



# New BATC Streamer and Internet Presence

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- Any questions (up to 10 minute)

- BATC TV Streamer

- Existing BATC TV Streamer
- Shortcomings of.
- New BATC TV Streamer Design
- Codecs
- Any more questions

# BATC Web System



- PHP+MySQL written by Chris G1FEF
  - Member Management System
  - Shop
  - CQTV Distribution
  - TV Streamer
- Services based on 3<sup>rd</sup> party software
  - Forum
  - Wiki (original, no longer used)
- Hardware hosted in Communication Gateway by Chris
  - Rack Server Unit owned by BATC
  - 100Mbps Network Connection

# BATC Web System



- Unmaintained system
  - No new features
  - Security concerns
- Scattered bugs
  - 'Forgotten Password'
- 100Mbps Pipe
  - Streamer runs ~40Mbps load
- Hardware hosting costs
  - High commercial pricing for our bandwidth requirements
  - Rack server lifetime

# New Web System Design



- Trusted 3<sup>rd</sup>-party software packages
  - Community-maintained, lowering sysadmin requirements
- LDAP Authentication System
  - Centralised
  - Secure, isolated store
- Linux Containers (Lightweight VMs) used for services
  - Security due to service isolation
  - Maintainability
  - Flexibility
- Linode VM
  - No hardware to worry about
  - 1Gbps outbound Network Interface (on current plan)
  - Large Data Transfer quota (8TB/mo (on current plan))
  - Flexibility to scale server size or add additional temporary servers to meet demand



# New Web System Progress

- Front-end Website, based on Wordpress
  - <https://beta.batc.tv/>
- Stream Server (minus user integration)
  - <https://beta.batc.tv/live/>
- Prototype server running on Linode, with Container (VM) structure
  - All new services are in containers
  - Supporting EATF Website <https://eatf.org/>
- LDAP User Authentication
  - Not open to users yet, web interfaces still in progress

# New Web System Future Work



- Integration of LDAP into Stream Server
- Import User Data (minus passwords)
- Send out password reset email
- Integration of LDAP into Forum, Wiki
- Set up Shop

# BATC TV Streamer



- Adobe Flash Media Server
- RTMP Input & Output
- No HTML5 (HLS/DASH) Support
  - Flash player required for viewing
- Inflexible Browser Player applet
  - Aspect Ratios..
- Accepts any Resolution and Codec that the Flash player can decode
  - Sorenson Spark, VP6, H.264



# New TV Streamer



- Development heavily accelerated by ARISS, and it's requirements
  - Mobile friendly
  - Modern Look & Feel
  - Scalable for large events
- HTML5 using HLS
  - "Nginx RTMP Server" used as RTMP Server and HLS Remuxer
  - "Clappr Media Player" used for Browser Player
- RTMP Support planned before release
  - BATC-workflow-compatible Browser Player required
- Categories for Members, Repeaters, & Events
  - Events automatically have transcoding for lower client bandwidth

# TV Streamer Performance in ARISS



- Flash Media Live Encoder
  - 900kbps H.264, Main, 4.1
  - 128kbps MP3 (transcoded to 96kbps AAC)
  - Lower Bandwidth transcode available
- 16Gbps HTTP Caching servers set up in London and Frankfurt
  - Cost of \$1/hr, approx. \$8 total (2 x 4hr)
- Peak of >1,600 viewers, ~1,450 Mbps AV Traffic
- Success! (all systems performed as expected)



# Streaming Codecs

- For HTML5
  - H.264 + AAC is the only cross-browser compatible combination
  - Also profile/level limitations: Main Profile, Level 3.1 suggested
- Audio transcoding for all HTML5 streams due to lack of FMLE support
  - Transcoded to 64kbps AAC
- VP6 encoder in FMLE works better for noisy pictures due to integral denoising filter
  - Ffmpeg can use a denoising filter before H.264 encoding (HQDN3D)
  - If ffmpeg (or vmix) isn't an option, use only RTMP Streaming

# Questions



- If you don't catch me this weekend:  
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