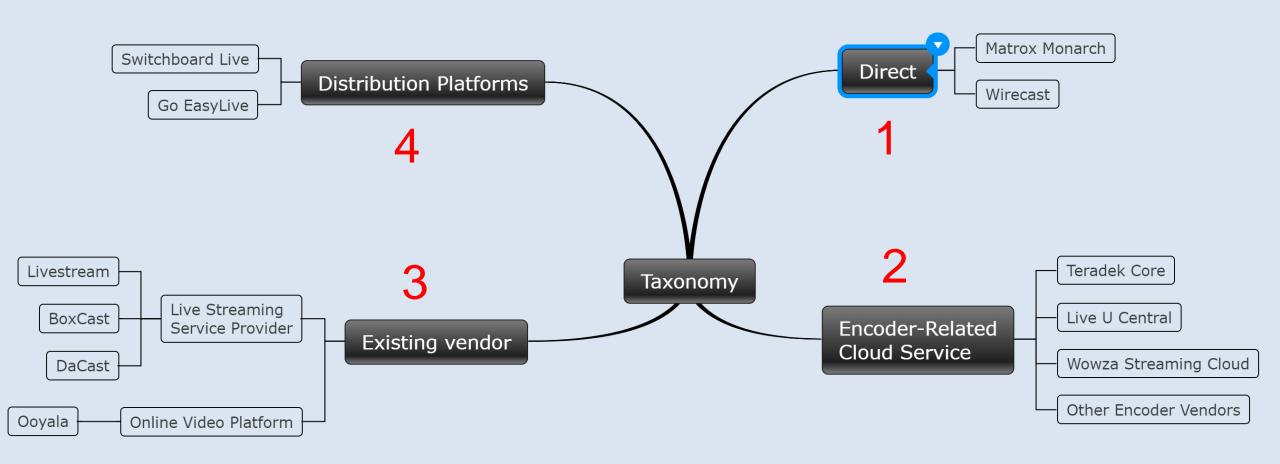
#### TECHNOLOGIES FOR LIVE STREAMING TO MULTIPLE PLATFORMS

Jan Ozer www.streaminglearningcenter.com jozer@mindspring.com/ 276-235-8542 @janozer

#### Agenda



## Facebook Live Rules to Live By

#### **20. Live API** https://developers.facebook.com/policy

- 1. Don't build apps that enable publishers to simultaneously stream to Facebook and other online streaming services.
- 2. Don't use the API to stream directly from a mobile phone or tablet camera to Facebook.
- So, can't use preset to stream to Facebook Live AND another service
- Workaround
  - Use custom RTMP settings for other services (or FBL)



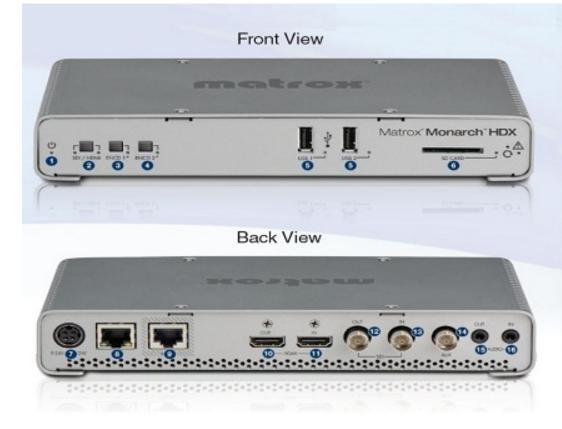
- Hardware devices
- Software

#### **Multiport Hardware Devices**

- Overview:
  - Hardware devices that stream directly to two or more services
    - Matrox Monarch HDX <u>http://bit.ly/ma\_mon\_hdx</u>
      - •\$1,995

### Matrox Monarch HDX

- Connect camera to input
  - Can be one camera to two outputs or one to one
- Configure outputs
  - Can be 1 destination
  - Can be 2 destinations
  - Can be 1 record (at high quality) and one service



- 1) Power LED
- Input Section Button
- Start/Stop Encoder 1
- 4) Start/Stop Encoder 2
- 5) USB 2.0 Ports
- 6) SD Card Slot
- 7) Power Connector
- 8) Gigabit Ethernet Port
- 9) RS-232 Connector
- 10) HDMI Output Connector (with embedded audio)
- 11) HDMI Input Connector (with embedded audio)
- 12) SDI Output Connector (with embedded audio)
- 13) SDI Input Connector (with embedded audio)
- 14) Auxiliary Input Connector
- 15) Analog Audio Output (stereo)
- Analog Audio Input (stereo)

#### https://youtu.be/u-gJLuGyD\_I?t=12m14s

#### Matrox Monarch HDX

#### **Benefits of dual encoder:**

- Stream to platforms such as YouTube Live or Facebook Live and your own website to target both platforms for more immediate exposure
- Stream to primary and back-up server destinations for redundancy
- Stream locally at high bitrates (say, to a separate campus) and to a CDN at a lower bitrate

## **Desktop Production Software**

- Wirecast desktop production software (\$695+)
- Can transmit to more than one service simultaneously
  - vMix can also do this

Output Settings		- 🗆 ×
Eacebook Live Streaminn Media East RTMP Server RTMP Server	Name:       Streaming Media East         Destination:       Facebook Live         Encoding:       Default: 720p30 (2Mbps) x264 H.264	
	Username: Jan Ozer Change Schedule: Go Live Now	f
	Post To:  Pages Profile Groups Events Show verified pages only Refresh	Sign.Up
	Title: Description:	
	Privacy: Public Places: Create Advanced Options	
	Click 'Create' to refresh RTMP URL after editing any field Bitrate: 2378 k	
	Location: Stream Delay: 0 seconds	
Add Remove		OK Cancel

https://youtu.be/nZkVzIhRqNs?t=1m

#### Wirecast Software

- Benefits of two supporting two destinations from a single machine
  - All those specified with Monarch
- Potential issues
  - Each stream is a separate encode
  - Can drag system performance and cause instability

## Going Direct – Viable in Small Quantities

#### Pros

- You control all streams; no third party involved (security)
- No third party fees (lower OPEX)
- Lower latency

#### Cons

- Require higher outbound bandwidth
  - Problematic from remote locations
- Higher CAPX
- Doesn't scale beyond 2-3 very well; if targeting 20 – 30 Facebook pages, not really an option

## **Cloud Switching With Existing Vendors**

#### Hardware

- Encoding vendors
  - Teradek
  - LiveU
  - Wowza
  - StreamBox
  - Other encoding vendors

#### Cloud

- Live Streaming Service Providers
  - Livestream
  - Streambox
- Online Video Providers (OVP)
  - Ooyala
- Others

## Going Direct – Generic Pros and Cons

• What is it? Send single stream out; duplicate stream and route to different destinations in the cloud

#### • Key benefits of class:

- Low CAPEX single encoder on-site
- Lower outbound bandwidth requirements
  - Great for event producers

#### Teradek

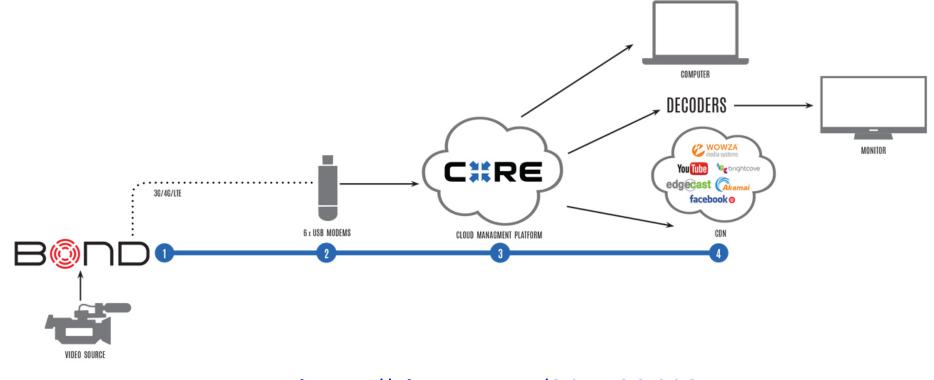
• If you've got a Teradek encoder, consider Teradek Core



HEVC

#### **Teradek Core**

• What is it? A cloud service that allows you to publish a single video feed to multiple destinations simultaneously



https://vimeo.com/217599416

#### Teradek Core

- Key benefits:
  - Deliver to multiple platforms both in-house (networks) and thirdparty
  - Transcode HEVC to AVC for delivery
  - Remotely manage and configure your Teradek encoders
  - Archive your streams
  - Transcode and more
- Its a bespoke IP video management ecosystem for Teradek users.

# Pricing

		PRICING	
		Monthly Annual	1
	<b>Premium</b> \$249.00	<b>Basic</b> \$99.00	Starter \$49.00
Number of devices	5 encoders 5 decoders	<b>2</b> encoders <b>2</b> decoders	1 encoder 1 decoder
Live:Air apps	5	2	1
On-demand Sputniks	Yes	Yes	Yes
Core-hosted Sputniks	2	1	0
On-premise Sputniks	2	1	0
Data Transfer	300 GB	50 GB	25 GB
Recording	Yes	Yes	No
HEVC transcoding	Yes	Yes	No
Free trial	No	30	30
	SUBSCRIBE NOW	SUBSCRIBE NOW	SUBSCRIBE NOW

#### LiveU

• If you have a LiveU encoder,

LU600



LU200

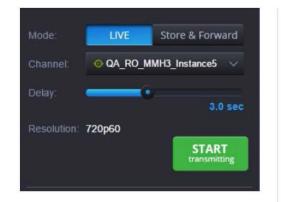


Solo



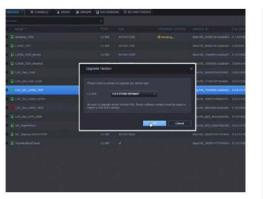
## You Should Consider LiveU Central

 What is it? A cloud service for monitoring and controlling your LiveU encoders



#### **REMOTE CONTROL**

Manage LiveU field units all over the world from a centralized control room or manage broadcasts from the field from any browser-supported device.



#### SIMPLIFIED UPGRADES

Full software upgrade management & control by customer's admin user. The target version is set by the customer's admin on LiveU Central and the upgrade is initiated from unit UI by the end user. During the upgrade the progress can be monitored within LiveU Central.



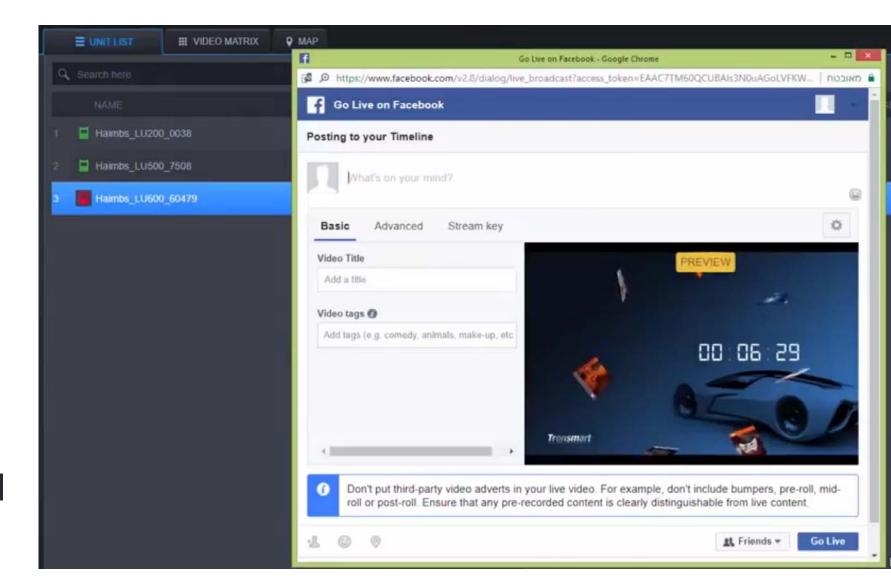
#### FULL UNIT MONITORING

Integrated Geolocation allows users to track units on a map, and comprehensive signal charts make it simple to monitor connections and performance.

LiveU Central - https://www.youtube.com/watch?v=0o1D3\_upVRQ

# LiveU Central

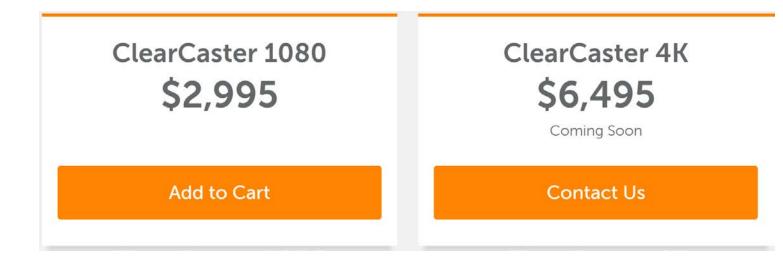
- Can route videos to multiple destinations, including Facebook Live
- Free with any unit; lease, purchase or rental



To 1:34 https://www.youtube.com/watch?v=J-zaC0\_zgfw

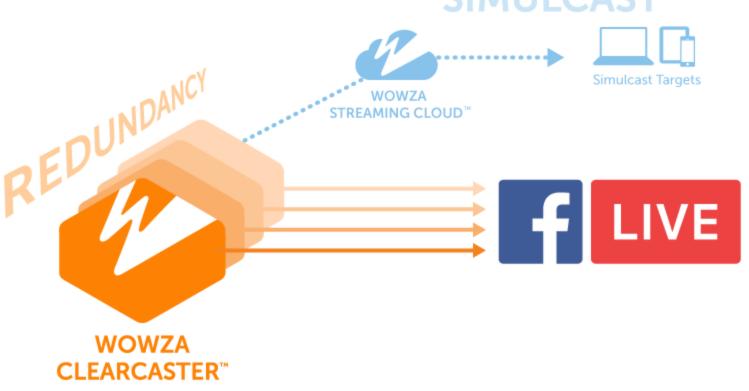
#### Wowza ClearCaster

- Broadcast 1080p
   Facebook Live (of of the few that can support 1080p)
- Encodes 360° and VR video
- Includes x264 and is VP9 and H.265-ready.



## Simulcast to Other Destinations Via Wowza Streaming Cloud

- ClearCaster can send a stream to WSC
- Can route streams to any RTMP-based destination
- Can also use as solution without ClearCaster

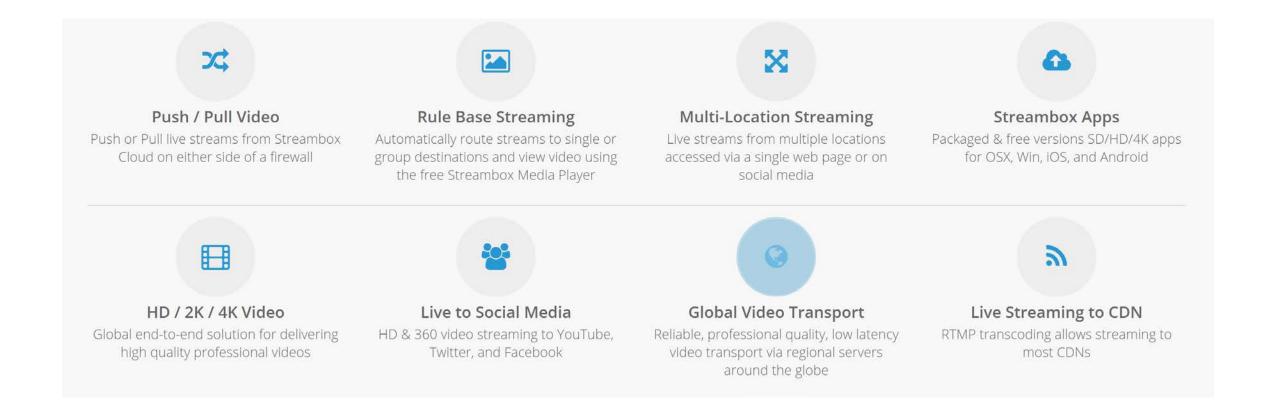


https://youtu.be/7v-7qgsdDHw?t=51s

#### Wowza Streaming Cloud Pricing

Wowza Streaming Cloud Live Event-Based Pricing Monthly Yearly Standard Plus Premier Starter (Monthly Only) \$49 \$199 \$499 \$999 Price per month Price per month Price per month Price per month 10 50 150 350 **Processing Hours Processing Hours** Processing Hours **Processing Hours** 500 GB 3,000 GB 7,000 GB 15,000 GB (~6,000 viewing hours) (~14,000 viewing hours) (~30,000 viewing hours) (~1,000 viewing hours) Add to Cart Add to Cart Add to Cart Add to Cart

#### StreamBox Cloud for StreamBox Encoders



#### StreamBox Cloud Pricing

#### **Streambox Cloud Pricing**

Find the Streambox Cloud Package That Meets Your Needs

	TON Trial	Event	Standard	Enterprise	Custom/Broadcast
Choose Plan	Free	\$295 One Time	\$99 / month	\$499 / month	Contact Sales
Billed Annually	×	×	\$1188/year	\$5988/year	Contact Sales
Data Amount	1 GB	250 GB	100 GB/month	800 GB/month	Contact Sales
Production Hours	2.5 Hours	555 Hours	250 Hours/month	2000 Hours/month	Contact Sales
Multiple User Accounts	×	~	~	~	×
Global Video Transport	×	×	×	Add-On	Add-On
Discounts Available for Governments, Education, and Non- Profits	Try Now	Order Now	Order Now	Order Now	Order Now

#### Does it Make Sense to Buy an Extra Encoder to Reach Another Service

#### Pros

- Security (medical, investments, governmental)
- Direct control

#### Cons

- CAPEX (can be minor)
- Additional bandwidth costs (particularly problematic if onlocation)
- services are fixed price (or free), so competing with free
- Conclusion: perhaps for one or two extra, but for scale, services almost always better alternative

#### **Bottom Line**

- If you're using encoding hardware; check if your encoding vendors has a cloud service. You get:
  - Control and monitoring for your devices
  - Software updating
  - Transcode HEVC (or other formats) to H.264 for broad compatibility
  - Routing to internal sources (broadcasters, etc).
  - Routing to third party sources (all companies)

# Live Streaming Platforms

- Streaming platforms that
  - Input live streams
  - Enable playback on their own site
  - Enable playback on your site via embedding
  - Also can send a stream to Facebook Live

- Representative companies
  - Livestream
  - Boxcast
  - DaCast
- Key value proposition
  - Simplicity
  - If using this service already, pretty easy to distribute to other sites
  - If using a service, check if they support multiple outputs

## Livestream

 Typically use Livestream as primary target, either for viewing on Livestream, or embedding in your own website

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Ö Ad

- Choose Facebook Live as another destination for Simulcast
- Or, YouTube plus Custom Destination

Account	Simulcast	
Password		
	Connect and stream to multiple destinations.	
Simulcast NEW	Simultaneously broadcast to Livestream, Facebook*, Periscope, YouTube, or	
Notifications	any other RTMP destination with a single stream.	
	How simulcasting to Facebook Live and YouTube works	
Plans	Recommended settings for Periscope	
	Setting up a custom destination (Twitch, Periscope, etc)	
Billing	List of approved broadcasting tools	
Donations	* Facebook can only be simultaneously streamed with Livestream due to Facebook restrictions.	
Devices		
Advanced	Facebook ADD	
	OR @	
	YouTube YouTube	
	Custom destination Twitch, Periscope, etc	

#### Boxcast

- Typically use BoxCast to stream to an embedded player on your own website
- Can setup Facebook Live, YouTube Live or Other RTMP outputs as destinations

https://www.youtube.com/watch?v=nSzYc8b7754

	tered	
Connected to Facebook as Jan		
Facebook Live	Show on My Timeline	Û
	Only Me Only Friends Public	
YouTube Live	Jan Ozer <janozer@gmail.com></janozer@gmail.com>	
	Private Public Unlisted	
Other RTMP	Server URL	Û
	e.g. rtmp://rtmp.service.com/live	
	Stream Key	
	Max Resolution	
	None (use highest)	
Add Destination	f You 🕰	

#### Other Vendors with Multiple Platform Support

- DaCast live stream
- Ooyala Online Video Platform (OVP)
- If using a cloud provider for any live streaming task, ask about ability to stream to other services

#### **Distribution Platforms**

- Switchboard Cloud
- GoEasyLive

## Switchboard Cloud

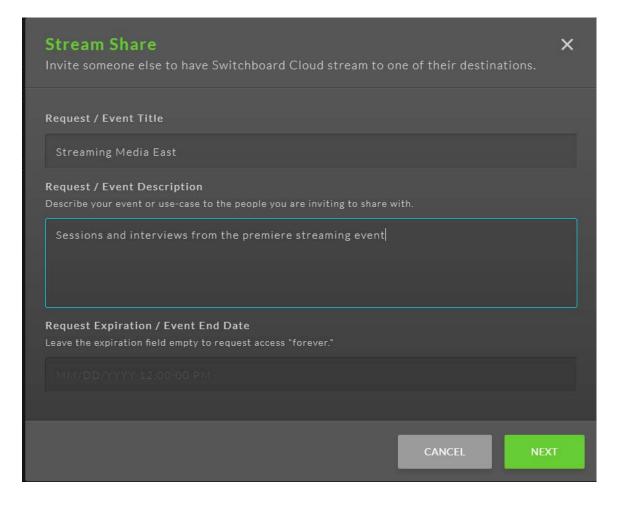
- Originally Joicaster
- Choose and configure multiple destinations
- Input one or more streams
- Select multiple output points
- Designed to distribute to multiple outputs
- Streaming Media Tutorial http://bit.ly/SBC\_tut

Add Destination			×
Select a platform you would like to Need to do more? <u>Contact Sales</u> .	add to your	account from the list below, then (	click Next.
Account Type - Free Upgrade Nov	¥		
O Periscope Producer		Facebook	
YouTube		WatchPeopleCode	
UStream		Twitch	
🌫 Sunday Streams		🜀 StudioSessions TV	
Streamup		O StreamSpot	
Picarto.TV		O Periscope (Manual)	
Liveleak		😰 LiveEdu	
w Livebeats		🔒 Hitbox	
🚯 Disco Melee		Dailymotion Gaming	
Lailymotion		Seam	
Rzubu			

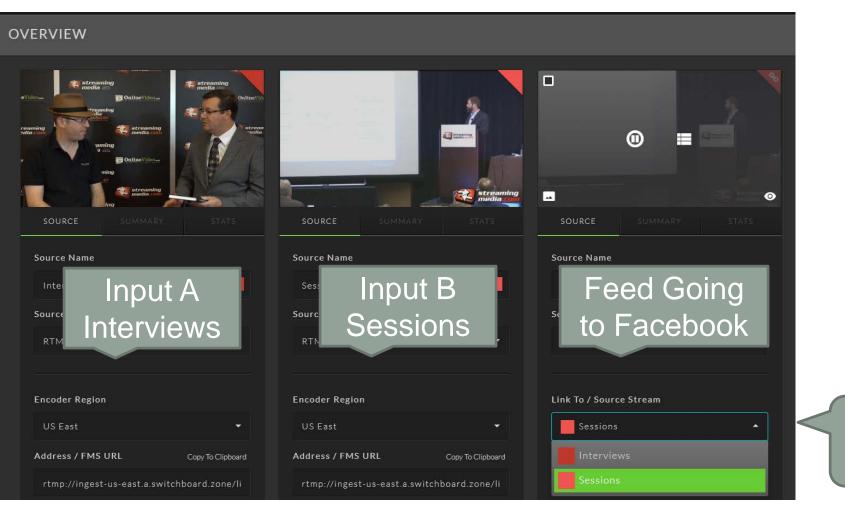
#### https://youtu.be/\_WS8-R0VOR0

#### A Few Really Cool Things about SwitchBoard Cloud

- Can easily request permission to stream to another Facebook Page (or hundreds of page)
- Any event can go to multiple FB sites without swapping passwords:
  - Brand events
  - Live events
  - Political events



#### Can Switch Videos Sources to Specific Destinations





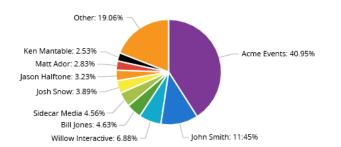
### Great Analytics (extra fee)

- Consolidated event stats
- Detailed stats about which page delivered how many views



ROUP PERFORMANCE			
	Live	24h Post	72h Post
Total Views	2,952,576	3,507,521	3,582,672
Facebook Views	2,652,067	3,201,218	3,276,139
Periscope Views	294,680	N/A	N/A
Youtube Views	5,769	11,563	11,793
Twitch Views	60	N/A	N/A

WHERE DID VIEWERS WATCH?



314 Hosted 27,541 Social Shares 2,957 Sign ups 1,583 Authorized Shares PEAK CONCURRENT VIEWERS (LIVE)  $\sim$ 13,596 VIEWS 10 2,952,576 Live 3,582,672 Total INTERACTIONS 36,526 Live 40,151 Total REACTIONS 51,810 Live 63,155 Total FACEBOOK IMPRESSIONS 1 15.580.711 Live 19.020.624 Total VIEW TIME 0 105,702 Hours 380,525,847 Minutes

DESTINATIONS

 $\sim$ 

ACME EVENTS, INC DECEMBER 8TH, 2017

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## Switchboard Cloud Pricing

- Professional \$75 per month
- Business \$750 per month
- Enterprise call for pricing

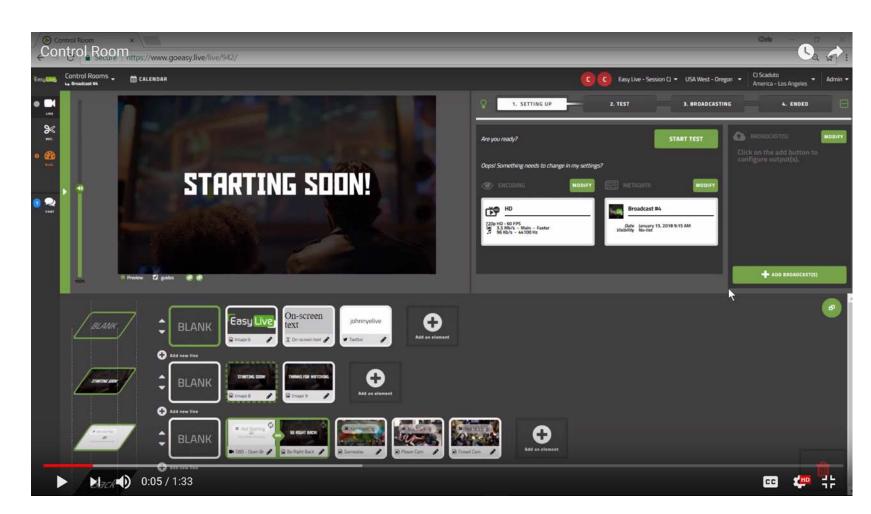
#### EasyLive – Cloud Production Studio



- A cloud production platform
- Input multiple feeds
- Create overlays, scoreboards, titles
- Output to multiple destinations
- Jan Ozer review http://bit.ly/GEO\_review

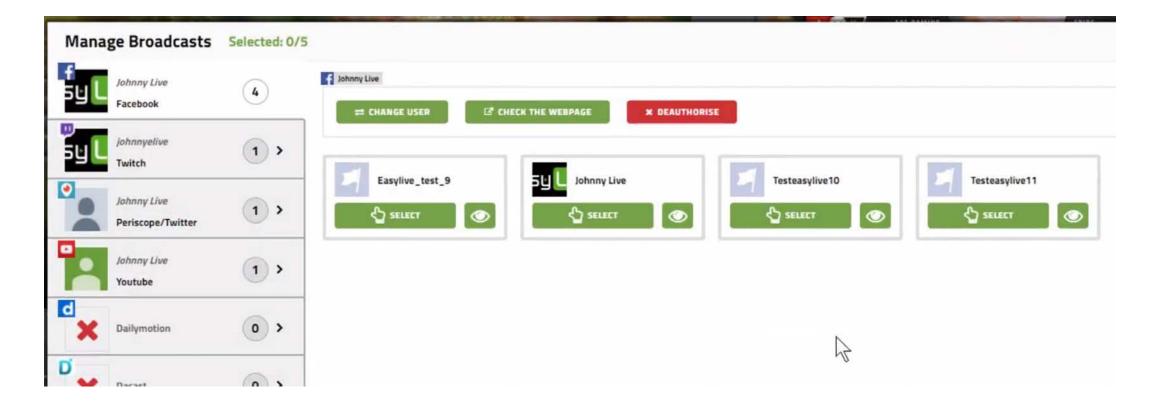
## **Control Room**

- Send single or multiple feeds back from event
- "Produce" in the cloud
- Live switching (not seamless; at keyframe)
- Can upload VOD assets to play if live stream crashes
- Advertising insertion



#### https://youtu.be/CMFv-RTBSi8

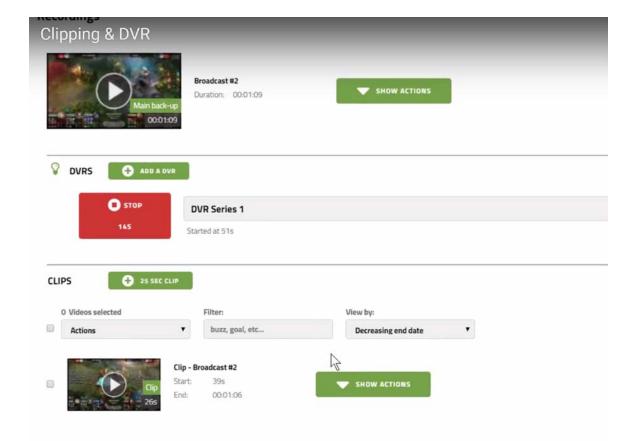
# **Setting Destinations**



<u>https://youtu.be/8u5fGrYyOiw</u>

## **Other Great Features**

- Clipping and DVR
- Create multiple outputs from single long session
  - Highlights
  - Separate songs, speeches, conference sessions, dances, etc.



#### https://youtu.be/CSX-dstaBEc

#### Simple and Transparent pricing

Paid plan starts with a 14-days trial. No credit card required. Monthly Billing Annual Billing MOST POPULAR STARTER PRO **ENTERPRISE** LET'S \$ TALK! per month per month Big companies have You want to discover the You are a pro and you more complex needs power of live streaming know what you want! and workflow. This is your tailored solution. **Contact Sales** Buy Now **Buy Now** Up to 4K 720 p 720 p 30 fps 30 fps 60 fps NEW 120h per year included 120h per year included Unlimited hours \$48 per additional hour \$18 per additional hour (billed per min) (billed per min) 🖳 🖪 🖸 🎽 + custom F Broadcast all at once (5 max) Broadcast all at once (Unlimited) Graphics management Graphics management Graphics management + HTML

# Go EasyLive Pricing

