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ExpressPlay®

WHITE PAPER

Combating the latest threats to live streaming

Part 1:
Assessing the threat to live-streaming services

Building trust for a connected world.

Contents

Executive summary

The rapid proliferation of live-streamed sports and other high-value linear content in the piracy-infested online environment poses significant new challenges that call for major advances in the battle against theft.

With sports and other rights holders adopting new licensing policies in response to the intensifying consumer shift from legacy TV to over-the-top (OTT) services, live streaming has moved at lightning speed from the fringes to the heart of the online video marketplace. Sophisticated online piracy is "following the money" and poses a rising and continuous threat to this growing market. As a result, mounting losses to theft have triggered demand for tools and procedures that go well beyond the capabilities of security platforms used with non-linear on-demand streaming services.

Solutions that meet these challenges must consider all the types of content involved, how it is formatted, and the importance of preserving low-latency viewing experiences at any scale. Moreover, countermeasures against live streaming piracy must be undertaken with a speed of execution that has an impact early in the user engagement, no matter how many illicit users there are or how dispersed they might be across multiple outlets.

Evidence abounds that effective anti-piracy programs work, as ever more actions backed by law enforcement and new government measures put pirates out of business. With piracy still on the rise worldwide, hope for turning the tide rests on license holders' willingness to take action with tools that work against live-streamed content theft.

For producers and distributors, knowing what must be done is only half the picture, as they also require that a chosen set of solutions must achieve meaningful results at the lowest possible costs. This is essential to making the case for front-office signoff on investments in new approaches.

The purpose of this two-part white paper series is first to provide a complete picture of how a technically sophisticated and well-funded piracy ecosystem is impacting legitimate stakeholders' financial interests in live-streamed sports and other content. Part 1 looks at the surge in live content consumption, losses attributable to theft, new challenges posed by live streaming, the methods pirates have devised to build audiences and thwart legitimate providers' defenses, and recent successes portending a brighter outlook for the battle against piracy.

The second goal of this series is to describe how modern security mechanisms can be used to implement a comprehensive, tightly integrated protection framework that covers all the bases essential to thwarting piracy.

Part 2 will explain the full scope of what's required and how those requirements have been met with proven reliability and cost-effectiveness through the cloud-based solutions embodied in Intertrust's ExpressPlay® Media Security Suite.

The rise of live streaming as a target in global piracy

The global live streaming market has become a major component of the overall OTT video services market with the 2022 revenue total topping $47.53 billion, as estimated by one researcher's 2023 report.[1]

Live streaming now accounts for 54% of the overall streaming market revenue as estimated by Grand View Research[2] and appears destined to surge at a faster pace than the sector as a whole for the foreseeable future (Figure 1).

The pace of the shift to live streaming is largely a reaction to legacy TV providers' accelerating losses of viewers to the OTT market. Figure 2 shows the stunning contrast between the streaming and pay TV trajectories. The global pay TV market, even with growing penetration in previously underserved regions of the world, is dropping precipitously, as measured by Statista.[3] The conflicting trajectories are reflected in subscription counts as tracked by Omdia.[4]

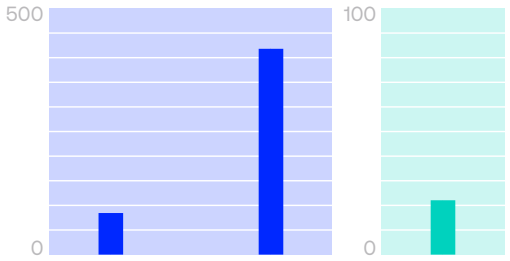
The percentage of video consumers' viewing time going to OTT content is increasing in tandem with the revenue numbers. In the U.S., Nielsen reported that OTT viewing on TV sets, which began outpacing cable in July 2022, accounted for 38.7% of TV viewing time as of July 2023 compared to cable's 29.6% share and broadcast TV's 20.0%.[5]

Figure 1

The impact of live streaming in the global OTT video market

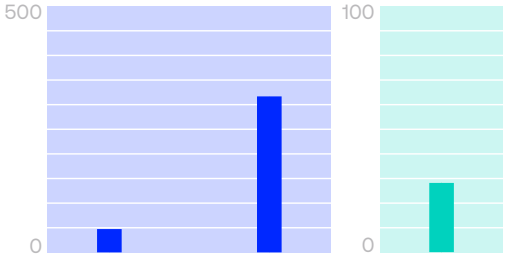
Overall streaming market

1A.



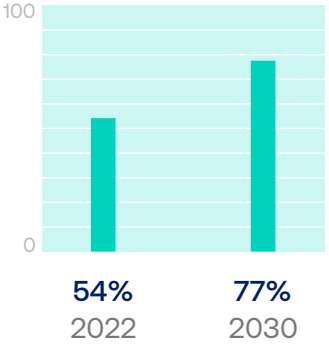
Live-streaming market

1B.



Live-streaming share

1C.



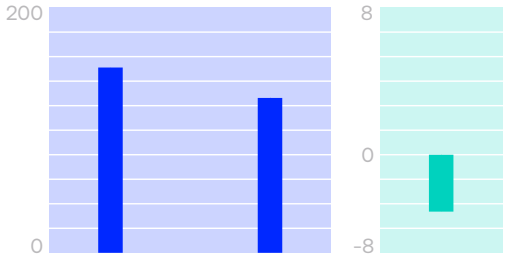
Sources: 1A. Grand View Research; 1B. Maximize Market Research; 1C. Extrapolations from data in Figures 1A and 1B

Figure 2

Contrasting directions in M&E streaming vs. pay-TV

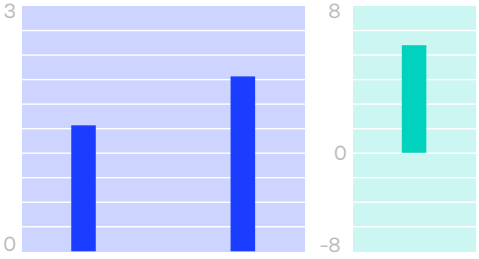
Global pay-TV market

2A.



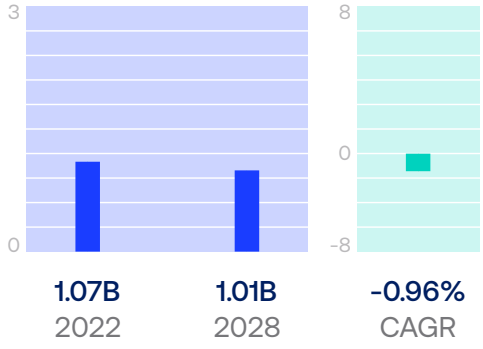
Global streaming subscriptions

2B.



Global pay-TV subscriptions

2C.



Sources: 1A. Statista; 1B. Omdia; 1C. Omdia

Sports boosting live-streaming revenue

In a remarkably short time, revenue generated by live-streamed sports has become a key source of ROI in the sports entertainment business, making protecting assets from the ravages of online piracy a front-burner priority for sports producers. Many studies point to a trend line that's pushing the sports streaming market ever closer to parity with traditional sports broadcasting. For example, Growth Market Reports predicts a 24.8% CAGR will take the market to $101.2 billion by 2031.[6]

Sports rights owners' rapid embrace of online distribution reverses years of resistance to OTT streaming as a way to deter subscriber attrition in the traditional TV market. But surging numbers of pay-TV cord-cutters and a new generation of "cord-never" OTT viewers persuaded sports content providers that they had to meet demand in the OTT market if they wanted to retain and build audiences.

In just one year, from 2022 to 2023, the amount spent on licensing of sports rights for streaming services jumped 64% to $8.5 billion, representing 21% of the total distribution spend on sports rights compared to 13% in 2022, according to Ampere Analysis.[7] In the process, live sports has entered the OTT programming mix across all service categories, including direct-to-consumer (D2C) productions from sports leagues, sports-specific streaming services, and OTT lineups spanning multiple types of linear channels.

Ad revenue at risk in streaming expansion

Internet streaming has become the battleground for building audiences for live TV programming, bringing with it a transition to reliance on TV-like in-stream advertising. The trend has burgeoned into efforts by growing numbers of content owners worldwide to maximize audience reach through a potpourri of OTT services carrying live streams.

In this mix loosely and somewhat inaccurately categorized as advertising video-on-demand (AVOD) services, one finds:

- Free ad-supported and combination subscription/ad-supported packages from virtual multichannel video programming distributors (vMVPDs).
- A new crop of branded online outlets from legacy MVPDs.
- Direct-to-consumer (D2C) services from the content owners themselves, including sports leagues that have mounted their own services, in addition to licensing distribution to vMVPDs.

The result is a large share of the subscription and advertising revenues generated by content traditionally protected by proprietary conditional access systems (CASs) embedded with set-top boxes is now exposed to online theft. Based on extrapolations from Figures 1 and 2, as shown in Figure 3, the share of total live TV revenue under threat from internet piracy is on course to increase from 24% in 2022 to a whopping 61% in 2028.

The greater theft risk has shifted from subscription to ad revenues, with advertising now accounting for about 60% of total streaming revenues globally, according to Statista.[8] The advertising share of live-streamed service revenues is undoubtedly even higher since the Statista figures include the largely subscription-only revenues garnered by on-demand streaming services.

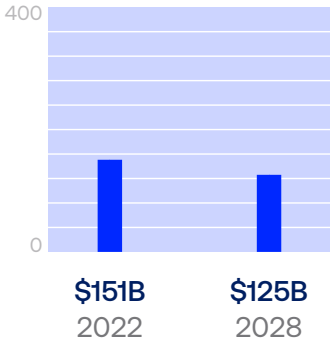
The growing role of advertising in OTT services, with the prevalence of linear programming, has added new urgency to the battle against theft. The more dependent legitimate OTT services are on advertising, the more they lose to pirated content owing to the fact that illicit viewing diminishes the tabulations of ad viewing impressions that would otherwise accrue with legitimate viewing.

Figure 3

Market segment revenue totals

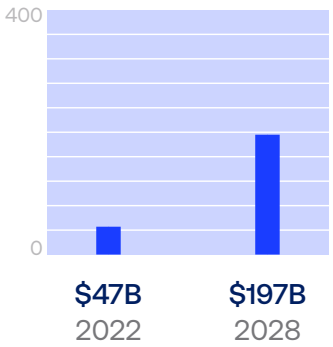
Legacy TV

3A.



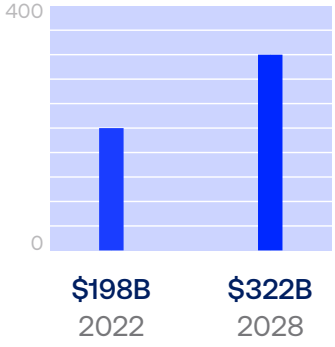
Live streaming

3B.



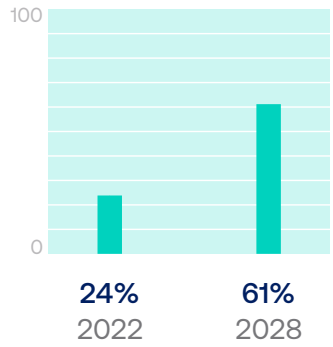
Total linear video

3C.

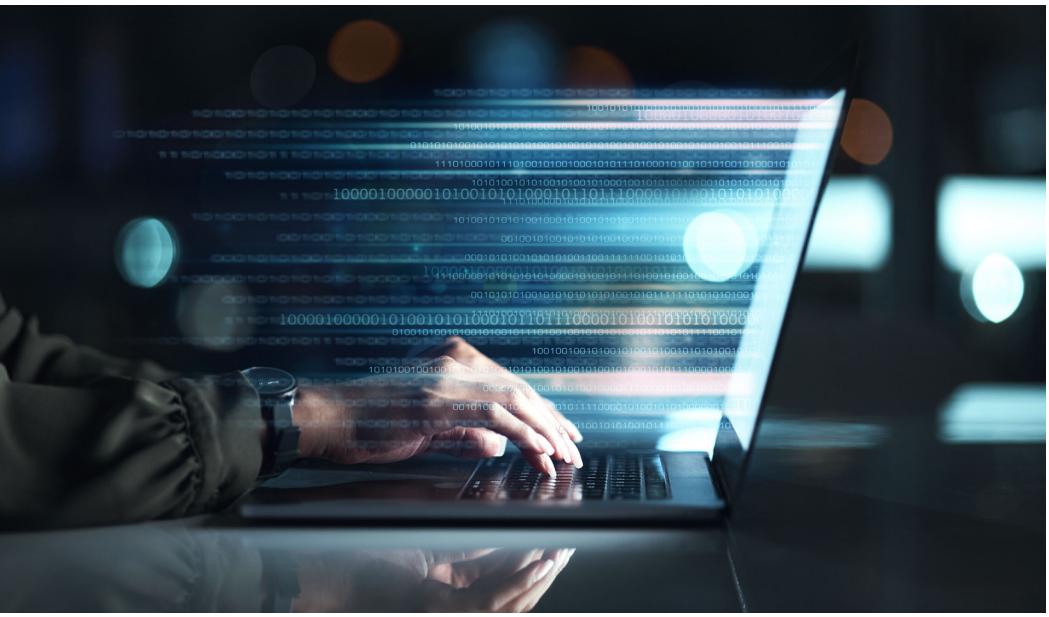


% Exposed to online theft

3D.



Sources: Extrapolations from data in Figures 1 & 2



With the surge in addressable advertising, the per-impression value of these losses is growing by leaps and bounds, which entails dynamic on-the-fly insertion of ads matched to demographic profiles, viewer locations, the types of viewers drawn by the content, or other parameters. A global programmatic bidding and selling ecosystem has emerged to support these capabilities in response to advertisers' willingness to pay 50% or more over traditional CPM (cost per mille) rates to benefit from the proven effectiveness of ad targeting.

In the U.S., for example, programmatic ad spending for ads reaching CTV screens was expected to reach $21.52 billion in 2023, up by 58% over the 2021 spend, according to eMarketer.[9] The 2023 programmatic spend equates to 85% of the total CTV advertising market eMarketer projected for 2023.[10]

UHD/HDR intensifies streaming piracy risk

4K UHD-formatted content streamed to smart TVs and other internet-connected TVs (CTVs) using 4K-compatible streaming media players (SMPs), often with high dynamic range/wide color gamut (HDR/WCG) enhancements, represents another trend impacting content protection requirements with live streaming. Owing to the extremely high quality of the on-screen displays, 4K, especially with HDR enhancement, makes it much easier to steal content by enabling bad actors to simply capture and retransmit programming directly from the screen at quality levels far superior to retransmissions of HD content.

This mode of theft is growing because it is a much faster and simpler way to get live content out to end users, especially for illicit streaming of live content, whether recorded from a 4K screen displaying TV broadcasts or OTT services. In fact, this approach doesn't require that the content be delivered in 4K when pirates use high-end displays that employ AI-aided upscaling to render video at near-4K quality.

But, of course, the best results for thieves occur when captured content starts in 4K, the growing volume of which stems from the market penetration of 4K and 4K/HDR TV sets worldwide. According to Strategy Analytics, 4K smart TV penetration of households globally will rise from 34% in 2020 to 51% by 2026, which, together with the vast base of 4K SMP-enabled CTVs, has created a sizeable market demand for UHD content.[11] In 2023 smart TV penetration of internet households hit 63%, according to research from Parks Associates.[12]

As reflected in Figure 4, the 4K transition is happening as CTV viewing has become the dominant mode of consumer access to OTT streaming. Notably, live-streamed content has an even bigger pull on viewers than content streamed on-demand. At 24.41 minutes per average view, the time spent viewing live-streamed content is 27% higher than the average time spent viewing an on-demand stream, according to the 2022 Conviva report cited in Figure 4.

While the volume of 4K UHD content available from MVPDs has been accelerating rapidly, global OTT providers are the biggest forces behind the availability of 4K and 4K HDR content. Virtually all original content produced by Netflix and Amazon is offered in UHD with HDR enhancements. These and many other OTT services also host large volumes of movies available for viewing in 4K.

At the same time, the growing volume of 4K content on linear TV channels has become part of OTT service bundles, including live sports. OTT services streaming various aggregations of 4K TV programming as of YE 2023 include DirecTV Stream, YouTubeTV, Hulu+ Live TV, and fubo TV.[15]

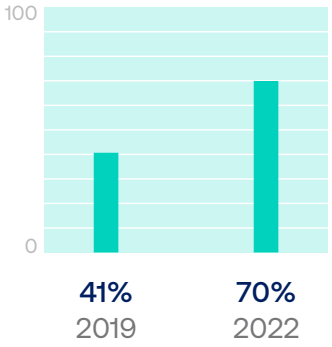
Adding to the momentum, an increasing number of D2C live sports events are streaming in 4K, in some cases dating back several years. For example, in fall 2019, Fox Sports began streaming some NFL games in 4K/HDR, culminating in the first 4K/HDR streaming of the Super Bowl in early 2020. In late 2019, BT Sport, which had been streaming soccer games in 4K for some time, laid claim to being the first European outlet to offer HDR-formatted 4K coverage of English Premier League and Union of European Football League games, which were also scheduled for streaming as part of Amazon's live sports agenda. The latest winter and summer Olympics were also in the 4K mix.

Figure 4

Global division of OTT viewing by device type

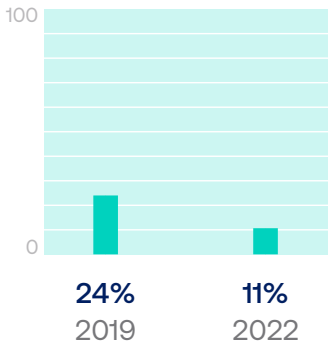
Smart TVs and CTVs

4A.



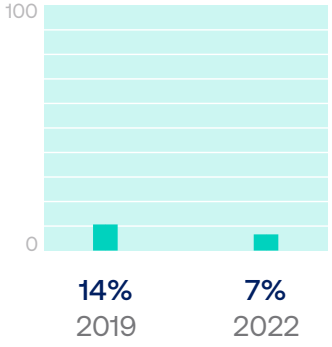
Mobile phones

4B.



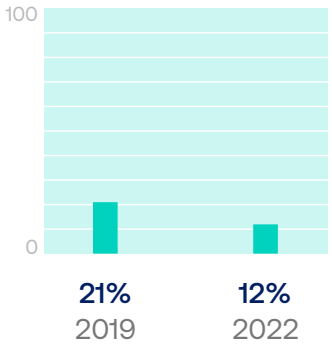
Gaming consoles

4C.



Desktops and tablets

4D.



Sources: Conviva 2019[13], Conviva 2022[14]

Optimizing latency, scaling for content protection

Anything that introduces latency with live streaming, including DRM and watermarking processes, is problematic, potentially severely impacting viewership and ad impression metrics. Online users want to view what's happening while the action is displayed on TV screens over legacy outlets, especially when engaging in group viewing through social media or when the viewer is on a second screen in proximity to a TV set showing the same event.

Consumers have made clear their dissatisfaction with high latency in live-streamed sports. A study conducted by Sapio Research for Verizon Media found that 19% of consumers regularly accessing online sports coverage cancel services that don't stream at broadcast latencies.[16] As noted by ABI Research, avoiding such reactions has become a priority among service providers.[17]

As a result, latency-reducing transmission techniques have made it possible to stream sports and other live content at broadcast-caliber latencies, with as little as six seconds in lag time between on-field action and on-screen rendering. Such advances make it all the more important that solutions applying the complex processes entailed with the use of DRM and watermarking technology avoid adding any noticeable latency to live streams.

A multi-DRM service capable of securing services across virtually all devices with support for Apple FairPlay, Microsoft PlayReady, Google Widevine, and Marlin DRMs must be able to orchestrate the management of device credentials, the content key storage, content encryption, and secure playback with multi-DRM license delivery. This must be done without adding significant latency to the viewing experience.

It's also important to note that, even if a multi-DRM platform can expeditiously manage all these operations across all the essential DRMs, the service provider must be able to scale cloud compute capacity to orchestrate authentication/authorization with delivery of DRM licenses or tokens to all user devices in any scenario. If viewer authorization and key distribution processes can't be supported by available server capacity, viewers will experience the kinds of delays that can lead to subscription terminations.

Adding to the challenges, when pirates use techniques that circumvent the protections accorded by DRM, producers and service providers must be able to implement the fingerprinting and watermarking techniques as discussed below in order to identify stolen content and its sources. These, too, must be applied in ways that avoid adding noticeable latency.

Meeting all these requirements becomes ever more challenging with increases in the number of people watching sports and other live event content. As reflected in Streaming Media's latest ranking of the ten most concurrently streamed events, all registered viewers count in the tens of millions, with several successively setting new records in 2023.[18] As of November, the number hit 59 million with concurrent viewings of the cricket World Cup final match streamed by the Disney+ Hotstar platform.

The impact of piracy on sports and live streaming services

According to multiple accounts from entities tracking piracy across the globe, the losses incurred by M&E interests in online theft have risen to astronomical levels with no end in sight.

According to piracy monitor MUSO, overall visits to video piracy sites of all types worldwide jumped 14% from 2022 to 2023, with visits to film piracy sites up by an extraordinary 32.7%.[19]

The impact is greatest on U.S.-based content suppliers, who as providers of the most watched programming worldwide experience losses to theft accruing to at least $29.2 billion annually, according to a U.S. Patent and Trademark Office notice citing a study produced by the U.S. Chamber of Commerce Global Innovation Policy Center.[20] The study found that 26.6 billion viewings of U.S.-produced movies and 126.7 billion viewings of U.S. TV episodes are digitally pirated each year, with the lion's share occurring in other countries.

The U.S. producers' losses comprise well over half the total losses hitting content suppliers worldwide, which according to Parks Associates' projections were on course to reach $54.5 billion in 2023, not counting another $12.5 billion in losses resulting from credential sharing and restreaming by individual subscribers.[21] Another Parks study predicts piracy rates inside the U.S. will rise from 22% in 2022 to 24.5% in 2027, at which point the annual loss to theft inside the U.S. will top $113 billion.[22]

The global sports industry stands to reclaim $28 billion annually by converting fans from pirated to paid content channels.

Live sports are taking an especially big hit from piracy, as noted in a group letter sent to the U.S. Patent and Trademark Office by the NBA, NFL, and UFC in August 2023.[23] Asserting the "financial impact cannot be ignored," they said the "global sports industry is losing up to $28 billion in additional potential annual revenue from sports fans who would be 'converting' from pirated content to paid content" if they didn't have access to stolen content. These loss calculations did not include "viewers who are least likely to pay for sports content," they added.

One hundred-eight sports organizations sent a similar plea to the European Commission for action against piracy in Europe in 2022.[24] "Piracy has and continues to drain Europe's creative and cultural ecosystems, sports and live performance sectors, depriving workers and industries billions in annual revenues," they wrote.

Indeed, according to the European Union Intellectual Property Office (EUIPO), the monthly per-internet-user rate of access to illegal content increased by 3.3% from 2021 to 2022, with piracy of live sports events surging by 30%.[25] EUIPO said streaming accounted for 58% of EU piracy compared to 32%, which is attributable to downloading. A similar story is unfolding across Asia where a recent study surveying 6,000 consumers in India, Indonesia, Malaysia, and three other nations found that 44% were accessing content streamed from pirate sites.[26]

While regions like the Middle East, Africa, and Latin America have broadband penetration rates far less than half the rates in North America, Europe, and Asia, as reported by the IEEE Communication Society,[27] the proportionate share of streaming revenue going into pirates' coffers is about the same. In Latin America, for example, annual losses to piracy top $733 million while pirate websites are raking in an estimated $675 million from advertising and subscription payments, according to the Center for Telecommunications Studies in Latin America (cet. la).[28]

How attack modes are expanding in the piracy ecosystem

As shown by the scale of the loss estimates, piracy is big business. It leverages the same advances in streaming, asset management, advertising support, and other legitimate OTT service operations components. Pirates now have the technical skills to develop and adopt new ways to defeat defenses and respond to detection with new brands and sites as often as necessary.

CDN Leeching

CDN leeching entailing unauthorized use of CDN resources to deliver content to pirates' customers has recently emerged as a major force to be dealt with in the battle against piracy. Using a variety of techniques, professional thieves have learned how to exploit CDN vulnerabilities, first, to capture and package any legitimate content carried by a CDN into service portfolios available on pirate websites and then to use the CDN to stream the purloined content to end users.

This adds a new two-pronged dimension to the impact theft has by cutting into content owners' and distributors' revenues while running up CDN charges paid by the legitimate users of CDN services. CDN leeching now rivals all other pirate techniques as a source of industry losses to theft.

Approaches to skirting DRM protection

The least technically sophisticated approach professional pirates have found to getting around the robust protection provided by the sophisticated DRM systems used with high-value content is the one also commonly employed by amateur thieves who restream content to their friends. Taking advantage of high-quality 4K TV displays and video cameras, the bad actors simply record and retransmit programming directly from the screen.

More advanced methods employed by professional pirate operations include using High Bandwidth Digital Content Protection (HDCP) strippers to pull the in-the-clear video from HDMI links to TV displays. This content can be instantly fed to origin servers for distribution of live content, imposing a latency penalty but otherwise measuring up to the quality levels of the originally streamed content.

In older devices without so-called Trusted Execution Environment (TEE) or Secure Video Path (SVP) support, pirates can capture in-the-clear content from device memory as it awaits playback in the buffering process. There are also so-called side-channel attacks, where hackers can extract the encryption keys without trying to break the AES (Advanced Encryption Standard) algorithms by using logic analyzers to read electronic wave or power consumption patterns. However, in modern chipsets, there are several techniques to prevent different forms of side-channel attacks.

Deceptive service facades

Whatever they do to obtain the content, the most successful approach pirates have found to drawing users allows them to derive revenues from both advertising and subscription fees by running deeply discounted online services with linear portfolios often running to hundreds of channels. By aggregating purloined content into multichannel streams with professional-quality EPGs, pirates are able to deliver a user experience comparable to legal pay TV services—and steal their advertising and subscription fee revenue in the process.

These illegal services frequently organize the content into multi-language presentations, giving them international reach from anywhere in the world. They can add features and use interactive communications between clients and servers to tabulate device usage data, gauge the popularity of content offerings, and perform troubleshooting in conjunction with sophisticated customer support services. Moreover, they often benefit from ad revenues generated by online ad networks that mistake them for legitimate operations.

Sometimes, apps offering pirate services also provide access to legitimate services at much higher prices, leaving the impression that the illegal sites are just legitimate aggressive competitors. Indeed, pirates have co-opted the "IPTV" label so that when people using these sites talk about where they're getting their ESPN or other channels, they say they're subscribing to IPTV.

The Kodi factor

This piracy ecosystem heavily relies on the open software platform formerly known as Xbox Media Center (XBMC), which is now operating under the Kodi brand. As a completely legal initiative administered and regularly updated by the non-profit XBMC Foundation, Kodi can be installed on Linux, OS X, Windows, iOS, and Android devices to deliver a compelling unified experience on TV sets much as Chromecast or Apple TV does but without the content restrictions imposed by such proprietary systems.

Kodi is used to facilitate access to illegally streamed content in two ways. Consumers can search for and buy Web-advertised "fully loaded" Kodi boxes, which are devices preloaded with Kodi software and plug-ins that can provide users access to thousands of TV channels worldwide. Or, after downloading and installing the Kodi software on their devices, users can download apps or "add-ons" from illegal sites that allow them to stream whatever content is offered from the site.

Another key component in the new piracy ecosystem consists of VPN suppliers who advertise their ability to provide users access to geo-blocked content by changing their IP addresses to make it appear the users are located outside the blocked regions. Kodi VPNs specialize in unblocking users' access to geo-restricted Kodi add-ons.

Readily available guidance to pirate services

Pirates are making use of the following techniques to help consumers find their services and to disguise the fact that the services are illegal:

- Consumers can subscribe to what is known as M3U playlists, which direct Kodi-enabled devices or other devices such as PCs, STBs, and smart TVs running certain types of players or apps to pirate IPTV sites offering access to thousands of live sports and other TV streams.
- Without having to pay for such listings, users searching for live sports streaming services can easily find online listings that include pirate sites and legitimate sources with messaging pointing out which ones are available at big discounts. Searches turn up articles with headlines such as “Which is the best website for watching free live sports streams online?” “Get closer to the action with these sports streaming services,” “How to Install TV Portal Kodi.”
- Consumers can find instructions that lead them through the process of downloading Kodi software or point them to sources of devices pre-loaded with Kodi software and pirated content.
- Professional pirates also use YouTube Live and Facebook Live to post and generate stolen content from TV shows and even entire channels, relying on ad networks’ placement of pre-roll ads to generate revenue.

Attacks aimed at defeating watermarking

Further complicating matters is the fact the pirates are constantly coming up with ways to defeat the effectiveness of watermarks, even when, as prescribed by the motion picture industry’s MovieLabs consortium, the digital markings are undetectable. Recent approaches to attacking watermarking effectiveness include intermittent blurring, chopping off the top and bottom of the screen, and, increasingly more common, random combining of multiple streams of the same piece of content into a single stream in a process known as collusion.

Another technique, focused on OTT streams, involves obscuring the source identity through direct penetration of the distributor’s client app. In such cases, the watermark remains intact but becomes associated with a phony ID.

Effective protection that answers the challenges

As daunting as the methods and pervasiveness of piracy might be, the good news is content producers and distributors are learning that investments in aggressive countermeasures pay off.

A growing body of evidence shows that when such initiatives are mounted against sports and other live-streamed events, they can have a disproportionately devastating and immediate impact on illegal operatives by disrupting a lot of people's viewing experiences all at once.

It's not just an in-the-moment impact on viewing the pirated content. Consumers receiving notices calling them out for engaging in illegal behavior or having their streams cut off as the game is underway have a powerful inducement to question the wisdom of returning for more.

If there's an upside to battling the live-streaming piracy scourge, this would be it. Given that, as noted earlier, users are often either unaware that what they're watching has been stolen or don't know it's illegal to watch stolen content, it makes sense that letting them know otherwise in no uncertain terms would significantly impact illicit consumption.

Of course, the best results occur when immediate disruption and legal action are working against live streaming piracy. Publicity about the successful prosecution of pirates has an impact that goes beyond shutting down a given operation by creating a chilling effect on illicit consumption in general, especially when users know legitimate options are available to stream the sports and other things they want to watch.

One key trend for curtailing piracy is adopting laws blocking illicit sites. Italy, for example, in July 2023, adopted a law requiring ISPs to terminate access

to pirated services streaming live sports and other events within 30 minutes of being notified they are carrying such streams.[29] The law extends blockages to any new domain names a piracy operation implements to avoid detection. It also encourages license holders and distributors to collaborate in "developing and using technical solutions aimed at facilitating the processing of notices, such as application programming interfaces."

The impact of such efforts was highlighted in a report from the Asia Video Industry Association's (AVIA's) Coalition Against Piracy (CAP).[30] Citing consumer surveys in Malaysia and Thailand, two countries with strong anti-piracy blocking policies, the report said 62% of Indonesian and 64% of Malaysian consumers indicated they changed their viewing habits after blocking pirate sites.

Successful takedowns of pirate operations are now regularly reported across the globe. Some of the more prominent recent successes, as recorded by the Piracy Monitor newsletter, include:

- Disruptions of 3.6 million FaceBook livestream views and 9,000 other illicit streams of the Indian Premier League 2023 cricket championships.
- Termination of service from what had been Spain's largest piracy site, serving nine million monthly visitors.
- The elimination of three illegal Egypt-based piracy rings that were offering commercial services throughout the Middle East and North Africa.
- The Maryland U.S. Attorney's seizure of 55 websites charged with illegally streaming World Cup competition based on notifications from the Fédération Internationale de Football Association (FIFA).

While details on the methodologies used by authorities are often concealed for obvious reasons, it's clear the advances in measures countering pirates' ever more sophisticated tactics have been a big factor in the enforcement surge.

These successes serve as clear evidence as to why producers and distributors anticipate that what they can save in revenue losses to theft is well worth their investments in anti-piracy platforms with a proven track record of covering all the bases.

Yet, for all the proven successes, the industry still has a long way to go before there's enough commitment from rights holders and distributors to act against pirates to reverse the global loss trajectory described earlier. This was evident at a Parks Associates conference in late 2022 when responses to an on-site survey revealed that 50% of participants with a stake in preventing piracy had no anti-piracy programs in operation, and another 20% were just in the starting phase of plan development.[31] Just 10% said they have a program in place.

That's not to say DRM systems are not widely in use. But it indicates that comprehensive end-to-end anti-piracy initiatives have yet to take hold on a scale essential to turning things around.

Conclusion

The sophistication, zeal, and pervasiveness of pirate attacks on high-value live-streamed sports and other linear content have produced a scourge that must be dealt with.

With the volume of live video traffic on track to exceed that of time-shifted content in just a few years, an ever-increasing share of the tens of billions of dollars lost to piracy will be attributable to attacks on sports and other linear content.

Distributors are confronted with the double whammy of needing to implement technology that streams their own content at the lowest possible latency while also ensuring that multi-DRM, watermarking, and other steps taken to maximize the impact of disruption against purloined content streams can get the job done fast enough to be effective against pirates' streaming techniques. So what's to be done, and how can operators best meet this challenge?

In part two of our series, we will focus on creating an effective security strategy and how it is achieved through a modern content protection solution. Readers will learn how the Intertrust ExpressPlay Security Suite solutions arms producers and distributors of live-streamed content with unlimited scalability at the lowest possible costs to significantly reduce their exposure to piracy and revenue loss.

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