B104: How-To: Technical Set-Up of Live Streaming Production

This session provides tips and tricks, best practices, and lessons learned regarding the technical set-up of live streaming production. Learn how to stream multiple formats from a single encoder, use social networking overlays, leverage adaptive bitrate streaming, and transition between live streams from multiple camera angles using multi-encoder synchronization. Come learn how to deliver interactive, high-quality experiences for your next live event.

Who am I?

- Rob Roskin, Sr. Manager Video Operations and Emerging Technologies.

- ~15 years at MTVN/Viacom. ~10 years on live streaming.

- 20-50 Events per year, used to be 5-10.

- Live streaming lead for MTV,VH1,CMT,Logo,Comedy Central, TV Land, Nickelodeon, Spike, Game Trailers, International, Internal Events.

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Cameras

Cameras

- Types
  - Static (non-moving): Good for well lit areas where you wont need to pan or tilt. Ex: red carpet entrance.
  - Robotic: Good for areas that a body can't take up due to regulations or a crew would be too expensive, but you still need mobility (pan/tilt/zoom). Ex: Green room or cameras on the stage itself.
  - ENG Crew (Electronic News Gathering): Good for when you have room for a few people and their gear, presents the best picture and can film anywhere.

Cameras (Continued)

- Tips
  - Make sure camera is not facing a light source.
  - When testing cameras outside, do it at the time of day the show will take place.
  - Don't affix cameras where bass will cause vibrations to be visible.
  - Pan/Tilt/Zoom robotic cameras require lots of cabling, if working in a union house be cognizant of costs.
  - Be wary of using "prosumer" instead of professional equipment. Could spend more converting signals.

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Encoders
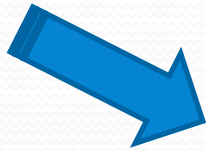
Encoder Setup

- Sync Timecode
  - What is timecode?
  - Why is synchronization important?
  - Mirandas
- Audio Synchronization
  - HE-1/2 VS. LC AAC
  - Keep each rendition the same audio bitrate.
- How to Choose Bitrates for Flash
  - Watch out for 512K users, 768K users.
  - No more than 2x the previous bitrate.
  - High end, 3K/3500 for 1280X720.
  - Use lower bitrates Internationally.

Encoder Setup Continued

- How to Choose Bitrates for Mobile
  - Don't worry too much about resolution.
  - Keep a few in the 3G range.
  - Crank up the b/w on the Wi-Fi stream.
  - Hit Android and iOS in the same profile.
  - If Intl – don't aim for Symbian, it's not the best experience.
- Balance Streams Across Encoders
  - Don't go in numerical order, the 3500 and the 2200 shouldn't be on the same encoder.
- Key Frames
  - What they are.
  - How they affect the synchronization.
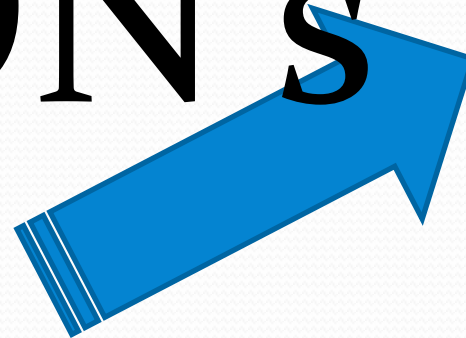 - 3 seconds.

Encoder Setup Continued

- Naming Conventions
  - Crucial for multi-bitrate streaming.
  - Keeps everyone on the same page.
  - CDN of your choice might have specific naming needs.
  - Stream1.flv doesn't help anyone.
  - MTV example: vma2011_greenroomflash_2200.

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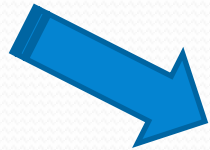
Bandwidth and CDN's

Internet

Bandwidth

- Watch ping times (latency) just as much as speed.
- Make sure you're connecting to the closest ingest point of your CDN.
- Leave overhead for TCP/IP! 30% rule.
- Bandwidth is used more heavily when there's motion, don't test with a slate if you're filming a concert.

CDN's

- Live streaming is difficult to do on your own, use a CDN.
- Cloud encoding vs. CDN.
- Security
  - Swf Hash.
  - Token Auth.
  - RTMPE / HTTPS.
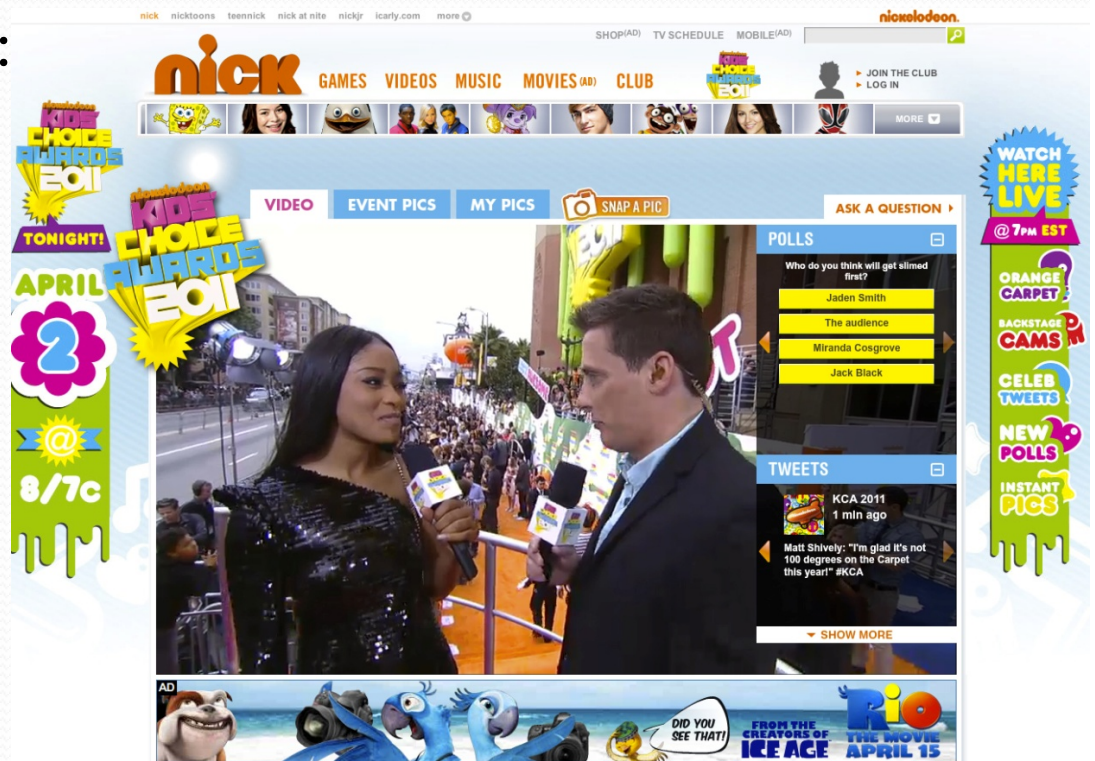- Geographic dispersion.

Social Networking Overlays

- AttractTV / Clip Sync
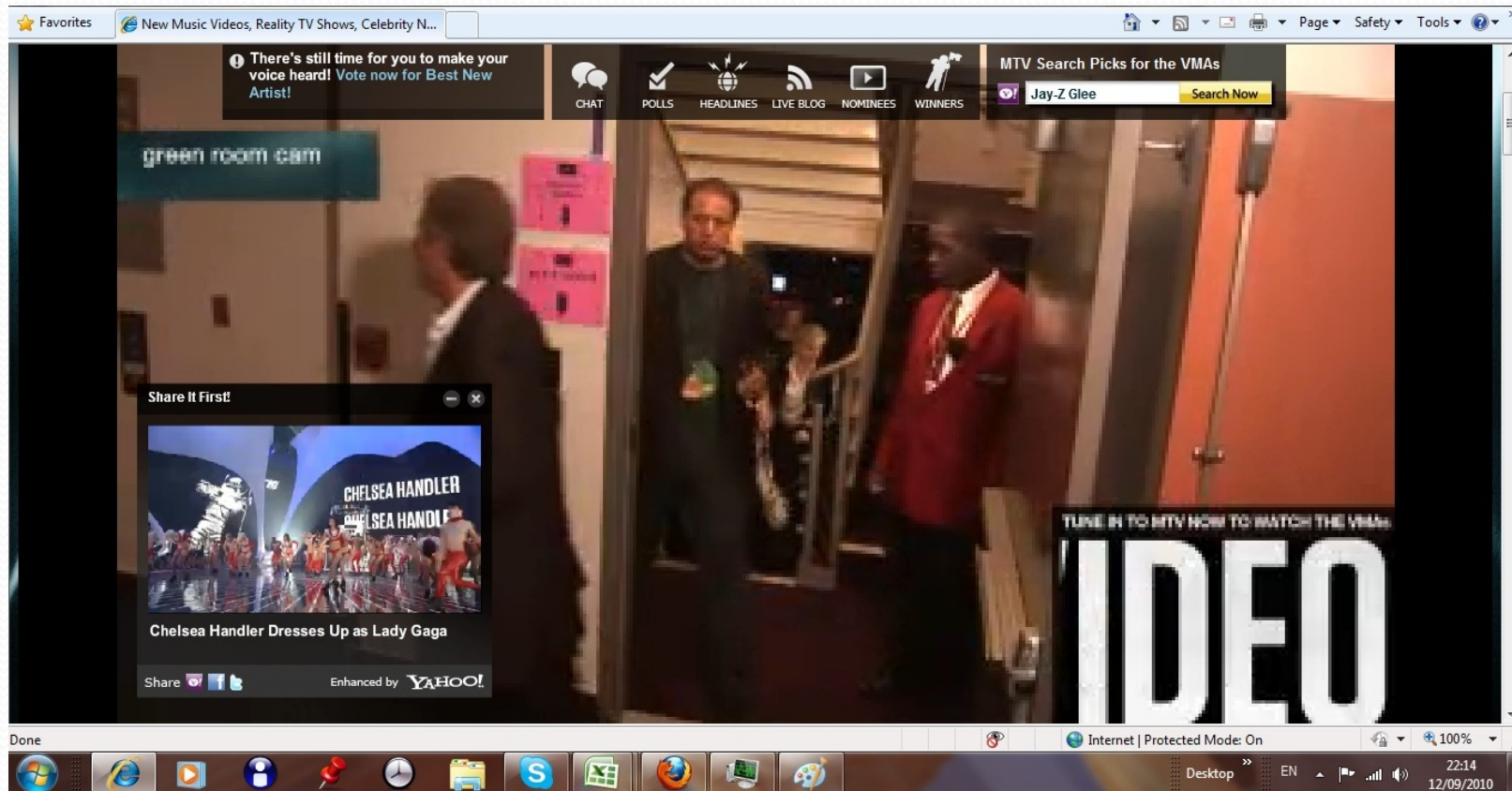
Social Networking Overlays (continued)

- What to use as widgets:
  - Polls
  - Charts
  - Take a photo
  - Make requests
  - Suggestion box
  - Mini-Game
  - "Boss" view
  - Tweets
  - Statistics
- Integrate right into player rendition xml.

Social Networking Overlays (continued)

-
- `<rendition cdn="akamai" method="httpstrm_akamai" width="1280" height="720" type="video/mp4" bitrate="3500">`
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- `</rendition>`
-
- `<rendition cdn="akamai" method="httpstrm_akamai" width="960" height="540" type="video/mp4" bitrate="2200">`
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- `</rendition>`
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- `<rendition cdn="akamai" method="httpstrm_akamai" width="768" height="432" type="video/mp4" bitrate="1700">`
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- `</rendition>`
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- `<rendition cdn="akamai" method="httpstrm_akamai" width="640" height="360" type="video/mp4" bitrate="1200">`
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- `</rendition>`
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- `<rendition cdn="akamai" method="httpstrm_akamai" width="512" height="288" type="video/mp4" bitrate="700">`
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- `</rendition>`
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- `<rendition cdn="akamai" method="httpstrm_akamai" width="384" height="216" type="video/mp4" bitrate="400">`
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- `</rendition>`
-
- `<item placement="overlay" format="swf" xPercent="-1" width="960" height="540" yPercent="0" startTime="0" duration="6000000" persistant="true" scale="false">`
- `<src>http://services.attractv.net/newtvhive/rest/asset/mtvloader.swf?src=http%3a%2f%2fservices.attractv.net%2fnewtvhive%2frest%2fasset%2fMTVgallery.swf%3FbaseServiceEndpointURI%3Dhttp%3A%2F%2Fservices.attractv.net%2Fnewtvhive%2Fservices%2F%26source%3D50844dbbfa91c00%26broadcasterKey%3DMTV_72d9307abb627c00%26debugMode%3Dtrue</src>`
- `</item>`

Test!

- Do a dry run the day before.
- When planning, leave enough time to adjust bitrates day of the show.
- Shows go bad when:
  - Changes are made after everything is working.
  - Testing was not done with the equipment in the field.
  - Bandwidth was an afterthought.

Thank You!!

For more information or if you'd like to discuss anything, please use the following:

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