Analog to Digital Migration
by Richard Glaser
Background

The Good

- Aid in preserving & restricting analog materials
- Migrate analog audio/video collection to digital
- Supplement & replace functionality of A/V router
- VideoCommander MX-3200
The Bad

- Limited Funding
- Xserve Dual G5 w/Xserve RAID
- Staff
  - No addition staff for project
  - Limited existing staff time
- NOT in our job description, but I volunteered ;-(

Background
Background

The Ugly

- Doubtful Higher-Ups
  - Didn’t believe it could be done
  - No addition staff or budget
    - Until we have finished product
  - Very political on campus & dept.
History

Setup QTSS Server

Setup Ingestation/Editing Station
- Used old equipment
  - Analog devices - Umatic, VHS, Cassette, etc.
  - DV Deck for media conversion & A/V backup

Standardized on MPEG-4 Part 2 Format
- Lowest common denominator
- Media Architectures & Players (QT, Real Media, Windows Media, VLC)
- Preparing to support AVC (MPEG-4 Part 10)
Choose QuickTime as Media Architecture

- Picked for support, quality and flexibility
- Used qtif image format for poster movie with embed tags.

<EMBED QTSRC="Actual.mov" HEIGHT="yyy" WIDTH="xxx"
SRC="UNeedQT.qtif" TYPE="image/x-quicktime"
PLUGINSPAGE="http://www.apple.com/quicktime/download/" >

- Prevents other players to hijack streams
**History**

**Media Access Restriction**

- Originally, done using a Virtual Host with *allow* & *deny* directives.
  
  ```
  AllowOverride None
  Allow from <subnet> <ip address>
  Deny from all
  Order deny, allow
  ```

- Moved to home-brew Media Asset Database

- More info later...
History

- Added multiple streamed TV Channels
Added streamed TV Channels

- Used old hardware
  - CPU - Power Mac G4 Dual 1.25 GHz
  - Analog to DV - Pinnacle miroMOTION DC30
  - Driver - Xact (Open Source Driver)
    http://www.alfanet.it/squared5/dc30xact.html

- Broadcasting - QuickTime Broadcaster 1.0.1
  - Will move to QT 7.0.1 & QTB 1.5 after WWDC
History

Xact example...
History

Startup QuickTime Broadcaster

- Use this AppleScript...

tell application "QuickTime Broadcaster"
  delay 5
  if (exists document 1) then
    start document 1
    return "broadcast"
  end if
end if
end tell
History

Added Live A/V Source Streams

- Using sources from A/V Router
  - Users have NO control, just watch or listen
- Direct analog sources (VHS & DVD)
  - Users can remotely control devices
    - Hardware - IRTrans - USB Infared Controller
    - Software - iRed
History

Added Media Asset Database
History

Added Media Asset Database

- Supports ACL’s
  - Multiple groups based on IP address, subnet or range
    - Dept A, Dept B, & Dept C...
    - Lab A, Lab B, & Lab C...
    - Campus & off-campus
  - Based on authentication (i.e. uNID)
  - Based on group defined in db, in future LDAP
- Hidden or Visible
History

Location
Based on IP
Authentication Based on Kerberos
Added Media Asset Database

- Securing of stream direct URL
- Use random number for each ACL
- Different for each ACL (Location, Authentication, Group, hidden/visible)
- Changes daily on QTSS server & Database
- **QTSS** - Use cron to update symlinks
- **Database** - Updates with script
History

Added Media Asset Database

- RSS & Podcasts
  - Supports RSS feeds of new media
  - Support multiple podcasts like campus meetings
- Statistics
  - Tracks media utilization
  - User info (IP, uNID, Ect.)
- Much more..
History
History

Popular Media
- CNN News Channel
- Discovery Channel
- All Mgrs, Apr '05-Status
- Mac Mgrs, May '05-New
History

RSS & Podcasts

UNIVERSITY OF UTAH
STUDENT COMPUTING LABS
History

Added Media Workflow Interface

- Manager
  - Allows manager assign/control source
  - Assign ACLs, etc.

- Editor/Encoder
  - Gives step-by-step instruction

- Hopefully, will allow to do our “real” job
  - No more ingestion, editing, encoding, etc.
History

Welcome to the Media Streaming Pipeline!

These are the six sections in the workflow process:

01. Locate Media Source Assignment
02. Capture Media from Source
03. Correct and Edit Media
04. Export and Encode Media
05. Upload Media to Streaming Server
06. Verify Uploaded Media Online

Click the "Next" button to get started.
History

Locate Media

You must first select a media title to begin working on.
In the job queue you will see a list of media titles awaiting processing (Fig 01).

Click the ‘Next’ button to view the job queue.

NOTE: At any time you can click the ‘Jobs’ button in the menu above to view the job queue.
History

Capture Media

You have chosen to work on the project titled "a".

If this is incorrect please press the 'Back' button.

Next, create a new folder (Cmd+Shift+N) for your project in the STREAM_PROJECTS folder on the hard drive named MEDIA_DRIVE connected to your mac.

Make sure to title the new project folder exactly the same as the media title.

Click the 'Next' button to continue.
History

Capture Media
Launch Final Cut Pro (Fig 01).

DOCK: General>Final Cut Pro HD

In FCP set the path of the scratch disk to the Project folder that you created in the previous step (Fig 02).

MENU: Final Cut Pro HD>System Settings...

Click the ‘Next’ button to continue.