

The Business of Internet Radio

George Capalbo

VP Engineering, Backbone Networks Corporation

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Introduction

- This presentation is about the business and technology of Internet radio
- You are viewing because you need to understand how to build an Internet radio station
- We will examine:
 - What is an Internet radio station?
 - What is the regulatory and royalty environment?
 - What you need to do to run an Internet radio station?
 - How do I make a profit doing this?

What You'll Learn

- What is radio?
 - A short history of broadcast radio
 - What is Internet radio?
- The business and deployment of Internet radio
- Business costs for Internet broadcasting
- Regulation and royalties—'DMCA'
 - What are the Rules, and how do I pay for this?
- How an Internet radio station operates
- 2nd generation Internet radio
 - Automation systems for Internet radio

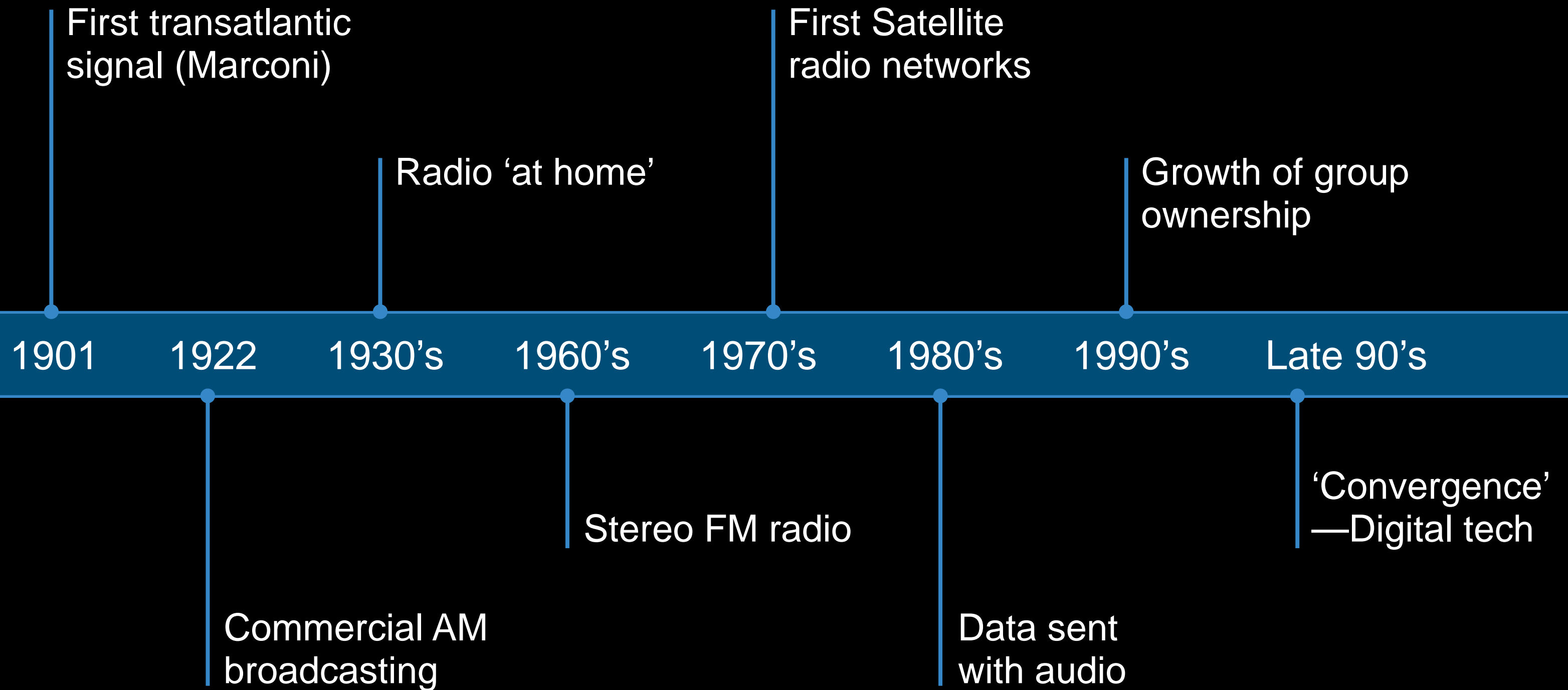
Technology Framework

- Client-Server model for Internet radio
 - Similar to ‘traditional’ radio ‘transmitter’ and ‘receiver’
- Internet radio using OS X and QuickTime
 - Standards compliant streaming technologies
 - MPEG-4 AAC for Internet radio streaming
 - RTP/RTCP/RTSP transport and control
- Radio automation concepts for the Internet
 - Use computers to simplify your station and lower costs

What Is Radio?

- A communication system that allows information to be broadcast by electronic means
 - 100 year old technology!
 - Original technology electromagnetic waves (RF or Radio Frequency) over the air
 - Originally (1900's) 'data'—Morse code
 - From 1920's voice

A Brief History of Radio



I Want to Broadcast!

- ‘Traditional’ broadcast is expensive
 - Why? Based on limited radio RF spectrum
 - Licenses controlled by the government (FCC)
- Buy or build a ‘traditional’ radio station
 - Large market \$50–\$100 million
 - Small market—‘Millions of dollars’
- Satellite radio
 - You need to launch or rent a satellite!
 - Only a few hundred channels available

I Want to Broadcast!

- 'Pirate' radio
 - Ship out at sea, or a local hideout
 - Not legal!
- Low power FM
 - Blocked by traditional broadcasters
 - 30,000 inquiries for licenses per year
 - only 228 licensed as of Spring 2004

Internet Radio

- What is Internet radio?
 - A radio service that uses the public Internet as its transmission medium instead of through the air radio frequency
- Why build an Internet radio station?
 - Much lower costs than 'traditional' radio
 - Easy to reach a focused, worldwide audience
 - Easy to capture, log & report listener metrics

Internet Radio

- 'Spectrum' is unlimited & unrestricted
- Can reach a worldwide audience for same cost as local audience
- Can be enhanced with rich media—images, links to web pages, etc.
- Can reach a narrowly focused audience
- Lower initial costs, running costs
- Precise demographics

The Growth of Internet Radio?

- 12,000 'traditional' radio stations in USA
- Approx. 30,000 Internet radio stations worldwide, more than half in the USA
- Traditional radio AM and FM took 80 years to build to this point
- Internet radio has done this in less than 10 years

The Growth of Internet Radio?

- Internet radio listening audience grows by ~25% per year
- From 8 million to 10 million listeners per month
'listening for more than 5 minutes' in last 12 months
- Who are listeners?
 - People looking for specific styles of music
 - People shopping for products/services
 - People at work
 - Listeners to 'home' radio from far away

The Business of Internet Radio

Costs

- Setup costs
- Computers, minimal studio equipment
- Running costs
 - Bandwidth—send audio to listeners
 - Royalties for music:
 - Performance royalties: RIAA/SoundExchange
 - Composition royalties: BMI-ASCAP-SESAC
 - Reporting requirements

Setup Costs

- Computers
 - Server located near Internet bandwidth
 - Takes connections from listeners
 - Logs station content broadcast
 - Control or encoding client
 - Sends a live stream to server
 - Optionally controls server

Running Costs

- Bandwidth—send audio to listeners
 - A continuous amount of data sent to each listener
 - Modem level "dial-up" bandwidth = near FM quality
- Connections to listeners are either
 - 'Unicast'—one connection per listener
 - 'Multicast'—data routed to user's network

Running Costs

- Royalties for Music
 - Composition royalties: BMI-ASCAP-SESAC
 - Royalties for written music and lyrics
 - Based on small percentage of revenue
 - Performance royalties: DMCA-RIAA
 - Compulsory license: (can't be denied)
 - One listener to a song = one performance
 - OR aggregate tuning hours, total time connected to your station by all listeners
 - Collected for RIAA by SoundExchange
 - <http://www.soundexchange.com>

Royalties for Music

- Composition Royalties
 - BMI-ASCAP-SESAC
 - These royalties are paid by ‘traditional’ broadcasters
 - Based on a few percent of your revenue
 - Minimum \$264us
 - Calculator at <http://www.ascap.com>

Royalties for Music

- Performance Royalties -- VERY contentious issue
 - ‘Traditional radio’ does not pay this
 - Perceived ‘promotional value’ from 1920’s
 - Political turmoil 2001–2002, compromises reached
 - ‘Small Webcaster Settlement Act of 2002’

Performance Royalties

- Performance royalties a result of DMCA
 - ‘Digital Millennium Copyright Act’ of 1998
 - Intended to address rightsholder concerns on digital media
- The players in the royalty issue:
 - RIAA—Radio Industry Association of America
 - U.S. Copyright Office
 - DiMA—Digital Media Association
 - Various webcaster groups, technology companies

Calculating Performance Royalties

- Process of calculating royalties called 'CARP'
 - 'Copyright Arbitration Royalty Panel'
 - Administered by the US Copyright office
 - Made up of industry and government
 - Performance royalties for music:
 - Recalculated each 2 years by US Copyright office
 - Different rates for college, non-commercial, commercial

Performance Royalties by Station Type

- College Internet radio
 - Flat rate for 2003 is \$250us + \$50 'data fund'
 - Flat rate for 2004
 - \$250us if < 10,000 students
 - \$500us if > 10,000 students
 - + \$25 to 'data fund'
 - Stream more than 146,000 aggregate tuning hours per month
\$0.0002176 per perf or \$0.000251 per tuning hour

Performance Royalties by Station Type

- Non-commercial Internet radio
 - Flat rate for 2003 is \$400us, \$250 if news/talk/sports/only
 - + \$50 to 'data fund'
 - Flat rate for 2004
 - \$500us or \$250 if only news/talk/sports
 - + \$25 to 'data fund'
 - Stream more than 146,000 aggregate tuning hours per month
 - \$0.0002176 per perf or \$0.000251 per tuning hour

Performance Royalties by Station Type

- Commercial 'for profit' entities (compulsory license):
 - 2003–2004 performance royalties:
 - One performance = One Listener to song
 - Commercial: Rate is .07 cents US (\$0.000762) per performance
 - 4% of your performances bear no royalty
 - Minimum fee is \$500, but no more than \$2500 (i.e. you have multiple channels)

Royalty Calculation Methods

- Either Per-Performance or by Aggregate Tuning Hours
 - 1 “ATH” = a listener listening one hour
- 2003–2004 aggregate tuning hours
ATH Royalties per LISTENER hour:

Simulcast existing radio station	\$0.00880us
News/Talk/Sports/Business	\$0.00762us
Internet only music station	\$0.01170us

Royalty Calculation Examples

Examples of commercial royalty rates, by type:
(Assume 100 listeners * 24hrs/day * 31 day month)

ATH
Music Station

@\$0.0117
on a per listener hour basis = \$870.48/month performance royalties

Performance
Music @ 9 songs/hr

@\$0.000762
on a per performance basis = \$510.24/mo. royalties

ATH
News/Sports/Talk

@\$0.00762
per tuning hour basis = \$566.93

Performance
News/Sports/Talk
@4 songs/hr

@\$0.000762
per performance=\$226.78

How Do I Pay for These Royalties?

Sell a little commercial time!

(Assume 100 listeners average, 24/7)

ATH
Music Station

@\$0.0117
on a per listener hour basis = \$870.48/mo

Break even @ \$28 in commercials/day

Performance
Music@9 songs/hr

@\$0.000762
on a per performance basis = \$510.24/mo.

\$16.46 per day

ATH
News/Sports/Talk

@\$0.00762
on per tuning hour basis = \$566.93

\$18.29 per day

Performance
News/Sports/Talk
@4 songs/hr

@\$0.000762
per performance=\$226.78

\$7.32 per day

Compromises Reached

- Small Webcast Settlement Act of 2002
- Designed to limit retroactive exposure of webcasters existing from 1998–2002
- Eligible for ‘percentage of revenue’ rates if gross revenues are < \$1,250,000us
- 10% of revenues less than \$250,000us
- 12% of revenues greater than \$250,000us
- OR 7% of expenses, whichever greater
- Plus a minimum fee of either \$2000 or \$5000, based on revenue

Compulsory License Requirements

- Reporting
 - In order to calculate your royalty you must report what you've played
- 'Broadcast complement'
 - What mix of music you can play
- Annotation
 - You must display display title, artist, copyright for each music track as it is streamed

2004 Reporting Requirements

- Use this to your advantage
- Every 3 months, report 2 weeks of log (for each track played):
 1. Name of service
 2. Transmission category
 3. Featured artist
 4. Sound recording title
 5. Sound recording identification
 - Album title marketing label
 - OR International Standard Recording Code (ISRC)
 6. Total performances

Broadcast Complement (for Music)

- “Sound recording performance complement”
- Designed to keep listeners from ‘recording music’
 - During any 3 hour period you can only broadcast:
 - 3 songs from a particular album, 2 consecutively
 - OR 4 songs by a particular artist or from a ‘box set’
 - No more than 3 consecutively
 - Cannot repeat same song at the same time each day
 - Cannot publish future playlists
- Not completely draconian, some ‘leeway’

Track Annotation

- Each broadcast music track needs to display:
 - Title
 - Artist
 - Album info
 - Copyright info
- Bonus: You can embed a link

Coming Down - The Cult - From the CD: The Singles 1984 - 1995
© 2000 Beggars Banquet Records Ltd

Royalties Summary

- You only owe royalties **IF** you play music you don't own the license to!
- **IF** you own the content, no royalties (but you may have to prove it!)
- Reporting requirements, calculation of royalties can be made simple by software
- Some software has automatic reporting functionality 'built in' (like Backbone Radio)
- Special purpose software can be written to parse program logs and mine information (to report your demographics)

Running an Internet Radio Station

Technical requirements

- Encoding
 - Data rate vs. quality
- Client-Server model for listening
- Streaming
 - RTP streaming with QuickTime
 - Hint track
 - MPEG-4 AAC standard
- Broadcasting models for Internet radio

Encoding

- What is encoding?
 - Take your source material
 - Uncompressed, CD, high quality/data rate MP3
 - Convert source material into a form that can be streamed over the Internet minimizing bandwidth while maximizing quality
 - Choosing a data rate is a balance of use of resources and subjective quality

Encoding Tradeoffs

Bandwidth is not free; balance quality vs. cost

- Higher datarate = Higher quality
- Higher datarate = Higher bandwidth cost per listener
- Lower datarate = Reduced quality
- Lower datarate = Lower bandwidth cost per listener
 - Some tradeoffs — e.g, stereo vs. mono

Contact your ISP or hosting service for best rate package

MPEG-4 AAC Audio

- 'Advanced Audio Coding'
- Standards-based
- Material you encode now will still be compatible in the future
- Plays on a number of devices, more later
- No encoding royalties on MPEG-4 AAC audio

Client-Server Model for Streaming

- Listeners on the Internet are ‘clients’
- Internet radio server takes connections from listeners and streams audio to them
- This maps conceptually to ‘traditional’ broadcast radio
- Think “transmitter on high hill”
- Internet radio differs in that
 - Like Digital Radio, few second delay, deterministic
 - In most cases a stream is sent directly to each listener

RTP/RTSP Streaming

- Also standards-based
- RTP (Real Time Protocol) the method by which the compressed (encoded) audio data from your Internet radio station is transmitted to your listeners
- Data is broken up into 'packets', small parcels of data that transmit well over public data networks
- RTP packets are sequenced and timestamped for easy decoding by player
- RTP is tolerant of 'loss'—Think driving under a bridge while listening to FM radio

RTCP

- Sent by server to synchronize video and audio streams
 - Contains information on data packets
 - Sequence number at a specific time
- ‘RTCP packets sent back by listeners’
media player to indicate ‘quality of service’

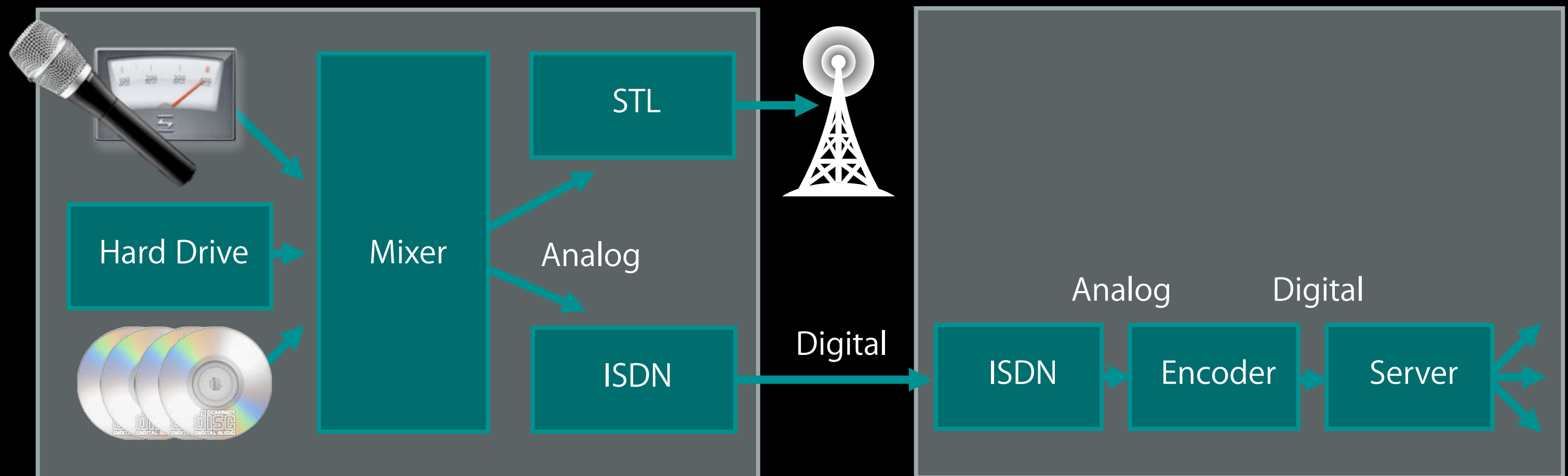
RTSP—Control Protocol

- The method by which your listener's streaming player communicates with the streaming server
 - Allows player to request a particular stream
 - Set up channels
 - Play, pause
 - Move to different parts of a streamed non-live file
 - Tear down connection
- Information encapsulated in a 'link' or 'stub' movie
- Embedded in Web page

Broadcasting Models

Typical analog radio streaming

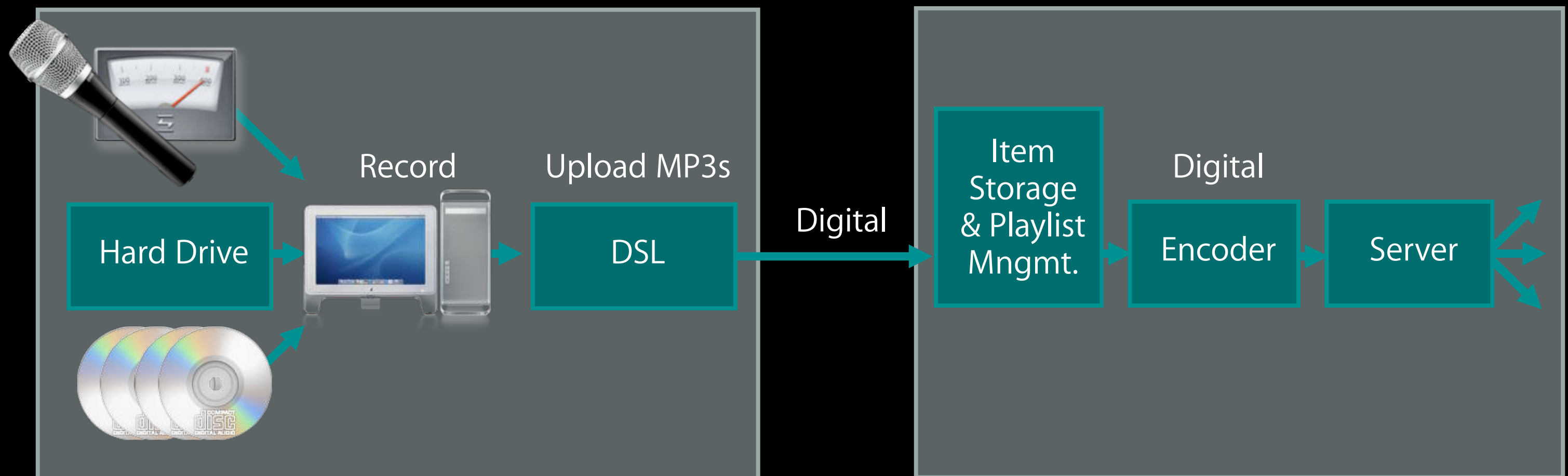
- Program is created in conventional analog mode
- Internet host encodes and streams to listeners
- No correlation between content and audience info
- Generally a service from an ISP
- Full time client-server link required



Broadcasting Models

MP3 hosting service

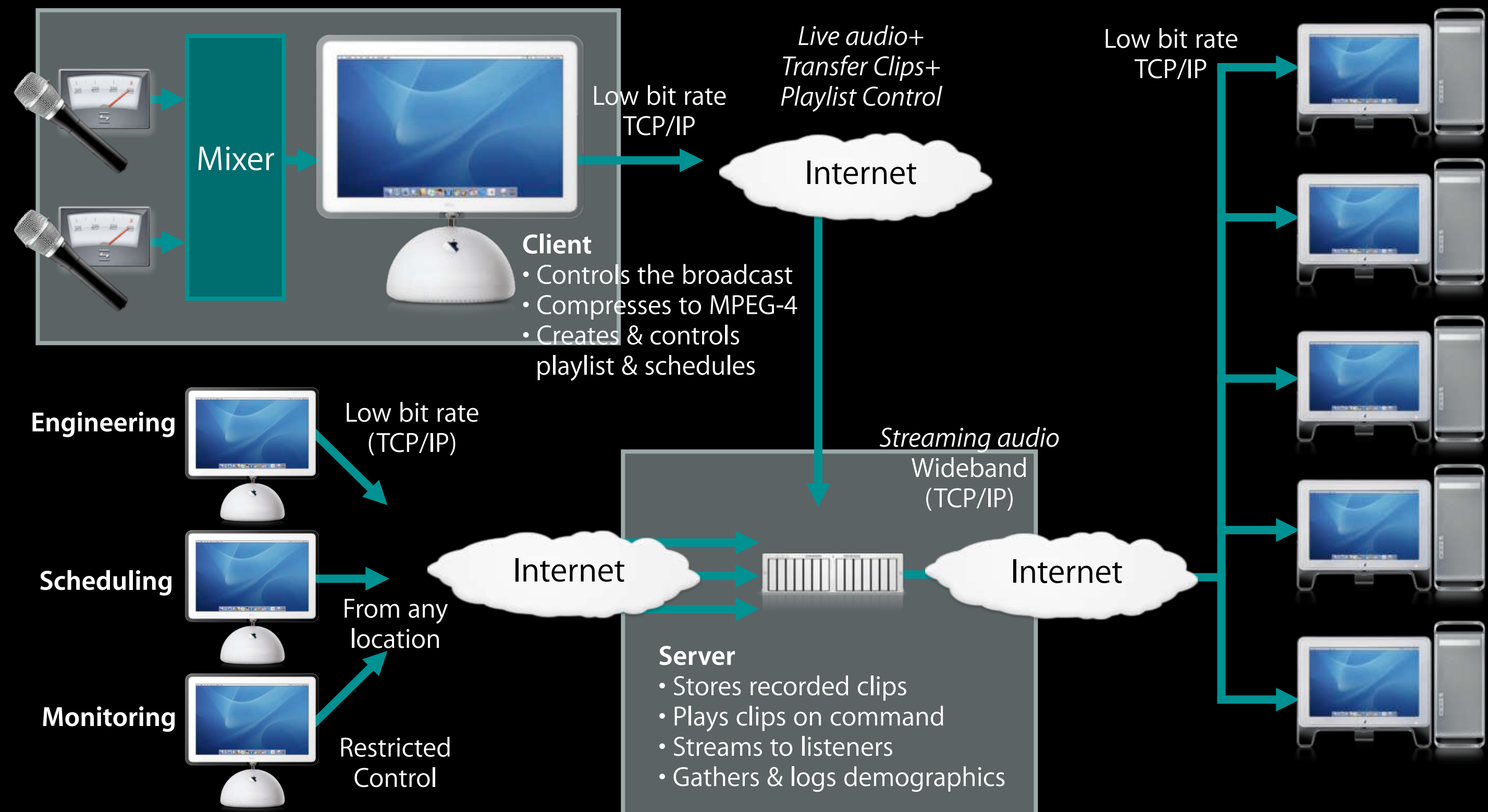
- Program is created as MP3s and uploaded to host
- Host stores as static, fixed, linear playlist
- Tracks do not overlap (“crossfade”)
- No correlation between content and audience info



Broadcasting Models

Digital Internet radio automation system

- Integrated, organized way to broadcast



Broadcasting Models

Client-Server Internet radio automation system

- Encoded clips stored on and broadcast from server
- Live stream only needed to server—when broadcasting live
- Server programmed remotely by people with ‘roles’
- “On-Air” talent works “in the now”
- Program director can choose playlists
- Commercials can be programmed by ‘traffic’ department

Internet Radio Automation

- Creates a 'dynamic' program
- Unattended operation or 'live assist'
- 'Voice tracking' - attaches lead-in to song
- Can implement broadcast rules
 - 'Standard rotation'
- Insertion of commercials
- Complete logging for royalty & metrics reporting

Where Is This All Heading?

- Royalty situation has 'stabilized'
 - Will continue to evolve due to 2 year rate window
- Internet radio will shortly expand beyond computers
- Mobile devices that can receive MPEG streams are coming
 - 3G phones
 - 802.11 (Airport)
- Emergence of high res images & annotation with audio
- The theme of NAB 2004 was 'IP broadcasting'

iTunes Enables MPEG-4 Streaming

- A final thought
- Millions of downloads of iTunes since 2003
- Each installation of iTunes is an installation of QuickTime
- Millions of iTunes downloads = Millions of potential listeners to your QuickTime standards based Internet radio station

For More Information

Royalties:

<http://www.soundexchange.com>

Composition royalties:

<http://www.ascap.com>

U.S. Copyright Office:

<http://www.copyright.gov>

Radio Automation & Streaming:

<http://www.backbone.com>

Who to Contact

George Capalbo

Vice President, Backbone Networks Corporation

gcapalbo@backbone.com

Richard A. Cerny

President, Backbone Networks Corporation

fiberac@backbone.com

Geoff Blum

VP Business Development

gblum@backbone.com
