SAFARI MONTAGE®
G3011
BROADCAST ENCODER

INSTALLATION AND SETUP GUIDE

FRONT

BACK

SAFETY PRECAUTIONS

The presence of this symbol is to alert the installer and user to the presence of uninsulated dangerous voltages within the product's enclosure that may be of sufficient magnitude to produce a risk of electric shock.

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS DEVICE TO RAIN OR MOISTURE, AND DO NOT OPEN THE DEVICE. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

- DO NOT apply power to the unit until all connections have been made, all components have been installed and all wiring has been properly terminated.

- DO NOT terminate, change or uninstall any wiring without first disconnecting power from the device.

- This device is supplied with the appropriately rated power cord. The use of any other power cord could cause damage and invalidate the manufacturer's warranty.

- DO NOT connect the power cord to the device if the power cord is damaged.

- DO NOT cut the power cord.

- DO NOT plug the power cord into an AC outlet until all cables and connections to the device have been properly connected.

- The device should be installed in an environment consistent with its operating temperature specifications. Placement next to heating devices and ducts is to be avoided as doing so may cause damage. The device should not be placed in areas of high humidity.

- DO NOT cover any of the device's ventilation openings.

- DO NOT cover or obstruct the device's fan or fan openings.

- If the device has been in a cold environment allow it to warm to room temperature for at least 2 hours before connecting to an AC outlet.

Product Description

The SAFARI Montage Broadcast Encoder is a small form factor, single-input HD encoder that combines support for HLS Adaptive Bitrate (ABR) HTML5-native playback, traditional UDP multicasting, and low latency video streaming to public CDNs such as YouTube Live and Vimeo.

These next generation encoders integrate seamlessly with SAFARI Montage IPTV & Live Media Streaming solutions to support delivery to mobile devices, Chromebooks, and all the latest browsers. They provide full, native HTML5-compatible playback and dynamically serve the optimal stream and bitrate to each client – all without the need for a plugin.

The SAFARI Montage Broadcast Encoder is ideal for streaming school news and supports up to 120 clients (classrooms) directly. When paired with this encoder, SAFARI Montage IPTV & Live Media Streaming solutions will dynamically select the optimal streaming format through client auto-detection, delivering UDP multicast or HLS ABR unicast streams.
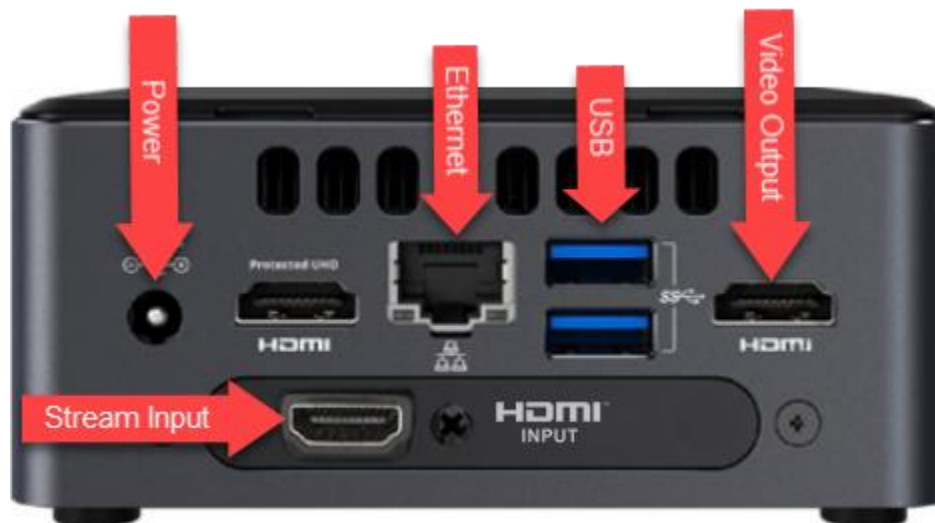
Unpacking and Inspection

Ensure that all items are removed and inspected prior to discarding any packing material.

Thoroughly inspect the unit and all contents to make certain all components are present and no damage has occurred in shipping, paying particular attention to connectors. If there is any sign of damage to the unit or items are missing, please contact SAFARI Montage Technical Support. SAFARI Montage Technical Support is available Monday – Friday from 8 a.m. to 6 p.m. Eastern Time, and they may be contacted by telephone at 800-782-7230 or online via http://www.safarimontage.com/support/.

Package Contents

- SAFARI Montage Encoder with:
    - (1) AC-DC Power Adapter
    - (1) 6' HDMI Cable
    - (1) 6' Network Cable

SAFARI Montage® Encoder Specifications

Power	AC-DC Adaptor AC input: 100-240 V DC output: 19V/3.4A
Video Encoding	H.264/AVC
Video Encoding Resolutions	HLS ABR: 576p, 720p, 1080p UDP Multicast: 1080p CDN RTMP: 720p Bitrates: Variable
Audio Encoding	AAC @ 128 kbps
Audio Input	HDMI Digital 3.5 mm Analog (with optional USB adapter)
Network	10/100/1000 Base-T Ethernet
Dimensions	4.5" (W) x 4.6" (D) x 2.1" (H)
Warranty	3 Years
Environmental	0° C to +40°C
Weight	1.6 lbs.
Included	6' RJ45 Cat-5e Patch Cable 6' HDMI Cable
CDN Streaming & Centralized Management Requirements	IPTV Maintenance or IPTV Streaming Software Upgrade Plan (SUP)

Installation and Configuration

Please read these instructions in their entirety before you begin:

1. Review any questions with Technical Support in advance. Please note that SAFARI Montage Technical Support is available Monday – Friday from 8 a.m. to 6 p.m. Eastern Time, and they may be contacted by telephone at 800-782-7230 or online via https://www.safarimontage.com/support/.

SAFARI Montage® System Requirements:

- SAFARI Montage® v7.5 or greater

- SAFARI Montage® IPTV or Selective Video Streaming license

- Clients must meet the System Requirements found at: https://www.safarimontage.com/support/releases/sm-7.5.x.aspx#system

Before You Begin:

2. Make all connections before powering the encoder.

3. Note that all Encoders ship with a default:

   - Static IP address: 191.53.51.216
   - Gateway: 191.53.51.1
   - Netmask: 255.255.0.0

4. SAFARI Montage strongly recommends that video sources be connected directly to the Encoder with the supplied cabling and cannot provide support for third-party distribution and/or switching equipment placed in-line between the video source and the encoder.

5. The encoder is designed to work with input sources set to 30 or 60 FPS. Please make certain your video source equipment is set for 30 or 60 frames per second.

6. SAFARI Montage is not responsible for damage caused by electrical surges and recommends that equipment be protected by installing surge protection where appropriate. Surge protection is **required** for Coaxial Cable inputs and is highly recommended for HDMI inputs. For further information please review our Surge Protection documentation.

7. The encoder supports both multicast and unicast deployment, with a recommended concurrent unicast user count numbering 125 or fewer. Please take the time to review our Multicast and Unicast Considerations documentation before configuring SVS streams within SAFARI Montage.

Initial Network Configuration:

1. Connect a monitor and keyboard to the encoder.

2. Connect the encoder to the network.

3. Power the encoder via the supplied power adapter or cord.

4. Configure the network settings as required to conform to the local network addressing scheme.

   a. The console menu will display when the encoder's boot process completes.

   b. Press 1 and enter to go to the **Network Settings…**

   c. Press 1 and enter again to go to **Network Cards (IP Address)…**

   d. Press 1 and enter to go to **NIC (eno1)**

   e. Press 1 and enter to **Disable DHCP and Assign Static IP**

```
SAFARI Montage......: Network Interface Type (eno1)

Host (FQDN).........:
Serial Number.......: BTDN826000TL
Version.............: 001.000.000 (000000000000)
IPv4 Address........:
------------------------------------------------------
1 : Disable DHCP and Assign Static IP

0 : Return
------------------------------------------------------
Enter your selection and press Enter:
```

f. Enter the desired static IP address and press enter

```
------------------------------------------------------
  e(X)it

Enter Static IP Address (xxx.xxx.xxx.xxx):
```

g. Enter the subnet in CIDR notation and press enter

```
IP address check ok...
------------------------------------------------------
  e(X)it

Enter valid CIDIR Block (1,2,4,8,16,32,64,etc):
```

h. Enter the Gateway IP address and press enter

```
CIDIR check ok...
------------------------------------------
  e(X)it

Enter valid Gateway (xxx.xxx.xxx.xxx):
```

i. Enter DNS server(s) leaving a space between each address

```
Gateway ok...
------------------------------------------------
  e(X)it

Enter valid DNS (xxx.xxx.xxx.xxx (seperate each entry by a space)):
```

j. The information will be saved and applied to the unit.
k. The static IP will be reflected in the menu when it reloads

Configure Host Name

With a monitor and keyboard connected to the encoder:

1. Press 1 and enter to go to the **Network Settings…**
2. Press 3 and enter to go to **Host/Domain**
3. Press enter to begin the configuration
4. Enter the host name and press enter

```
Host
        << current settings >>
--------------------------------------------------
machine hostname:
machine nodename:
machine domain:
--------------------------------------------------
press enter to continue
new hostname or leave blank for current          : hostname
```

5. Enter the domain name (including the top level domain) and press enter

```
Host
        << current settings >>
--------------------------------------------------
machine hostname:
machine nodename:
machine domain:
--------------------------------------------------
press enter to continue
new hostname or leave blank for current          :
new domain name or leave blank for current       : domain.com
```

6. Wait for the encoder to finish changing the domain name, and hit enter when prompted to return to network configuration
7. Verify that the **Host (FQDN)** displays the host name you configured

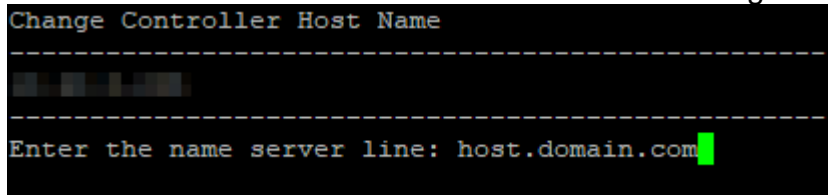## Configure SAFARI Montage Controller

Select encoder settings can be managed from the SAFARI Montage controller through Pathways SM. To do this, the encoder must be given the appropriate host name of the controller. With a monitor and keyboard connected to the encoder:

1. Press 13 and enter to go to the **SAFARI Montage Controller…** menu
2. Clear any existing controller by pressing c (clear) and enter

```
SAFARI  Montage Server Host Name
        << current settings >>
--------------------------------------------------

--------------------------------------------------
e: edit      c: clear      0: quit

Enter your selection and press Enter: c
```

3. Press e (edit) and enter to begin configuration

4. Enter the FQDN or IP address of the SAFARI Montage controller and press enter
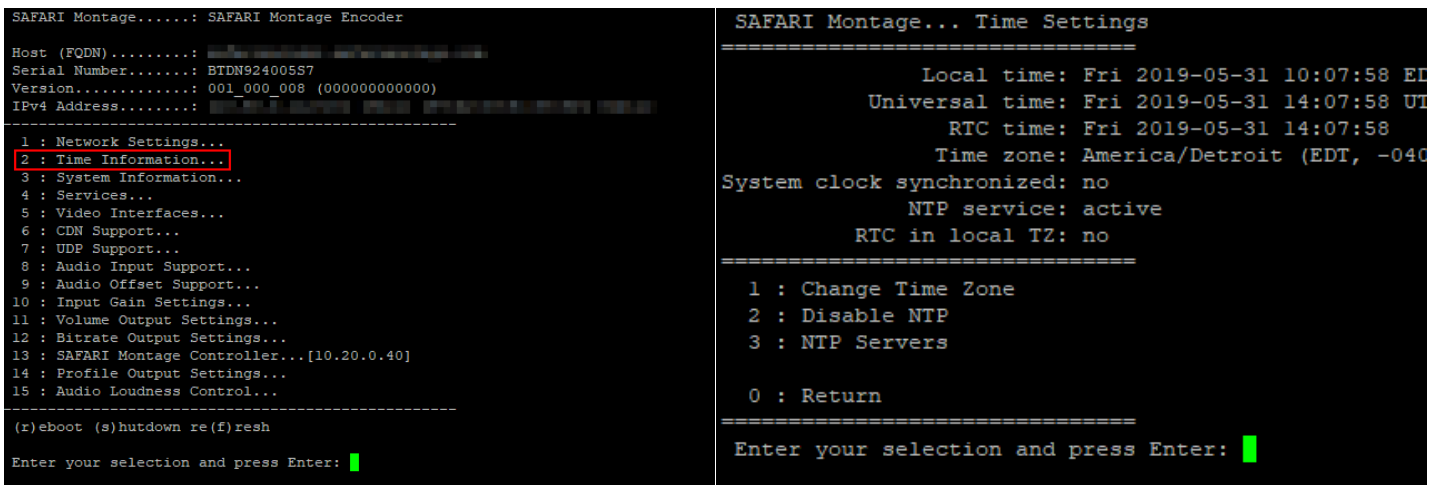

5. Ensure the controller's FQDN or IP address appears in the **<< current settings >>** section
6. From a separate computer, login to your SAFARI Montage controller and navigate to **Admin > Pathways SM > Broadcast Encoders** and verify that this encoder appears in the list

Allowed	Version	Serial Number	IP Address	Hostname	Description	Inputs	Recording Enabled	Status			
✔	001.000.008				broadcast encoder	1	f	7 secs	view	edit	delete

Time Configuration:

Set the unit to proper local time to ensure correct playback. Time can be set by going to the Time Information (option 2) menu from the main console menu.

NOTE: It is recommended that local NTP servers are used with all SAFARI Montage hardware to ensure accurate time settings.
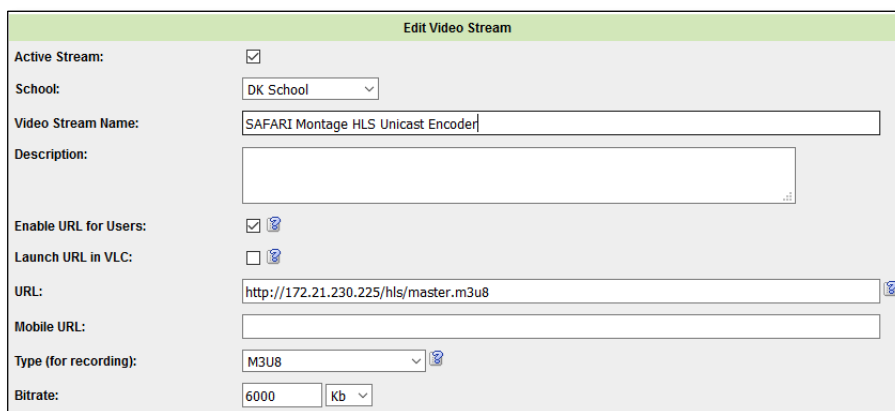
Using With SAFARI Montage:

To configure in SAFARI Montage® Selective Video Streaming:

1. Login to SAFARI Montage as an administrator.
2. Navigate to Admin > Selective Video Streaming > Video Streaming.
3. Click on the New Stream link.
4. Select a school, enter a descriptive name, and enter the streaming URL in one of the following formats:

Example SVS Supported URLs	
Description	**URL**
ABR Stream	http://x.x.x.x/0/master.m3u8
576P HLS Stream	http://x.x.x.x/0/vs0/manifest.m3u8
720P HLS Stream	http://x.x.x.x/0/vs1/manifest.m3u8
1080P HLS Stream	http://x.x.x.x/0/vs2/manifest.m3u8
UDP Stream	udp://@239.x.x.x:>multicast port<

Replace "x.x.x.x" with the IP address of the encoder.

5. Set Type (for recording) to M3U8 for ABR and HLS streams, and H.264 RAW TS for UDP streams.

6. Configure additional stream settings as desired and click on Add to save the new stream.
7. Click on the stream name to navigate to the stream detail page.

8. Click on the Play icon PLAY to verify playback.

Using Within a Web Browser:

Use the following example URLs to view the streams within a browser.

Example Direct playback URLs	
Description	**URL**
ABR Stream	http://x.x.x.x
576P HLS Stream	http://x.x.x.x/0/576.html
720P HLS Stream	http://x.x.x.x/0/720.html
1080P HLS Stream	http://x.x.x.x/0/1080.html

Replace "x.x.x.x" with the IP address of the encoder.

Connecting to a CDN:

Connecting a Stream to a CDN can be done through the console menu.
1. From the main menu press 6 and enter to go to **CDN Support.**
2. Press 1 and enter to **Add CDN Support to HDMI Input 0**

```
Host (FQDN).........: encoder-desk2.safarimontage.com
Serial Number.......: BTDN826000TL
Version.............: 001.000.000 (000000000000)
IPv4 Address........: 192.168.123.206/24 (eno1) [54:b2:03:0b:07:da]
--------------------------------------------------------
1 : Add CDN Support To HDMI Input 0

0 : Return
```

3. Enter the CDN URL and then press enter
4. Enter the CDN Key and then press enter
5. Within the next scheduler period (once a minute) the system should notice the stream is configured to broadcast to a CDN and start trying to push to it.

NOTES:
- *Consult your CDN provider for CDN URL and Key.*
- *Only one CDN key can be assigned to a Stream.*

Enabling Multicast Streaming:

Configuring a multicast UDP stream can be done through the console menu.
1. From the main menu press 7 and enter to go to **UDP Support**.

```
SAFARI Montage......: UDP Support

Host (FQDN)........: encoder-desk2.safarimontage.com
Serial Number......: BTDN826000TL
Version...........: 001.000.000 (000000000000)
IPv4 Address......: 192.168.123.206/24 (eno1) [54:b2:03:0b:07:da]
--------------------------------------------------------
1 : Add UDP Support To HDMI Input 0

0 : Return
--------------------------------------------------------
Enter your selection and press Enter: █
```

2. Press 1 and enter to **Add UDP Support to HDMI Input 0**

```
adding UDP support....
--------------------------------------------------------
Enter UDP address (udp://239.x.x.x): □
```

3. Enter a valid multicast address udp://239.0.0.1 – udp://239.255.255.254

    NOTE: it is recommended that the last 3 octets of the multicast address match the encoder's IP address.

```
adding UDP support....
--------------------------------------------------------
Enter UDP Port (xxxx): □
```

4. Enter a valid multicast port number (e.g. 1234)
5. The encoder will then save the settings, begin multicasting, and return to the UDP Support menu

NOTE: Other settings not covered in this document can be configured from the console menu.