PIRACY THREATS AND OPPORTUNITIES FOR THE BROADCAST ECOSYSTEM

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The State of Content Piracy Worldwide
Abstract

When it comes to the piracy challenges facing the broadcast ecosystem, it is, in many respects, both the best of times and the worst of times.

--On the one hand, enforcement efforts are better than ever, thanks to the hard work of private and public anti-piracy agencies all over the world. And the evolution of the main piracy threat away from decentralized downloading towards largely centralized streaming has made those enforcement efforts somewhat easier.

--On the other hand, such centralized streaming, closely emulating and even sometimes surpassing legitimate broadcast offerings in terms of quality and breadth of content, makes piracy a greater competitive challenge to the broadcast ecosystem than ever before.

But broadcasters and their upstream and downstream partners in the ecosystem have, both individually and collectively, more technological and non-technological tools available to meet the competitive challenge of piracy than they have ever had.

If these tools can be successfully deployed, the health of the ecosystem will benefit enormously.
PIRACY LOSSES AND TRENDS
Piracy losses—past, present and future

![Graph showing legitimate online revenues versus piracy losses from 2010 to 2022. The graph indicates a significant increase in piracy losses compared to legitimate revenues over the years.]

Source: Digital TV Research
Some good news...
Despite increased availability of legitimate content and some encouraging downward trends, piracy of film and TV content remains very popular.

Like legitimate viewing, pirate viewing is switching to streaming.

Use of pirate apps and STBs to stream pirated content is the fastest growing threat.
THE THREAT FROM ILLICIT STREAMING
Streaming in an Ideal World

Live Streaming
Encoder

VoD Streaming
Cloud Storage

Cloud Delivery Platform

Viewers
Streaming in a Pirated World

Cloud Delivery Platform

Live Streaming
Encoder

VoD Streaming
Cloud Storage

Legit Viewers

Pirated Stream Viewers

Piracy Site

Pirated Users who Re-Encode the streams
ILLICIT STREAMING ECOSYSTEM

- **Content:**
  - TV channels
    - Premium sports and entertainment
    - Foreign
    - General
  - VOD and PPV content

- **Devices:**
  - Open access Set-Top Boxes (STBs)
  - Amazon Firesticks (jailbroken)

- **Software/Apps**
  - Kodi and similar media center software
  - Add-ons that aggregate pirate content

- **End-to-end pirate IPTV networks**
  - Duplicating broadcast bundles/devices
  - Paid business models
    - Upfront fees
    - Monthly subscriptions
    - Combinations
OPPORTUNITIES:
CONVERTING PIRATE CONSUMPTION TO LEGITIMATE CONSUMPTION
A recent study of British consumers found that **infringers are worth almost twice as much to the industry as non-infringers**

**Theatrical Visits**

- **1.7 vs. 3.25**
  - Non-infringer visits the theater 1.7 times per month on average
  - Infringer visits the theater 3.25 times per month on average

**Home Entertainment Consumption**

- **1.8 vs. 3.51**
  - Non-infringer engages in digital transactions about 1.8 times per month on average
  - Infringer engages in digital transactions about 3.51 times per month on average

*Source: ICM Unlimited, Industry Trust Moments Worth Paying For Tracker (December 2015–January 2016)*
CONVERSION TARGET
AUDIENCES
Logan: Global P2P Piracy

**Early VOD Release**
4/12/17

**First Disc Rip**
5/09/17

Source: Irdeto P2P Data
By one measure, there were 1.3M P2P downloads of the SPVOD version in S. Korea prior to the first availability of another high-quality version, vs. 1.2M P2P downloads of lower-quality camcord versions.

Source: Irdeto P2P Data
Kingsman 2: South Korea P2P Piracy

By one measure, there were 43.2K P2P downloads of the lower-quality camcorder versions in S. Korea prior to the first availability of a high-quality version. The first high-quality version ripped 23 days after SPVOD release, from a non-SPVOD source.

Source: Irdeto P2P Data
Some Data on Actual Conversion

- Following the blocking of 148 pirate sites in Portugal, a Dec. 2016 study by the MPAA found:
  - 11% decrease in total visits to pirate sites (blocked and unblocked) by former users of blocked sites
  - 6% increase in visits to paid legal sites by all users of pirate sites
  - 17% increase in visits to paid legal sites by the heaviest users of pirate sites

- Following the blocking of dozens of pirate sites in the UK, an Oct. 2016 study by Carnegie Mellon University (CMU) found:
  - 23.6% increase in visits to paid legal streaming sites by former users of pirate sites

- Following the shutdown of popular cyberlocker Megaupload in early 2012, CMU researchers observed:
  - 8% increase in electronic sell-through transactions
  - 7% increase in digital rental transactions
  - 6.5% to 8.5% increase in digital movie revenues
Frustrating Piracy by making access to high-quality unlawful content less timely, harder to find and riskier for uploaders

Increasing Availability of high-quality legal content (timeliness and resolution) without stimulating piracy
<table>
<thead>
<tr>
<th>Secure Pre-Release Environment to Prevent Leaks</th>
<th>Robust Encryption/DRM &amp; Trusted Execution Environment in Receivers</th>
<th>Output Protection</th>
<th>Visible or Invisible Licensee Identifier</th>
<th>Non-Removable Subtitles Where Applicable</th>
<th>Invisible Session-Based Forensic Watermarking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security measures to prevent leaks</td>
<td>Robust encryption/DRM and trusted execution environment</td>
<td>HDMI with latest version of HDCP</td>
<td>To enable source identification for any leaks</td>
<td>To limit attractiveness of pirated files</td>
<td>With warning to users of its user (deterrent)</td>
</tr>
</tbody>
</table>
THE USE OF FORENSIC WATERMARKING AS AN ANTI-PIRACY TOOL
“Are you aware/do you know? That you can be punished for illegal copying and distribution.”

“The individual who copies or distributes this video without authorization can be identified/verified through a technological tracking system and can be held liable for money damages or punished according to related laws.”

13 of the 32 early window films released by Fox in S. Korea did NOT have an early window pirate source.
Of the 19 SPVOD releases that resulted in an early-window pirate source, the appearance of these sources on the public Internet was delayed on average **almost 9 days** after their release dates

--**Meaning that there was no competing high-quality pirate source for that length of time, either in Korea or elsewhere**

--**By comparison, standard VOD/EST releases result in a competing high-quality pirate source almost immediately upon release**

6 individuals received criminal penalties for uploading pirated SPVOD sources

--**if/when more cases are brought that result in penalties, the deterrent effect would logically increase**

*Note: 7 of these 13 titles did have other high quality pirate sources (screener, disc, DHD or non-Fox-released VOD) before the early window release—but 6 did not*
Other uses for forensic watermarking

Linear Channels
Live Events

Monitor:
Pirate Networks

Identify
Verify
Disrupt

Identify
Verify
Source Watermark
Source Overt/Covered
Disrupt

Synamedia OpSec’s Intelligence on
Pirate Networks & Open Internet

Legal & Take down Support
CONCLUSION

• Converting at least a portion of pirate consumption to legitimate consumption is clearly possible
  • Pirates almost always consume both (dual consumers)
  • Conversion has been documented previously
  • Large percentages of pirates themselves say they are open to it

• The potential upside is enormous
  • Pirates consume more than non-pirates, so modifying their behavior means more
  • Increased consumption in all windows/business models

• Forensic watermarking is an extremely promising conversion tool
  • If done right, delays access to high-quality files that compete with legitimate offerings
    • South Korea case study shows that significant delays are achievable
  • Other case studies show that forensic watermarking and similar technologies can effectively limit access to pirated high-value live programming (e.g., sports)
  • Any subscription- or transaction-based service with identifiable customers is a potential candidate