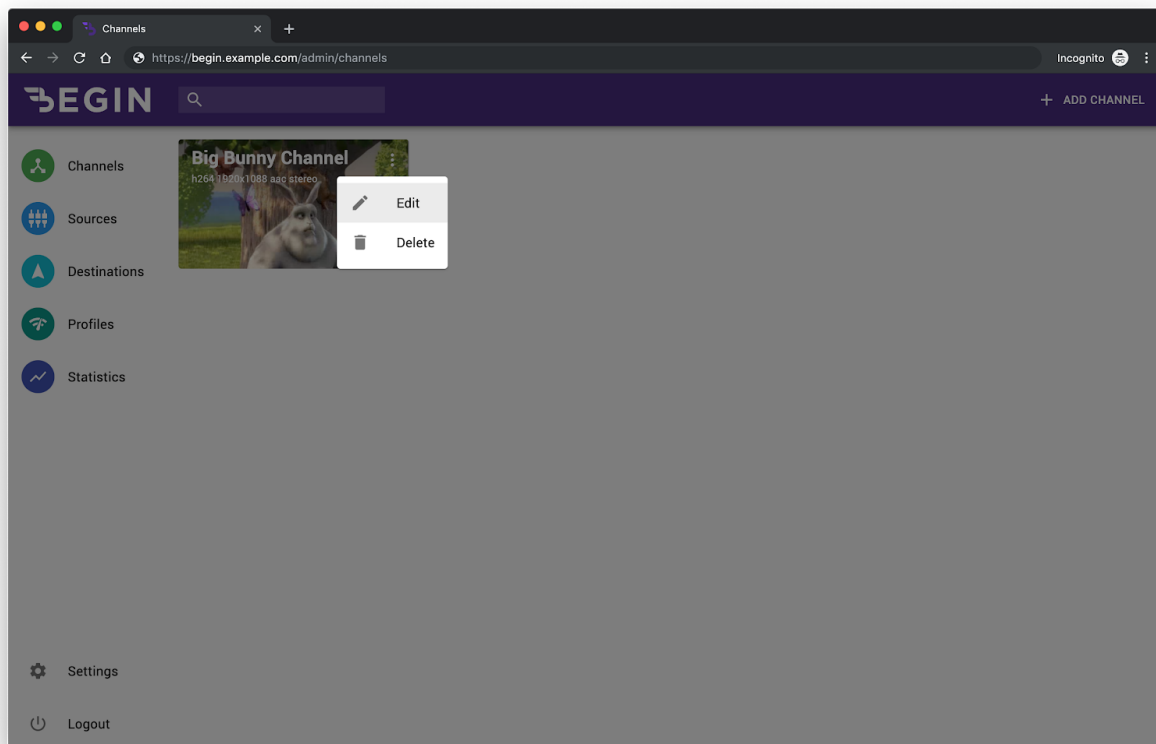


## Editing Channel

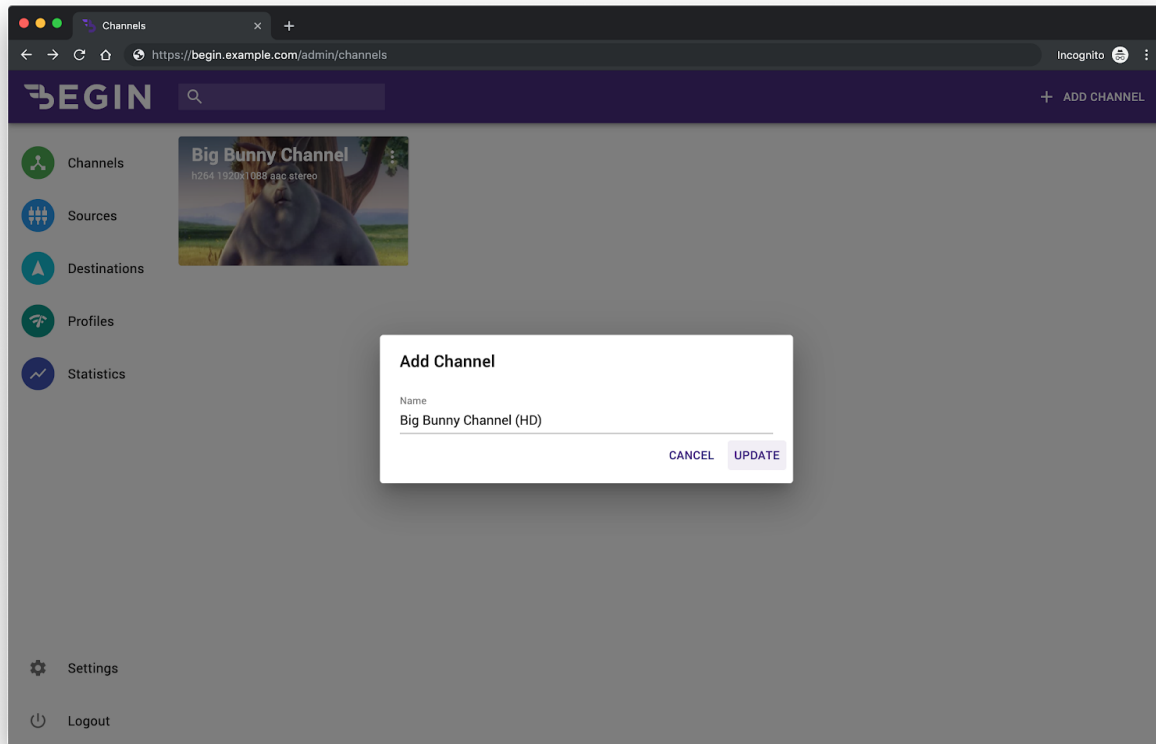
Channel requires at-least one source, one destination with at-least one audio or video profile to be able to start.

### Channel Name

Click on the  icon located on the top right hand corner of the channel card to open the options dialog. Click **Edit** in the options dialog to edit the channel.

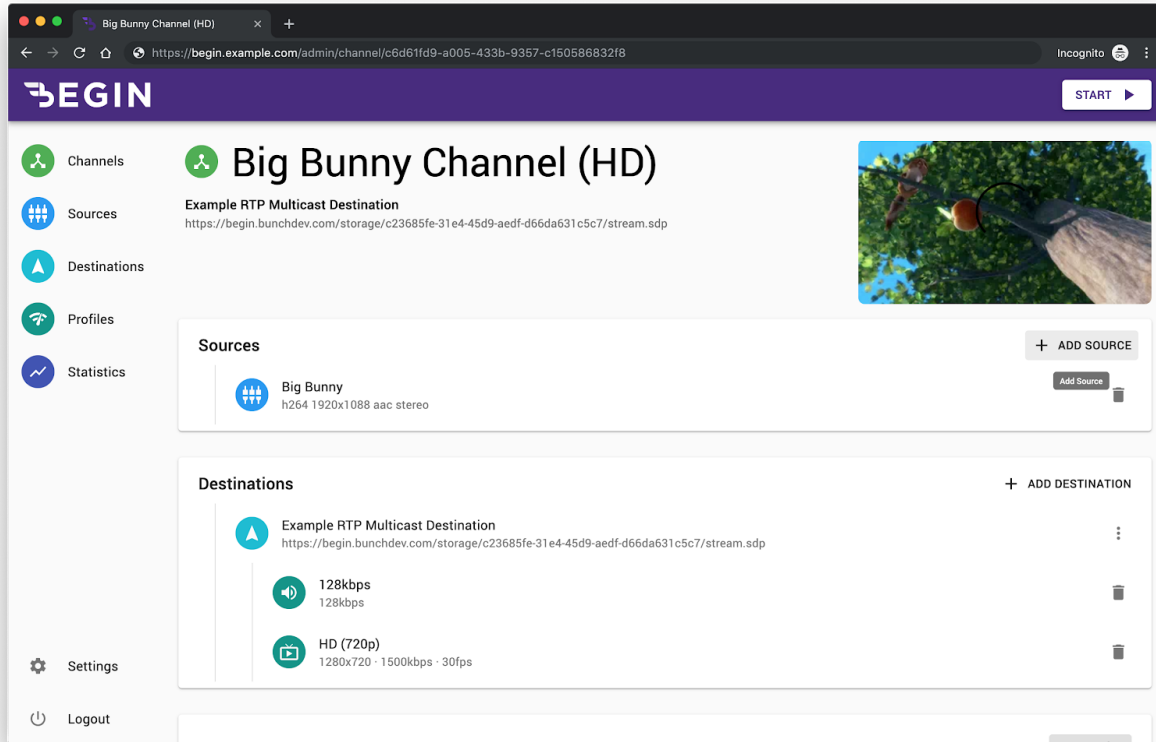


Make the changes and click on the **Update** button to update the channel name.



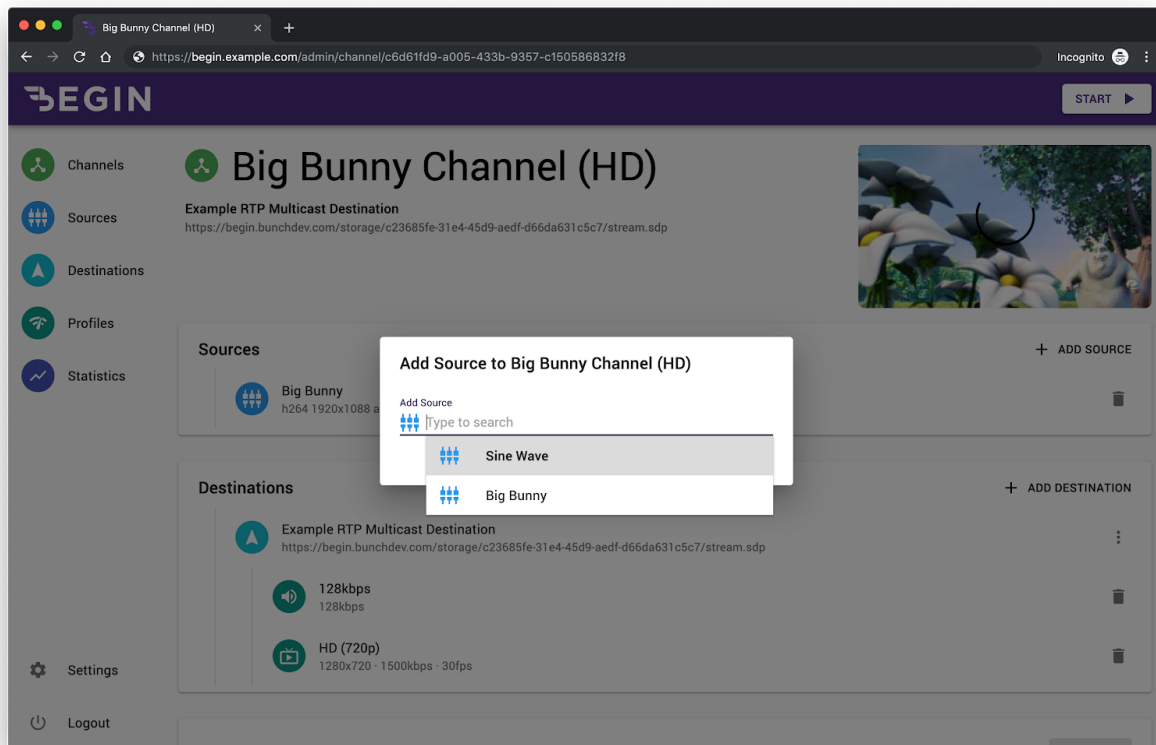
## Add Source

Click on the channel card to navigate to the individual channel page. Click on + **Add Source** on the right hand corner of the Sources card to add additional input sources.




Click on the Add Source field to see the list of available sources and click on the sources that needs to be added. Alternatively type the name of the source in the fields to narrow the list of displayed sources.

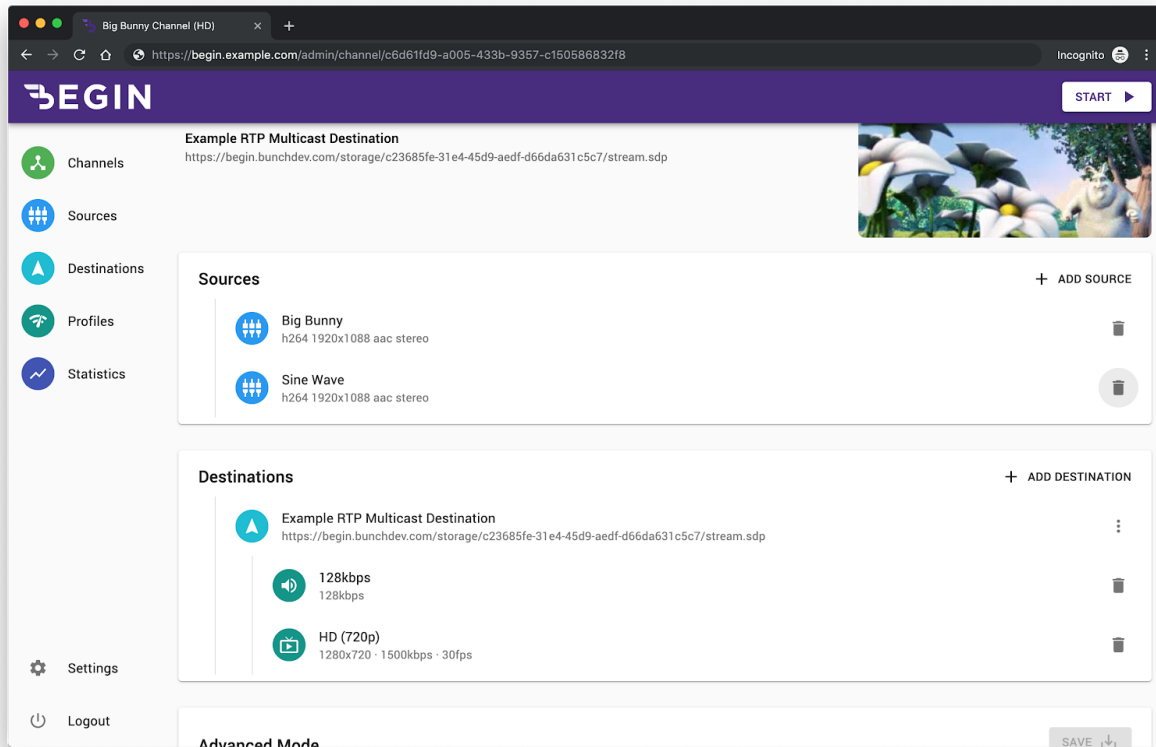
Click on the **Add** button to add the source to the channel.



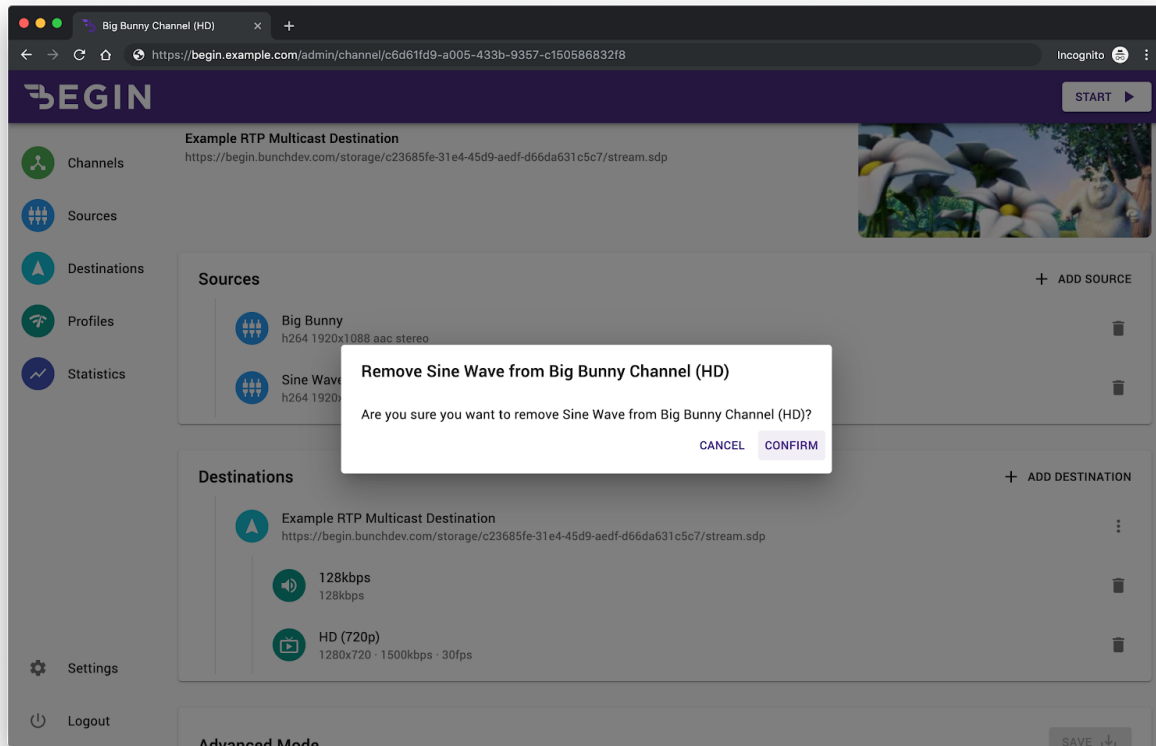


## Delete Source

Click on the  icon located at the right side of the source to remove it from Channel Sources.

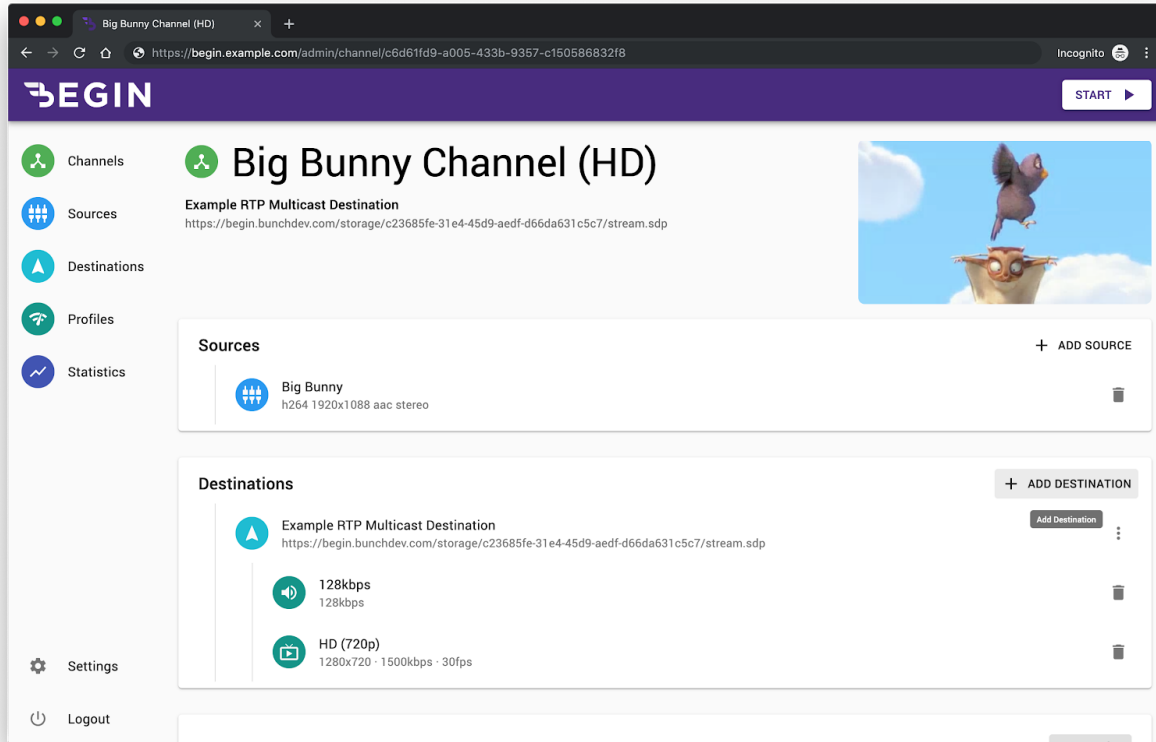


Click on the **Confirm** button on the confirmation dialog to remove the source from the channel sources.

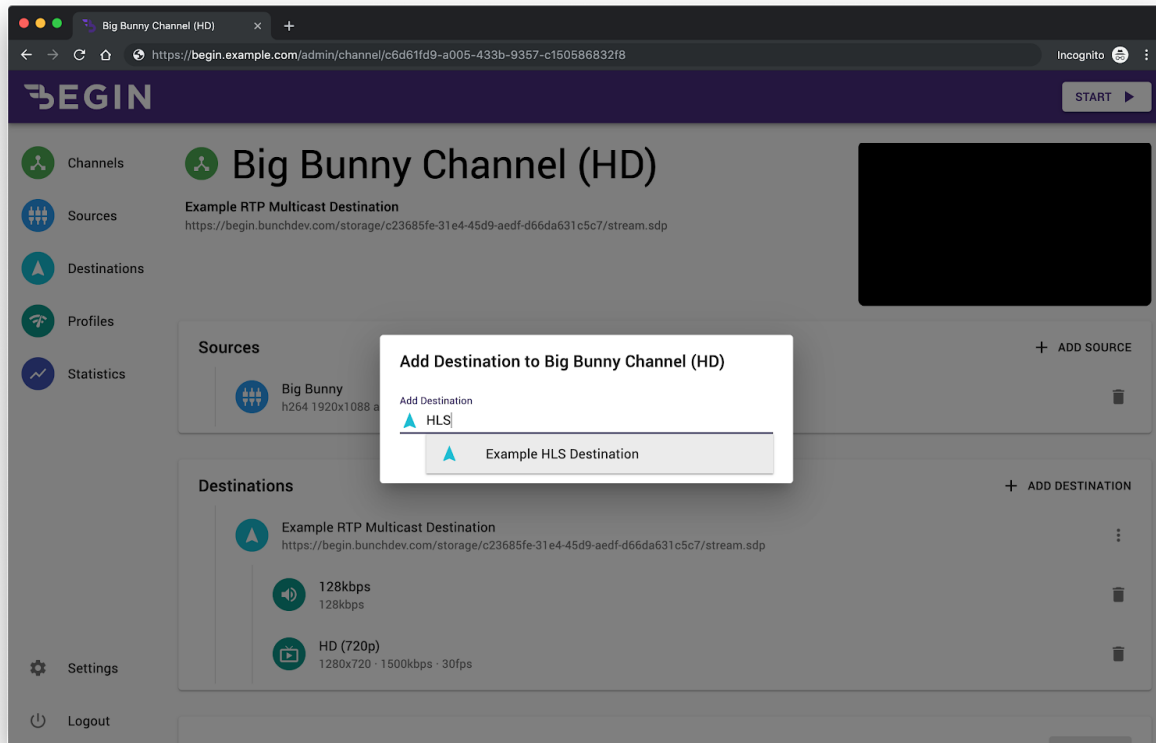


## Add Destination

Click on **+ Add Destination** button on the right hand corner of the Destinations card to add destination.



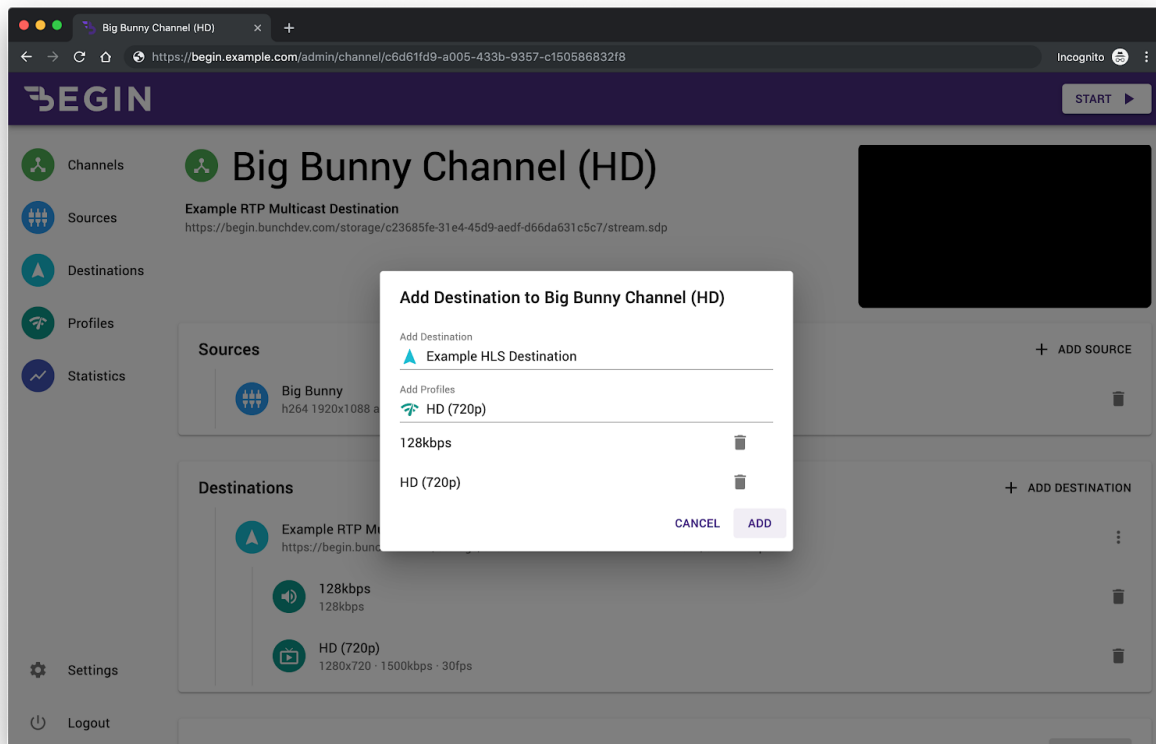
Click on **Add Destination** input field to see the list of available destinations and select one destination by clicking on popup. Alternatively type the name of the destination to narrow the list of displayed destinations.




Click on **Add Profiles** input field to see the list of available audio, video profiles and select one or more profiles by clicking on the popups. Alternatively, type the name of the profile to narrow the list of popups displayed.

Destination requires at-least one audio or video profile to be valid.

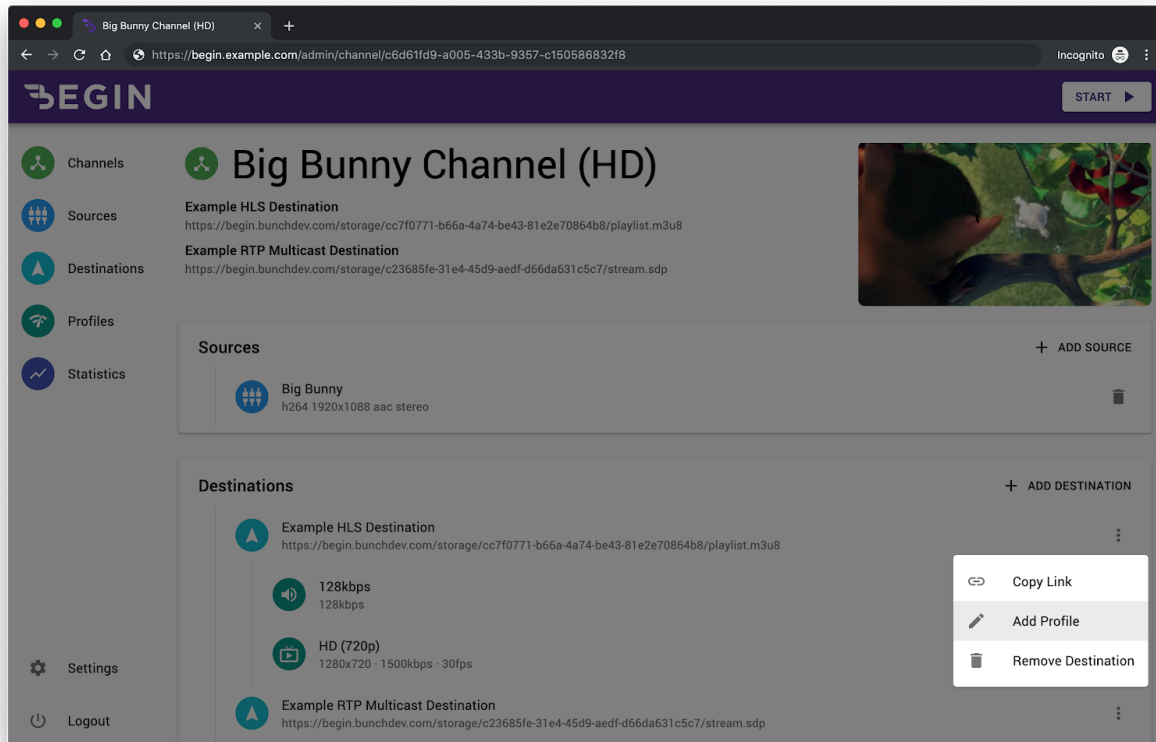
Click on the **Add** button to add the destination to the channel.



## Add Profile to Destination

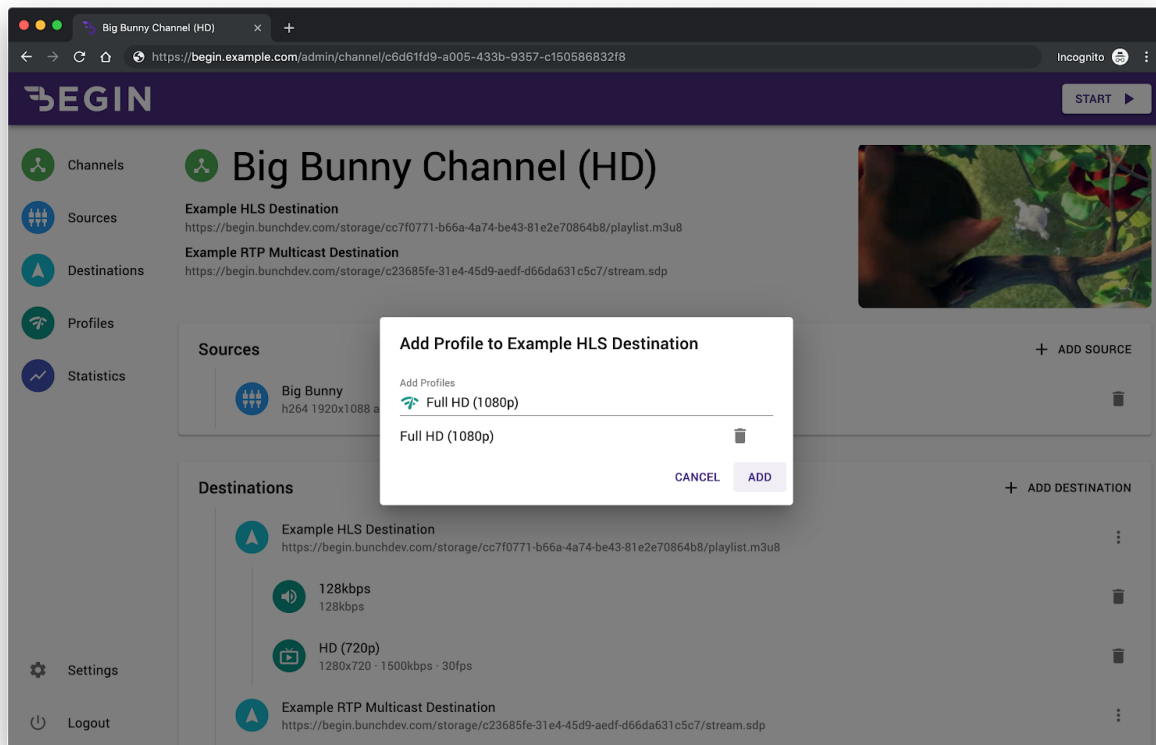
Click on the  icon located on the right side of the destination to open the destination options dialog.

Click **Add Profile** in the destination options dialog to add profile to the destination.



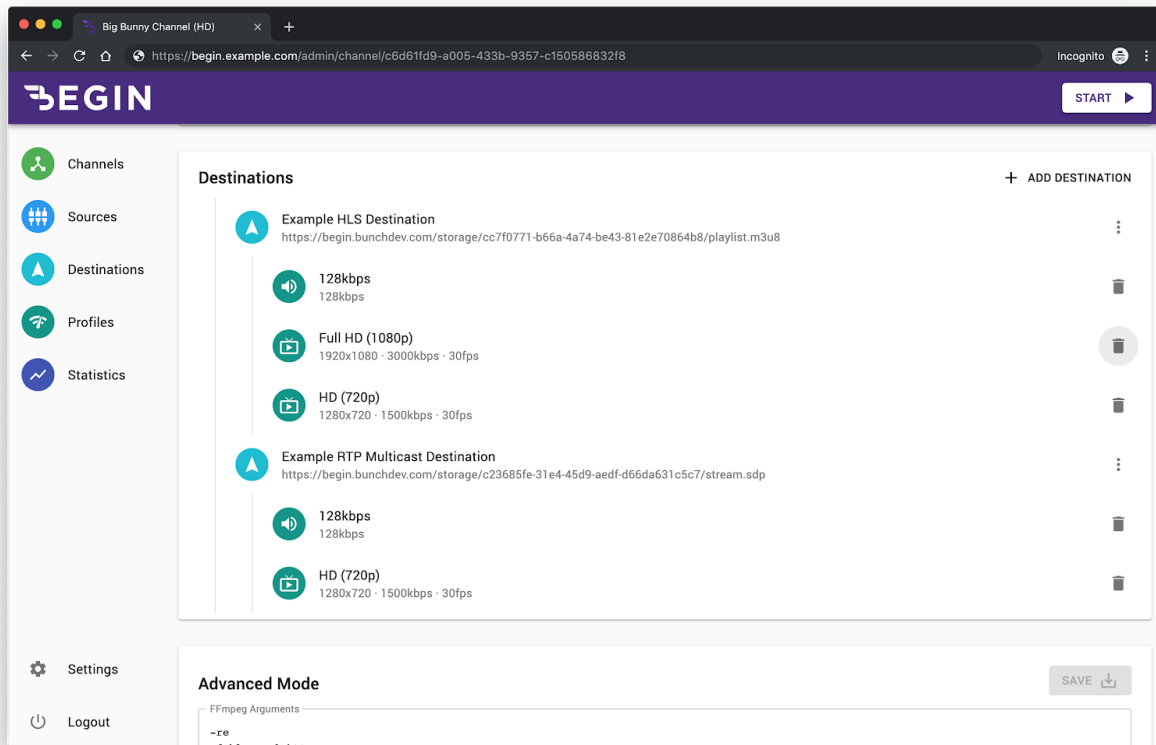
Click on **Add Profiles** input field to see the list of available audio, video profiles and select one or more profiles by clicking on the popups. Alternatively, type the name of the profile to narrow the list of popups displayed.

Click on the **Add** button to add the destination to the channel.



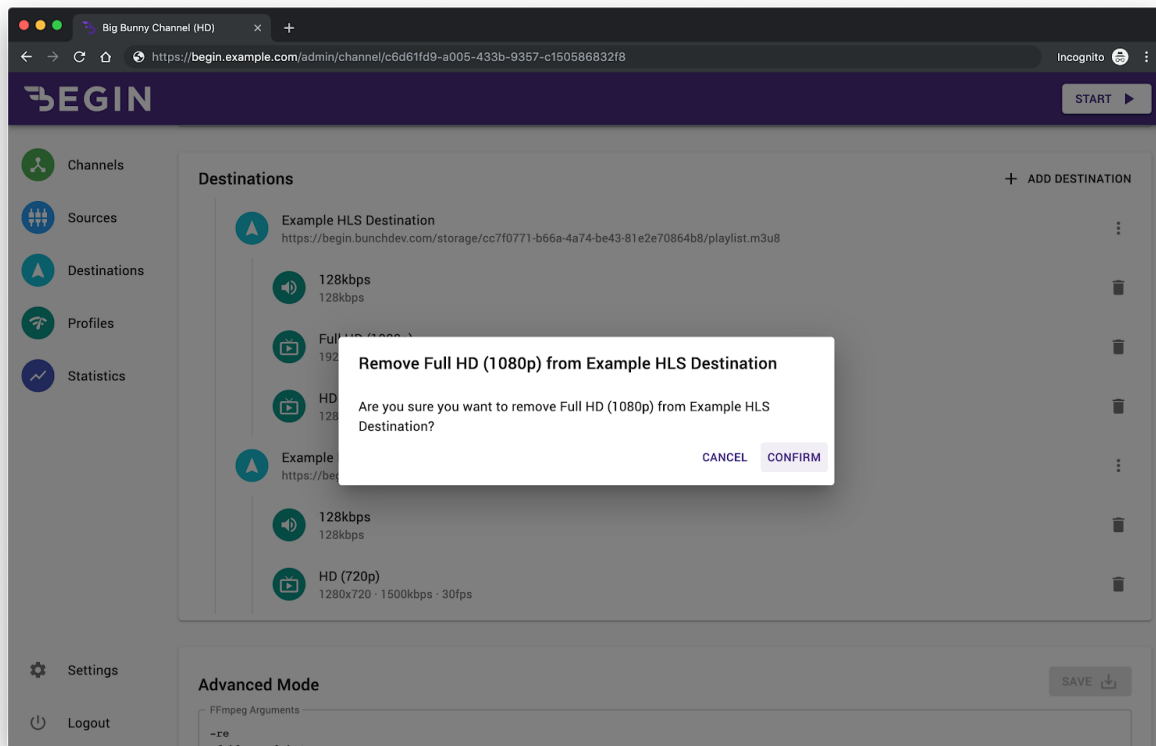
## Remove Profile from Destination

Click on the  icon located at the right hand side of the profile to remove it from the destination.






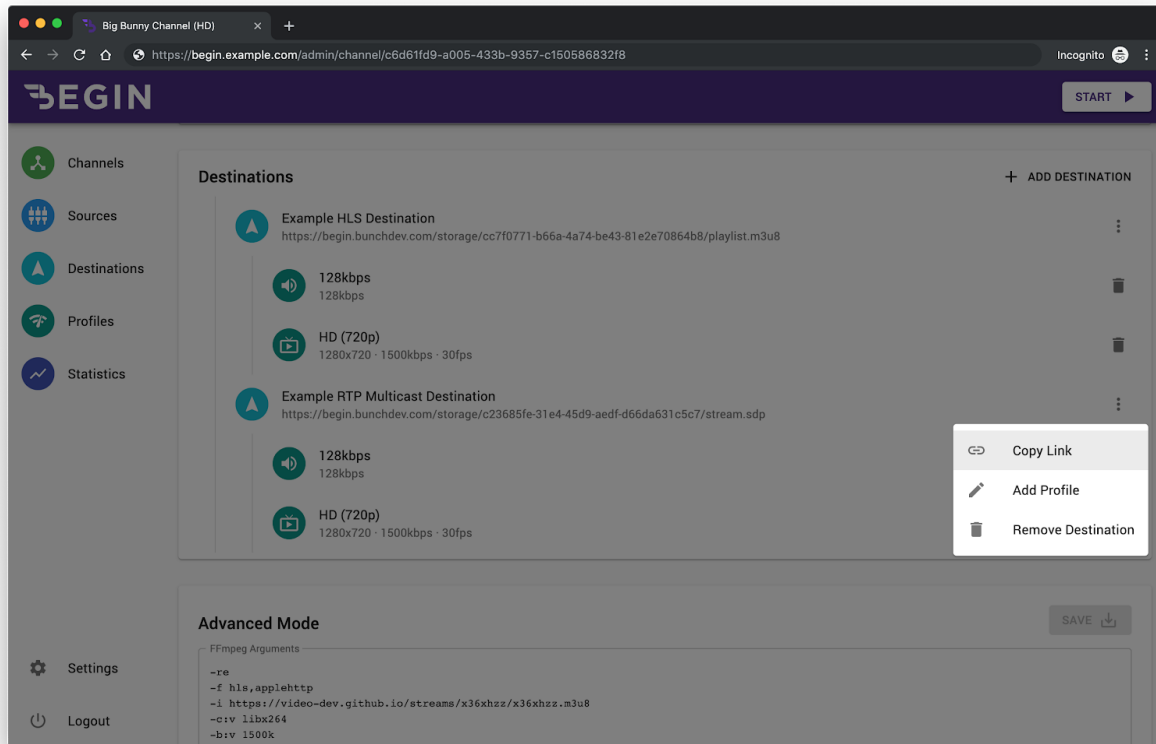
Click on the **Confirm** button on the confirmation dialog to remove the profile from the destination.




## Copy Destination URL

Click on the  icon located on the right side of the destination to open the destination options dialog.

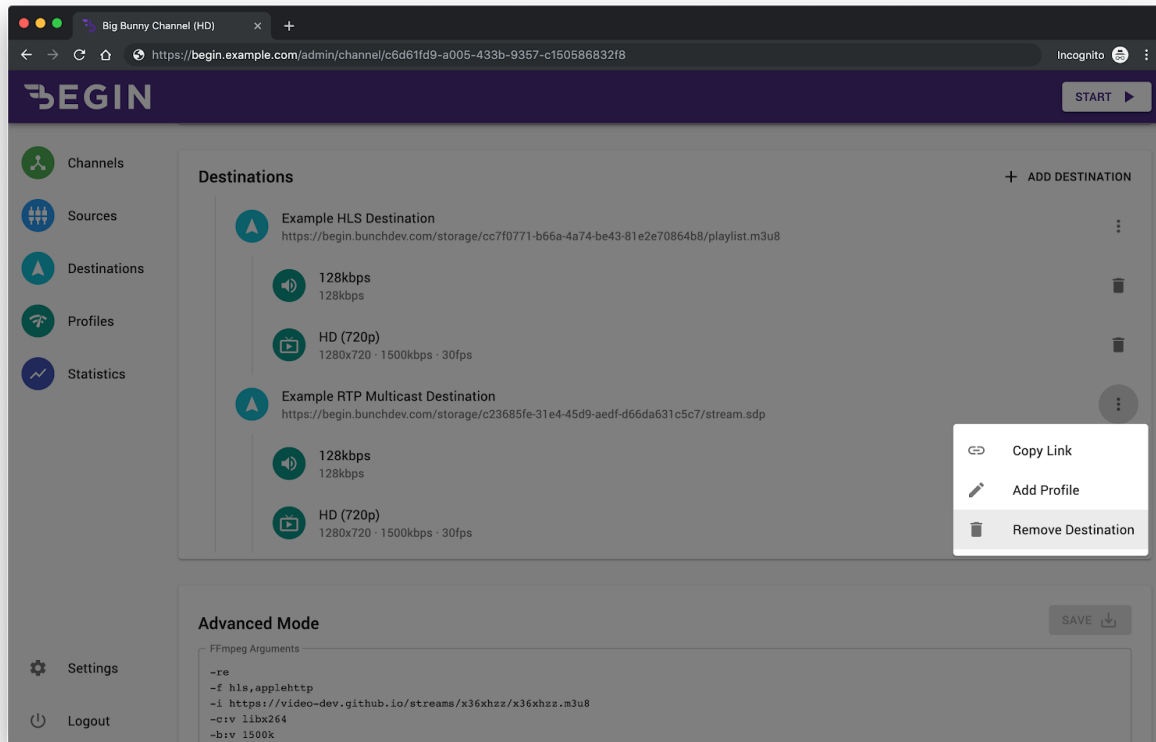
Click on **Copy Link** to copy the destination URL to clipboard.



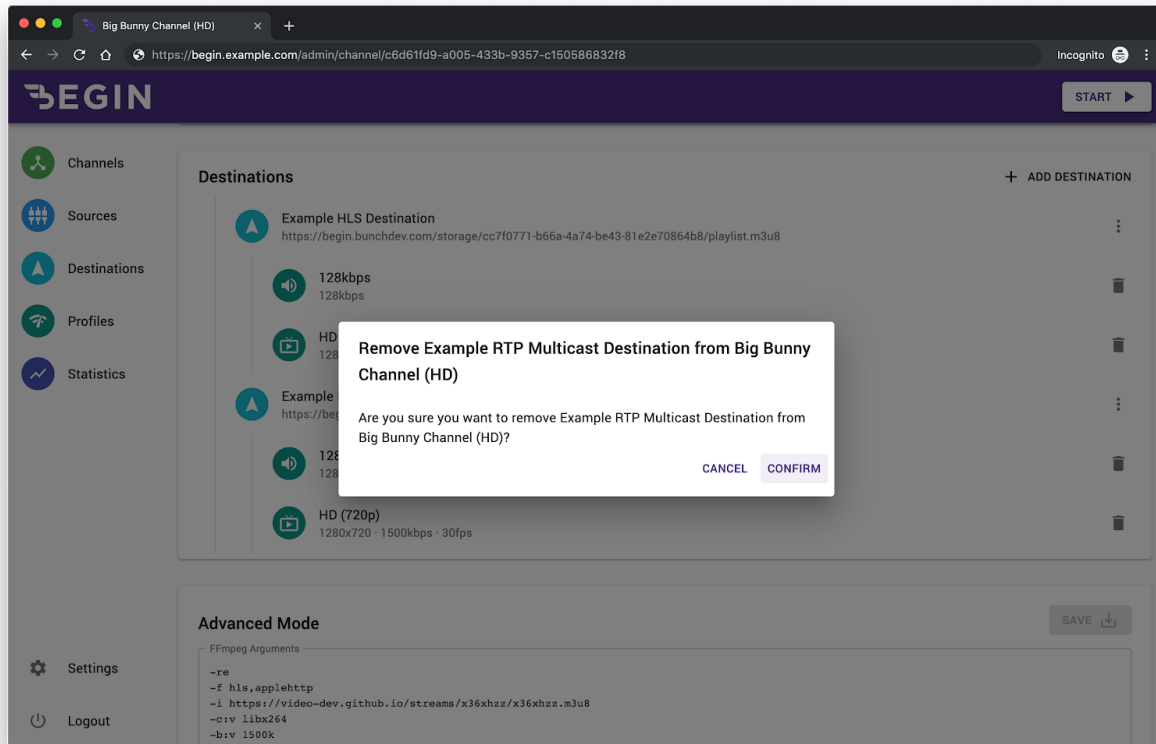
## Delete Destination

Click on the  icon located on the right side of the destination to open the destination options dialog.


Click **Remove Destination** in the options dialog to edit the channel.



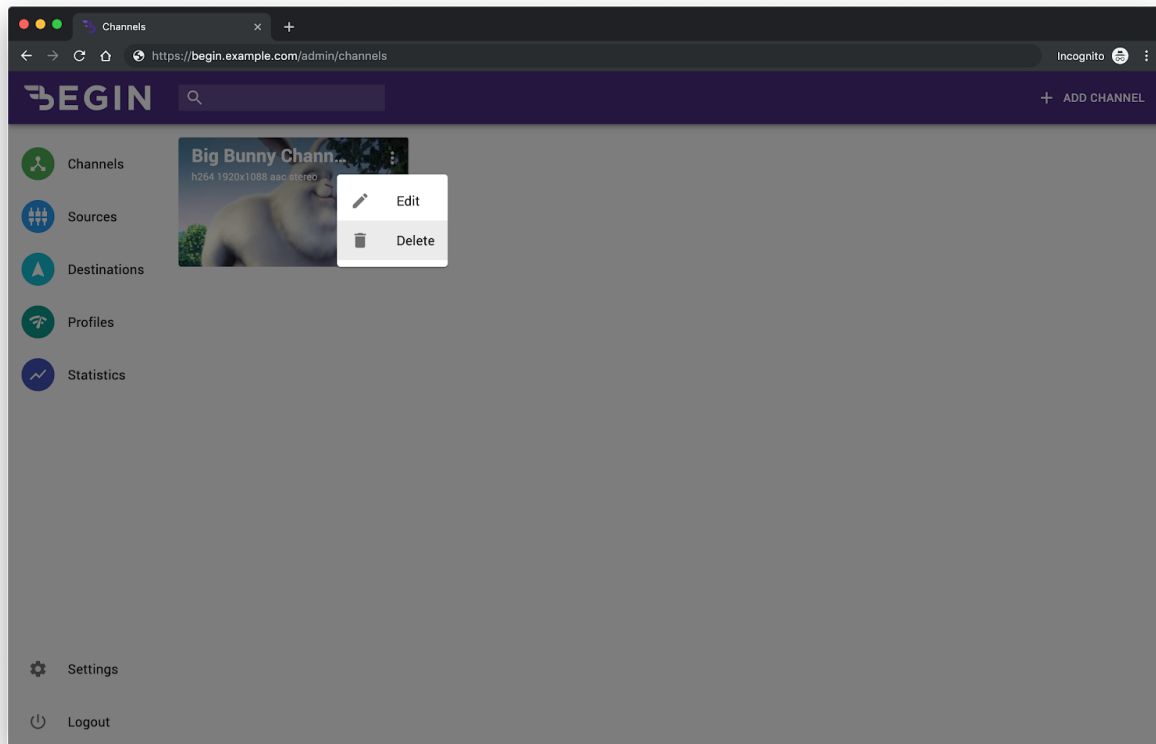
Click on the **Confirm** button on the confirmation dialog to remove the destination from the Channel.



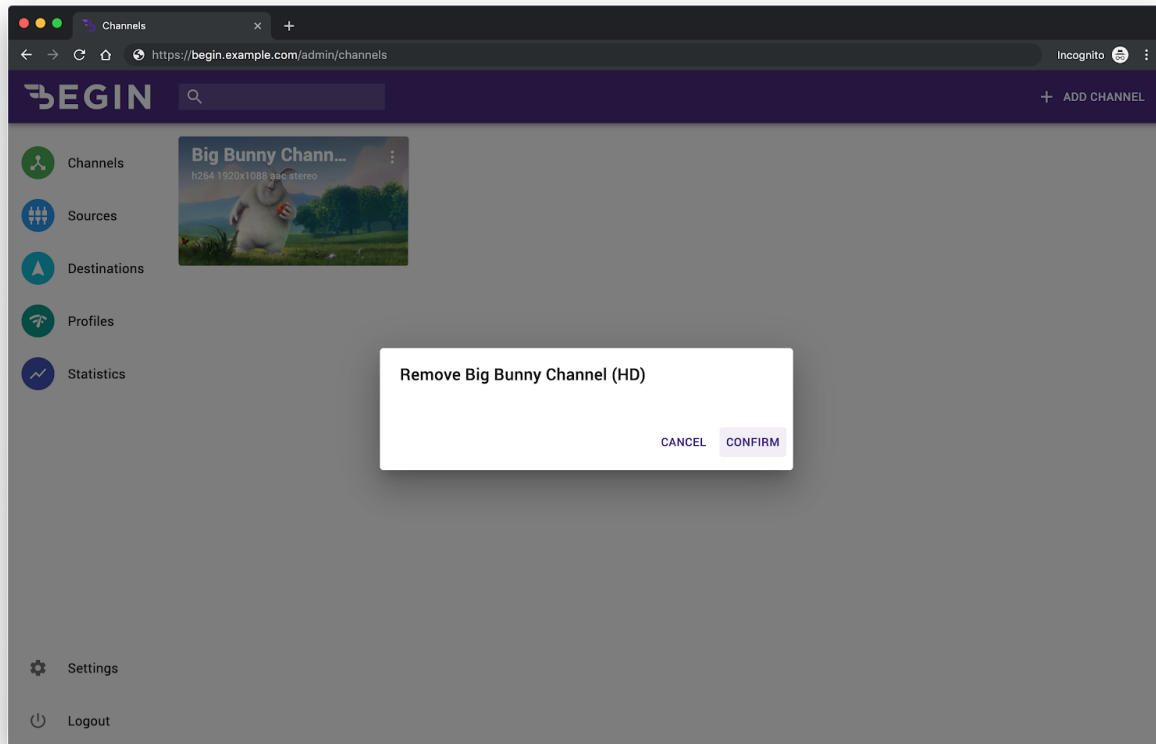
## Deleting Channel

Click on the  icon located on the top right hand corner of the channel card to open the options dialog.

Click **Delete** in the options dialog to delete the channel.



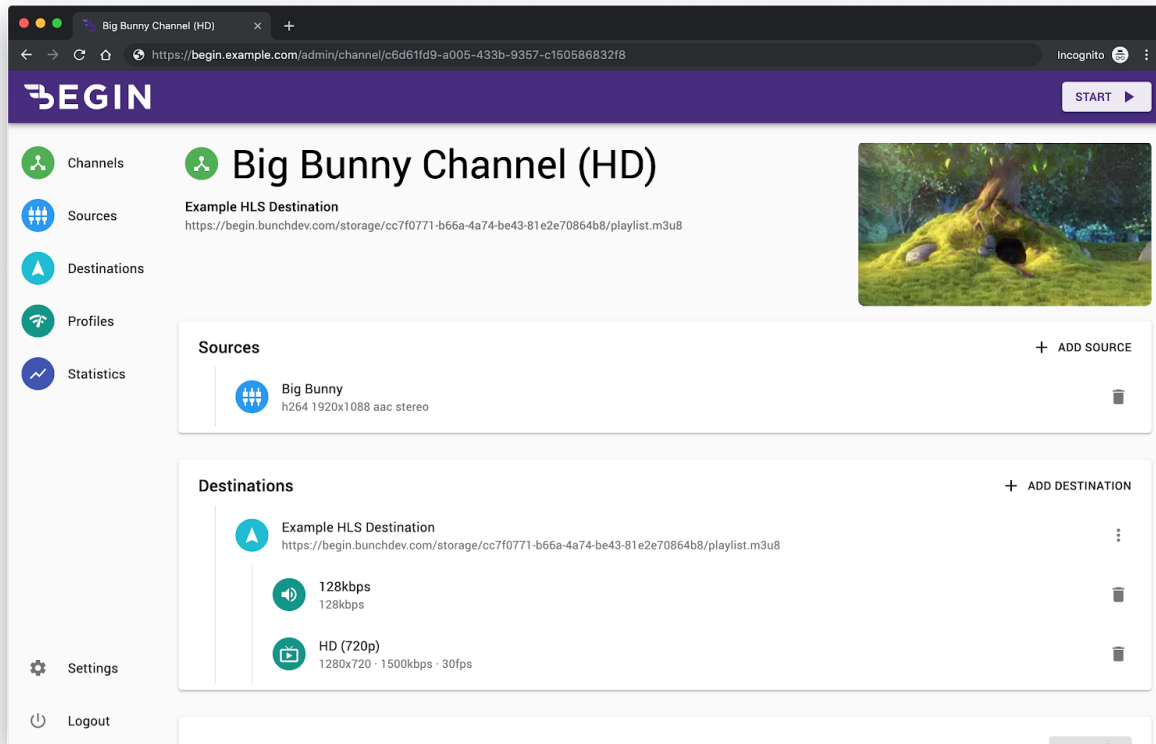
Click on the Confirm button on the confirmation dialog to delete the channel.



## Start Channel

Click on the channel card to navigate to the individual channel page.

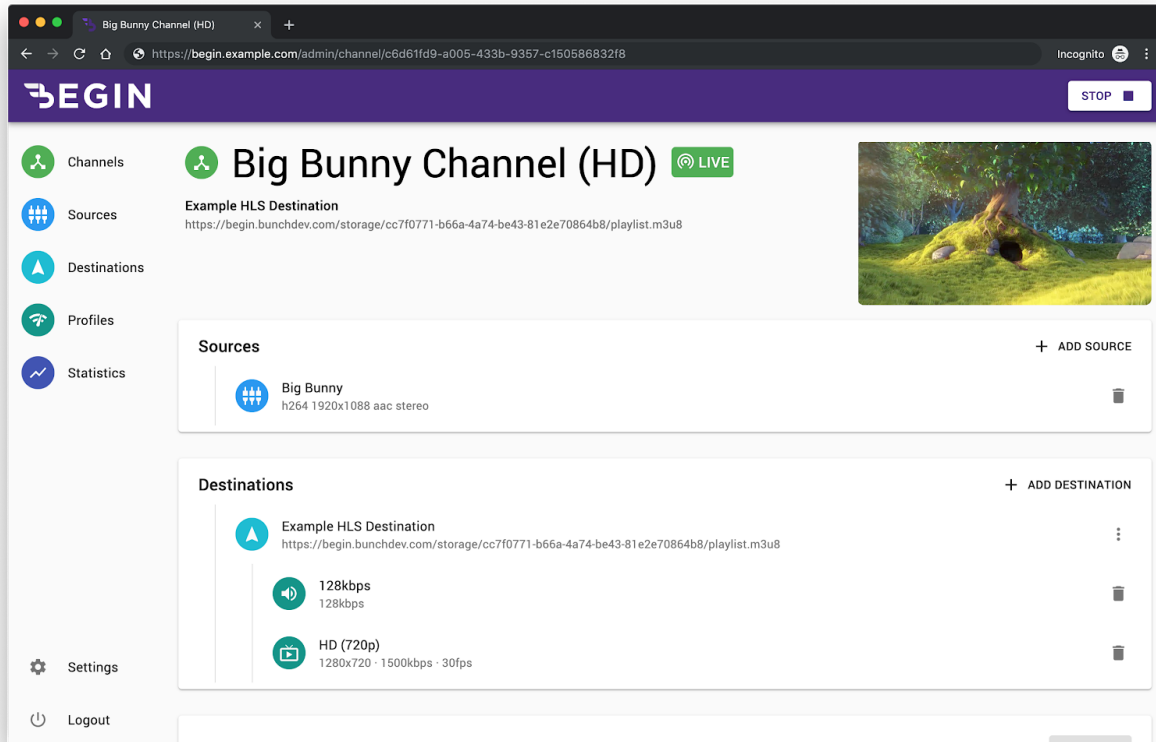
Click on the **Start** button at the top right hand corner of the page to start the channel.



## Stop Channel

Click on the channel card to navigate to the individual channel page.

Click on the **Stop** button at the top right hand corner of the page to stop the channel.





# Statistics

## Overview

Statistics page show's the system resource usage such as,

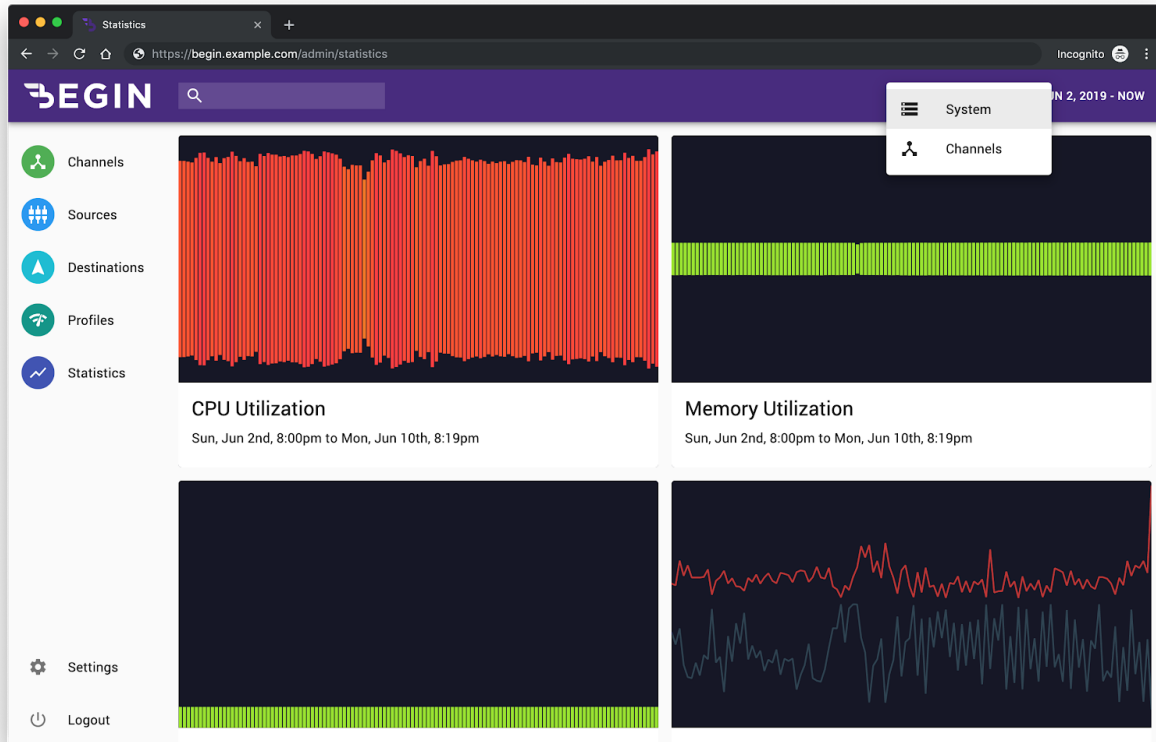
- CPU Utilization
- CPU Usage Per Core
- Memory
- Disk
- Network

Users can,

- View resource utilization over a period of time
- View resource utilization at the moment
- View resource utilization based on channel.

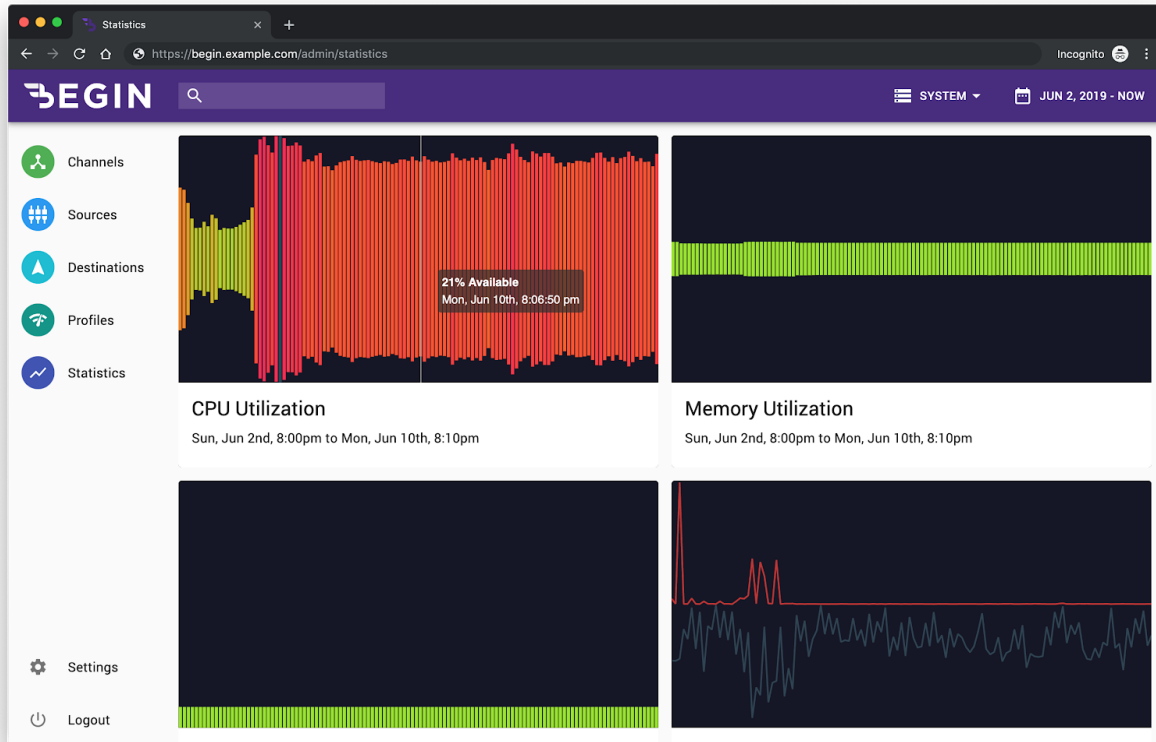
## System Statistics

Click on System dropdown menu on the top right hand corner of the screen and choose System to view System statistics, Channel to view Channel statistics.



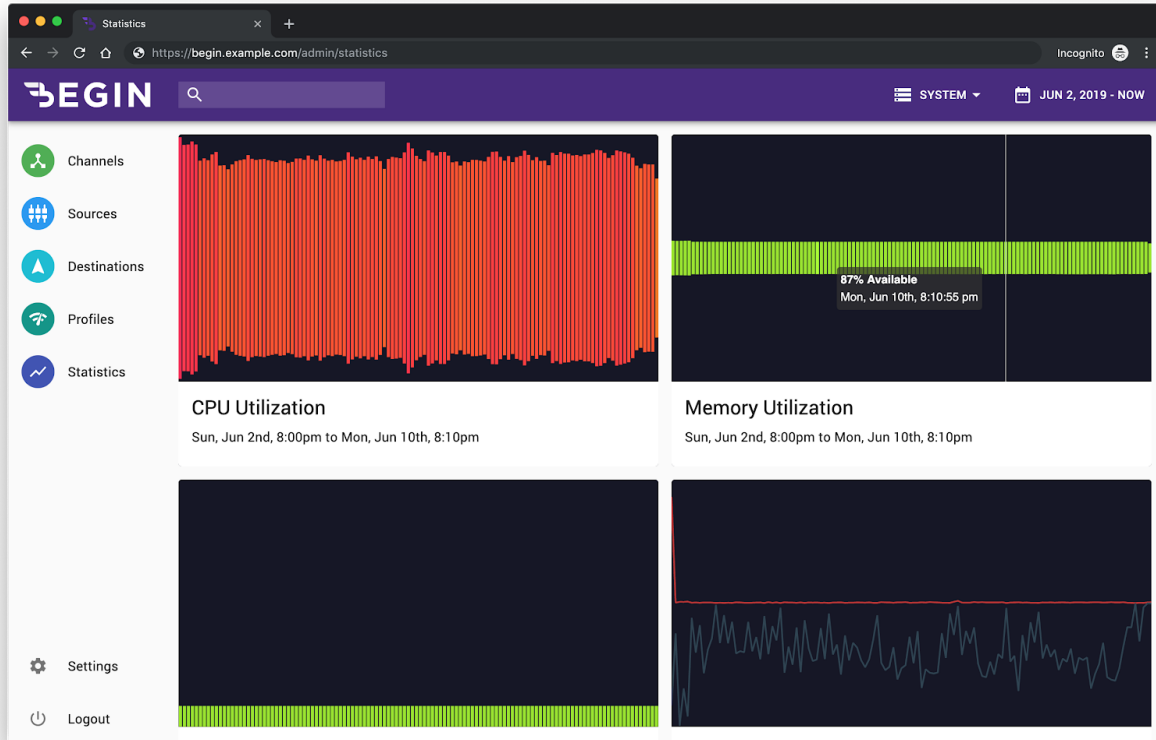
## CPU Utilization

CPU Utilization graph shows the overall CPU usage over a period of time and will update every 5 seconds with new values.



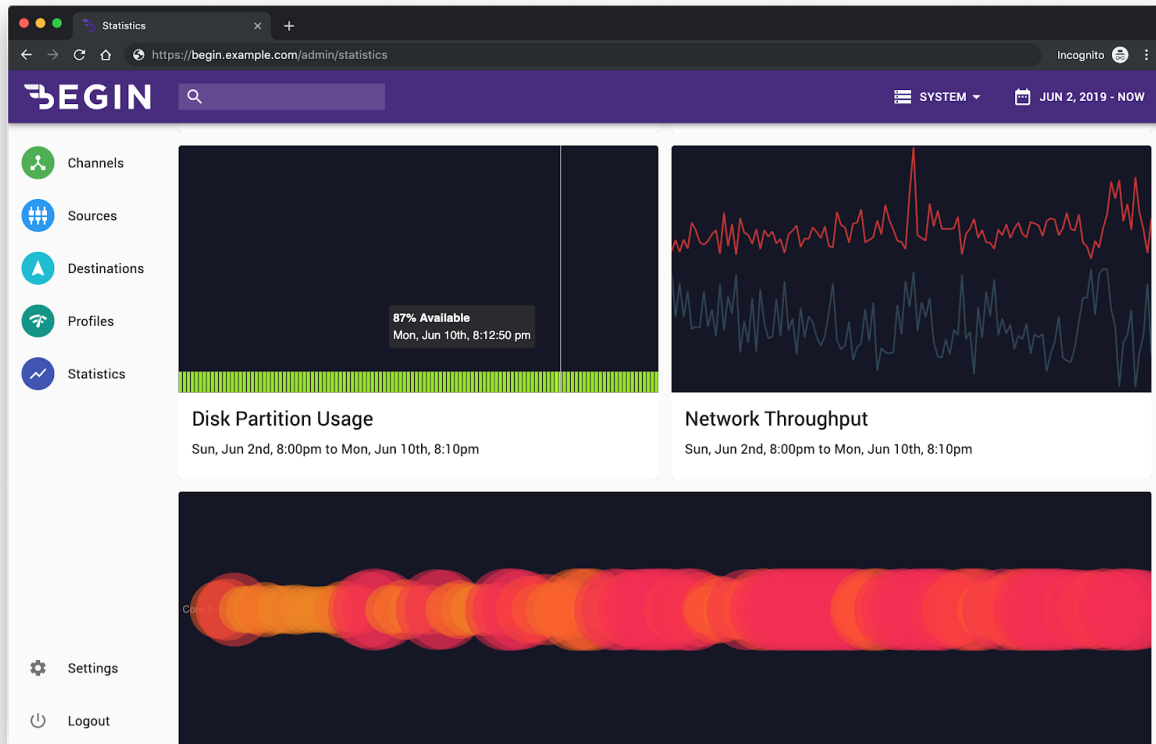
## Memory Utilization

Memory Utilization graph shows the overall memory usage over a period of time and will update every 5 seconds with new data points.



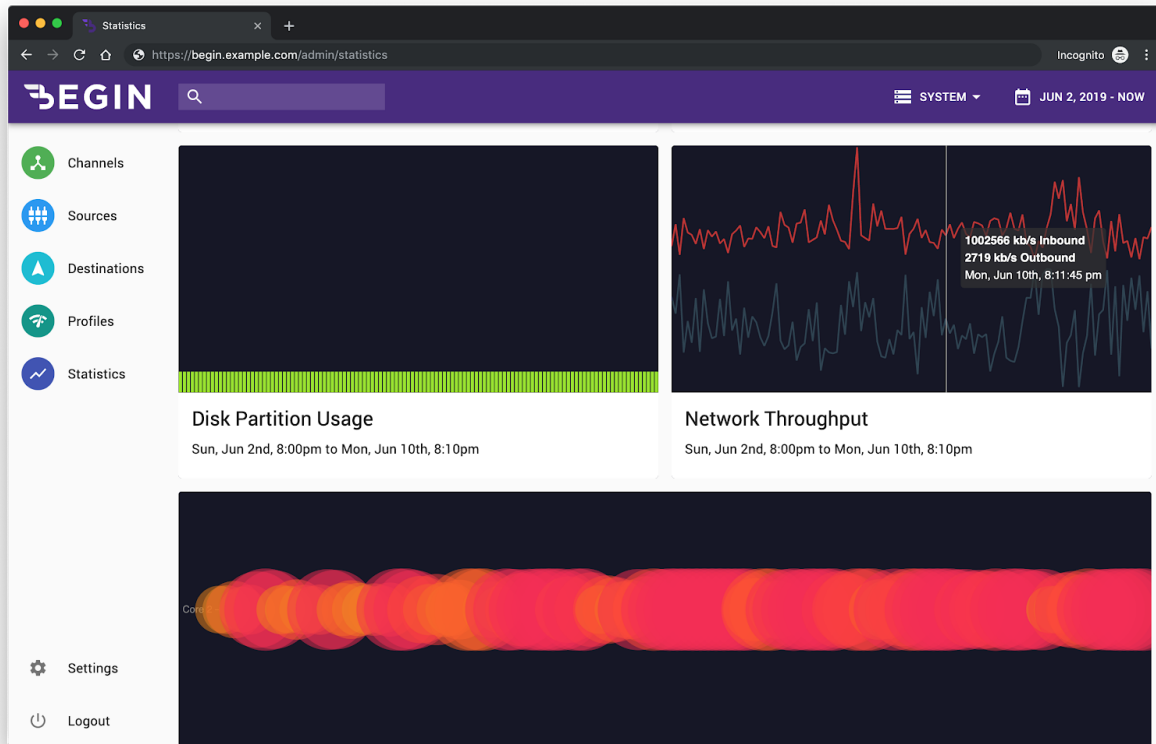
## Disk Partition Usage

Disk Partition Usage graph shows the disk usage over a period of time and will update every 5 seconds with new data points.



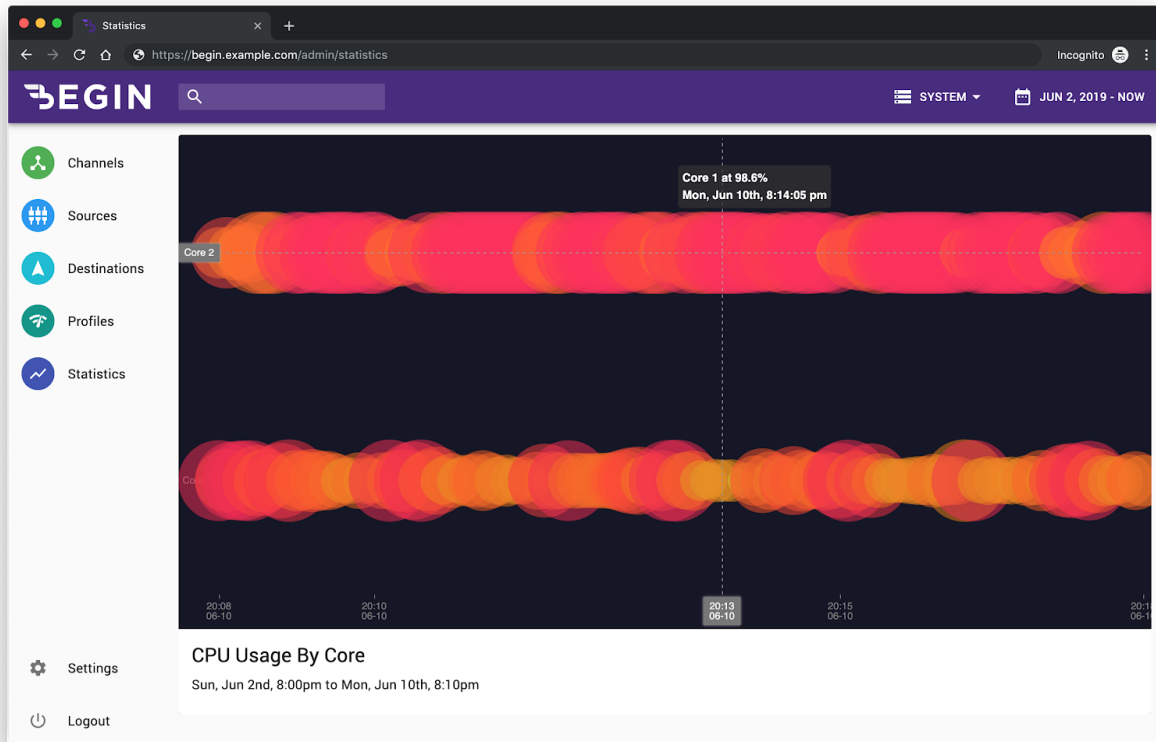
## Network Throughput

Network Throughput graph shows the network throughput over a period of time and will update every 5 seconds with new data points.



## CPU Usage by Core

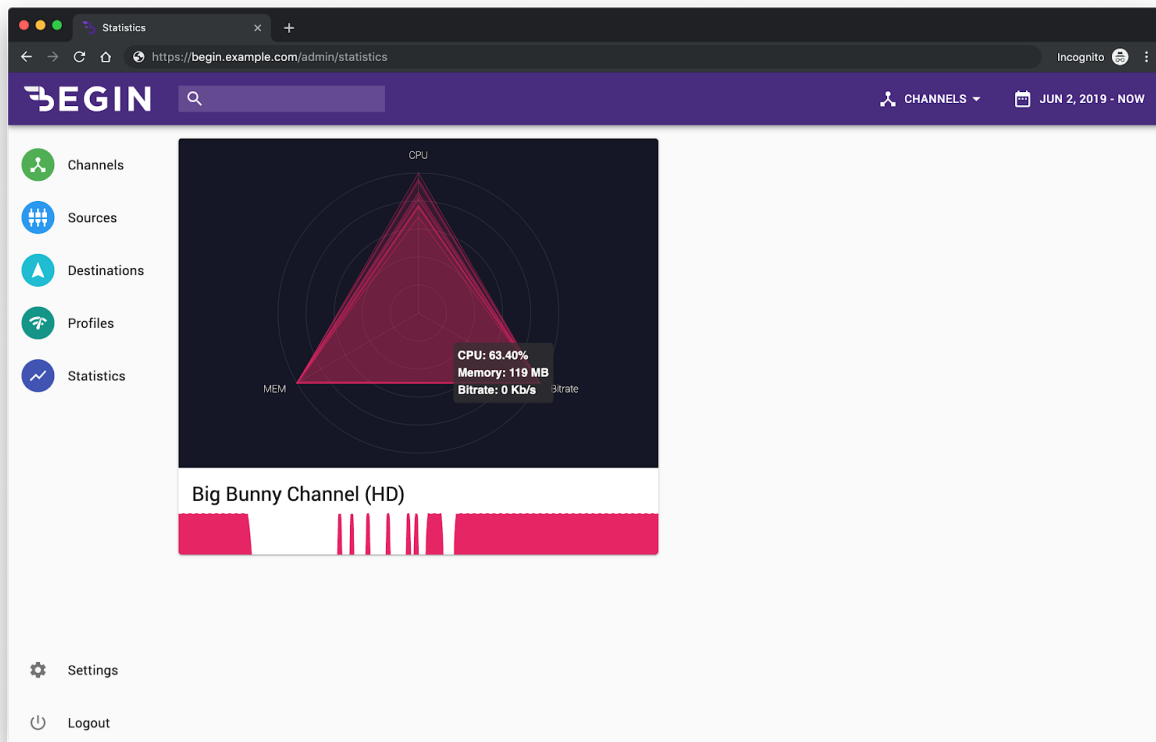
CPU Usage by Core graph shows the cpu usage per core over a period of time and will update every 5 seconds with new usage data.



## Channel Statistics

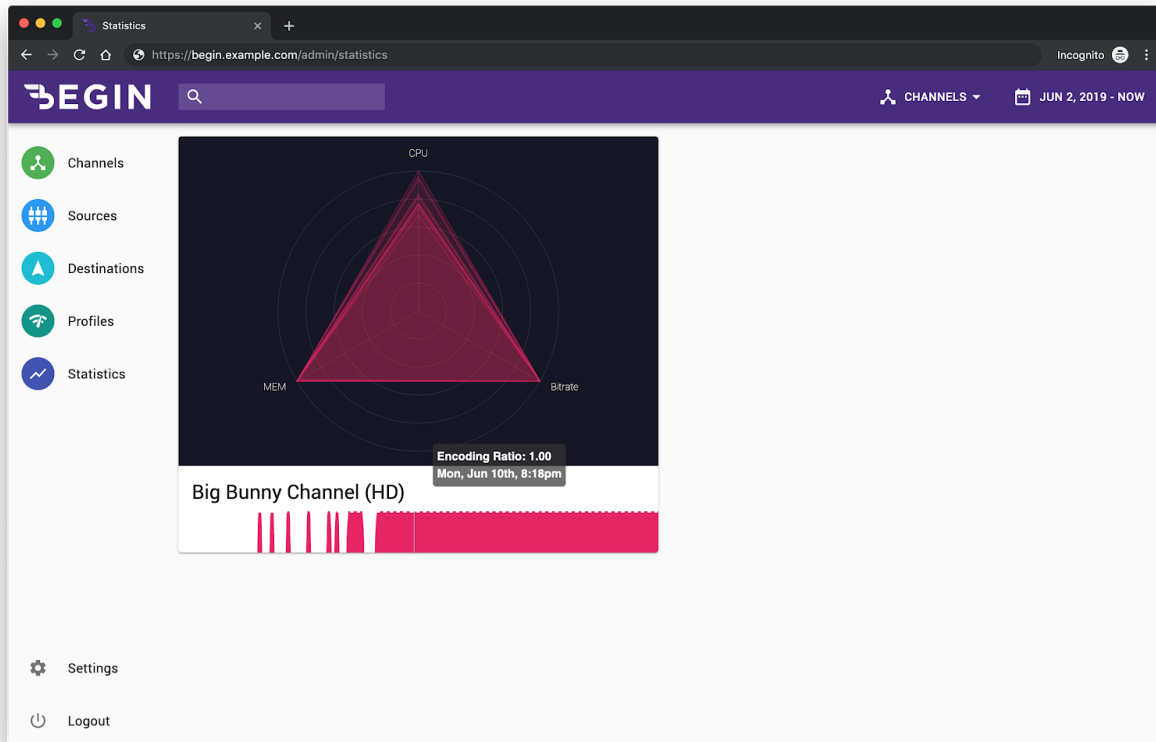
Channel Statistics page shows statistics of list of channels that are active.

Statistics card shows the CPU usage, memory usage and bitrate of the channel in the radar graph in a triangular shape.





Volume graph below the channel name shows the encoding ratio of the channel. The closer the encoding ratio is to 1.0 the better the quality of the output stream.



# Application Settings

## Overview

Settings dialog shows the following,

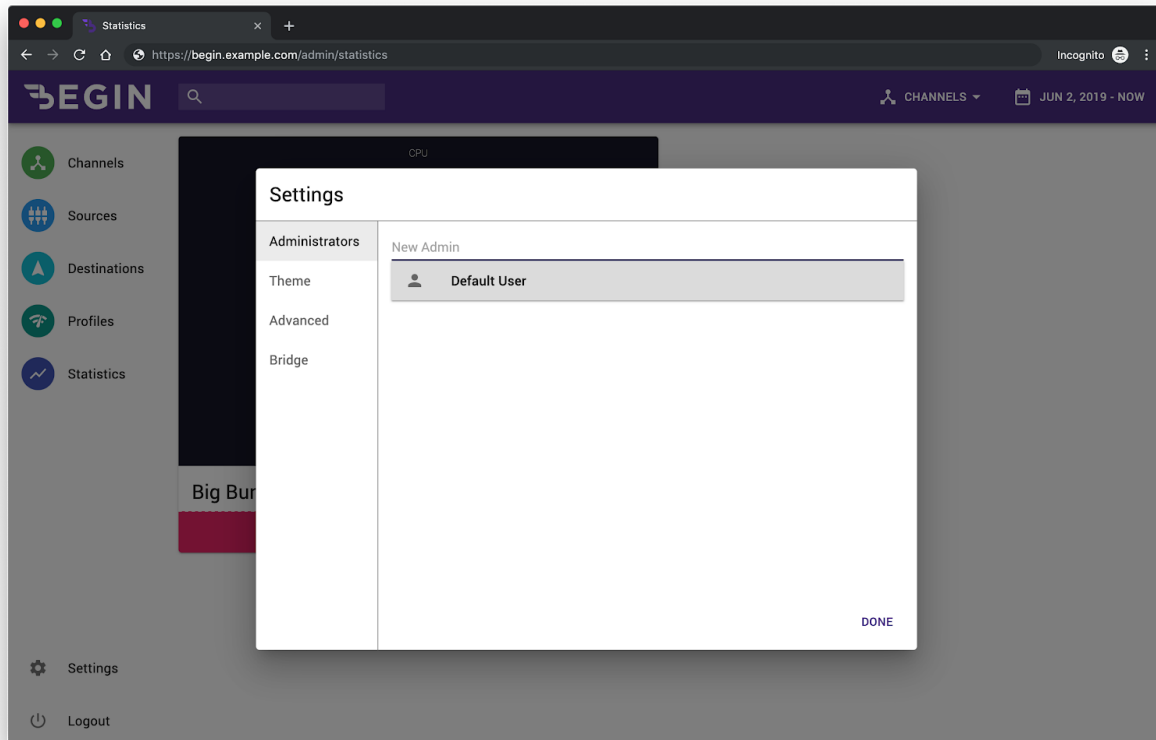
- Administrators
- Theme options
- Advanced settings
- Bridge login

## Administrators

Begin encoder has a set of users that has superuser access to the entire encoder.

To add an administrator, search for the user or group and click on the name to add as an administrator.

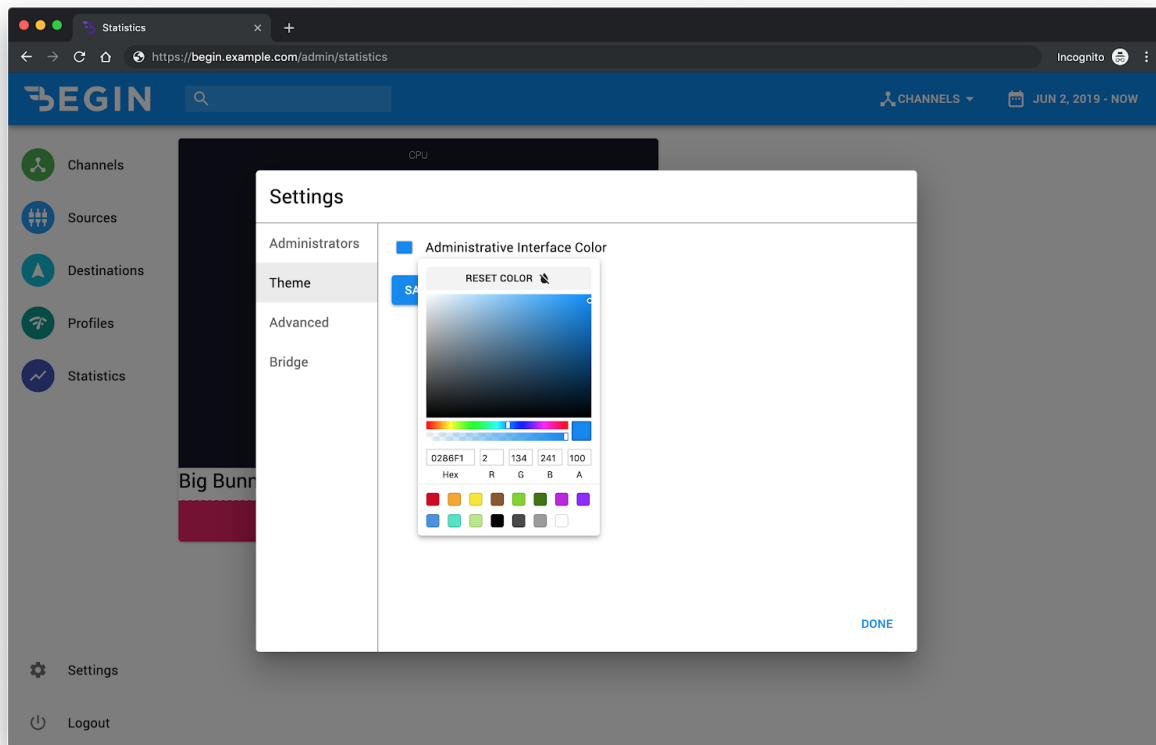
To remove an application administrator, Click on the  icon and click on  **Remove**.



## Theme

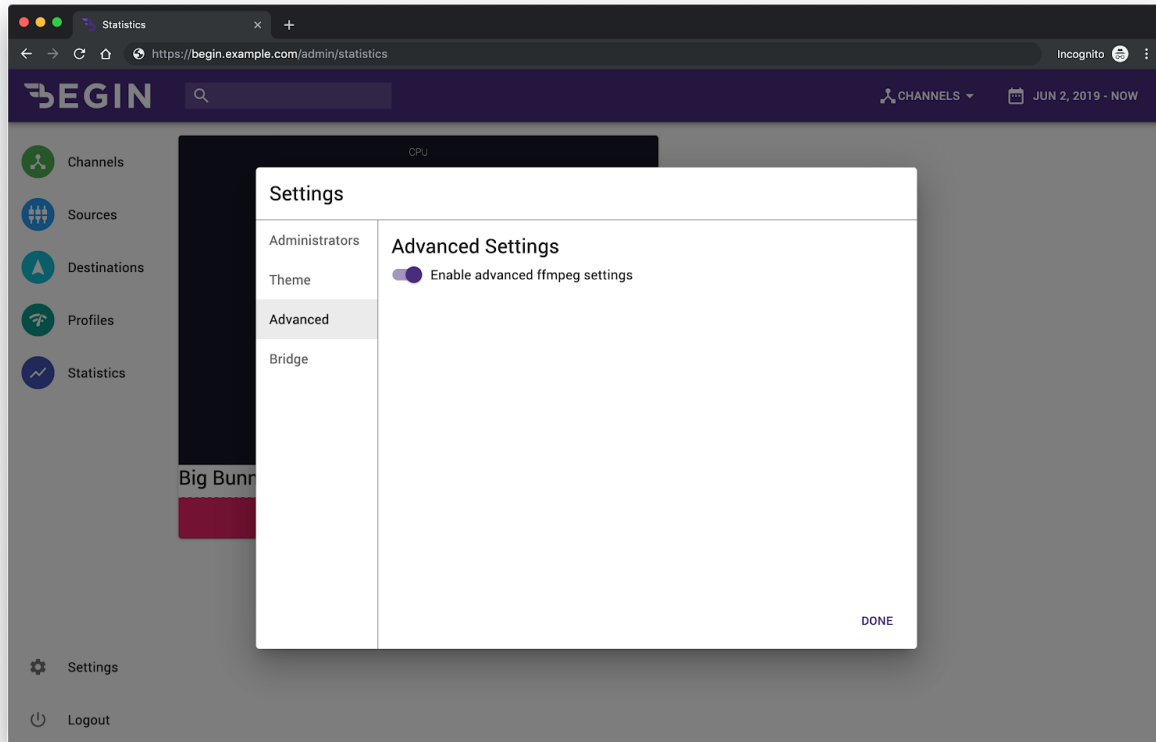
Set a custom theme color for Begin.

Click on Theme tab and click on the colored box next to Administrative Interface Color to open the color picker.



## Advanced

Enable the advanced ffmpeg settings toggle to view custom ffmpeg settings on the individual channel page.



## Bridge

Click on Bridge tab and click on **Login to Bridge** button to login to bridge.

