FIGHTING ILLEGAL STREAMING

Analysis of the World Football Tournament 2018

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EXECUTIVE SUMMARY

Piracy of video content on the web has moved from the download model, as exemplified by BitTorrent and similar technologies, to live streaming, as evidenced at the World Football Tournament 2018.

Throughout the tournament, Viaccess-Orca measured and analyzed illegal streaming during the football matches to provide detailed facts and figures about the number of illegal streams, host domains, links and more.

This report provides detailed analysis of the illegal streaming of matches from the 2018 World Cup, highlighting the scale of the newest TV sports piracy problem and its global nature.
It also examines the technologies involved in the illegal streaming industry.

This special edition report is directed by Christine Maury Panis, EVP, General Counsel and Security, and Renaud Presty, Director of Security.

KEY TAKEAWAYS

• Detailed examination of the scope of global piracy during the 2018 World Football Tournament
• In-depth look into the structure and nature of pirate platforms
• The role of social platforms in sports piracy
• Critical anti-piracy measures that combat illegal streaming

INSIGHTS AND INTERVIEWS

Legal streaming is on the rise, as noted by CDN Akamai Technologies, Inc. (NASDAQ: AKAM) which supported the streaming efforts of 55 broadcasters at the event.
Akamai reported that it set a new single-match peak for live streaming across its network of 22.5Tbps, comfortably surpassing the 6.88Tbps peak set at Brazil four years previously.
Alexios Dimitropoulos, analyst at Ampere Analysis, estimated that overall between 10-20% of all World Cup viewing occurred online .
Unfortunately, illegal streaming of sports events is also rising dramatically, requiring new understanding and strategies to combat this phenomenon.
We present a number of interviews that look at online responsibility, the workings of pirate platforms and more.

LIVE STREAMING AND OTT BOXES

WHAT ARE THESE OTT BOXES?

Illegal content redistribution is a major issue. A simple online search will reveal that many offers for the so called "IPTV box" (OTT decoders) are available and offer annual subscription access to the majority of the European bouquets. For the Middle East live programs these decoders may also provide a replay service. Their catalog is rich, being free from any constraint such as ROM geoblocking or media chronology. You can get them bundled with a decoder and subscription for one year; the costs vary between 125 and 270 Euros.

These offers use available OTT technologies such as the HLS protocol. The decoders are mainly manufactured in China. In appearance, they are standard free-to-view boxes, meaning they present an innocuous interface. but if you switch them on, you will quickly find on the menu their actual "raison d'être" – click on "activation" or on "Internet servers" or "IPTV" and you will find how to buy fully loaded packages - meaning that they are not neutral at all!

Streaming has been encouraged due to several factors:

• The falling price of hardware

• The scalable cloud platforms that can operate multiple services
  (e.g. encoding, packaging and storage) at a very reasonable price

• The fast development of OTT technologies which offer much lower upfront costs
  than broadcast

• The availability of open source software and free platforms (e.g. Linux, Android)
  saving millions in R&D

You will find these boxes under the following model references among others:

• Futubox

• Infomir-mag254 IPTV

• Istar A1600

• MAG 410

• GEANT GN-CX1200

Viaccess-Orca, as part of its security services, monitors these OTT boxes and provides impacted operators with technical analysis and support for potential legal actions. In most cases, these boxes use industry standard technology and the most recent ones show secure architecture and protection mechanisms. The security vulnerabilities that were detected in the past are rarely noted in today's implementations. These new protection mechanisms provide a new level of complexity to the detection of these boxes and therefore the analysis requires sophisticated investigation techniques. This underlines that pirates intend to protect their own "pirate" networks as they bring in substantial revenue to finance other networks; among others, organized crime.

Kodi

The Kodi player is a multiplatform, open source media player. It was created in 2003 by the XBMC foundation, and it is like a web browser, capable of loading and syncing most types of media and programs. Users rarely search with a web browser anymore to stream movies illegally, which takes too much time. With the Kodi player they can now select content in minimal time, from multiple high quality video sources ("the Playlist") without ads, all while sitting comfortably on a couch in front of the TV screen. Despite the European Court of Justice ruling in 2017 that selling pre-loaded Kodi boxes constituted copyright infringement, they continue to be prominently used.
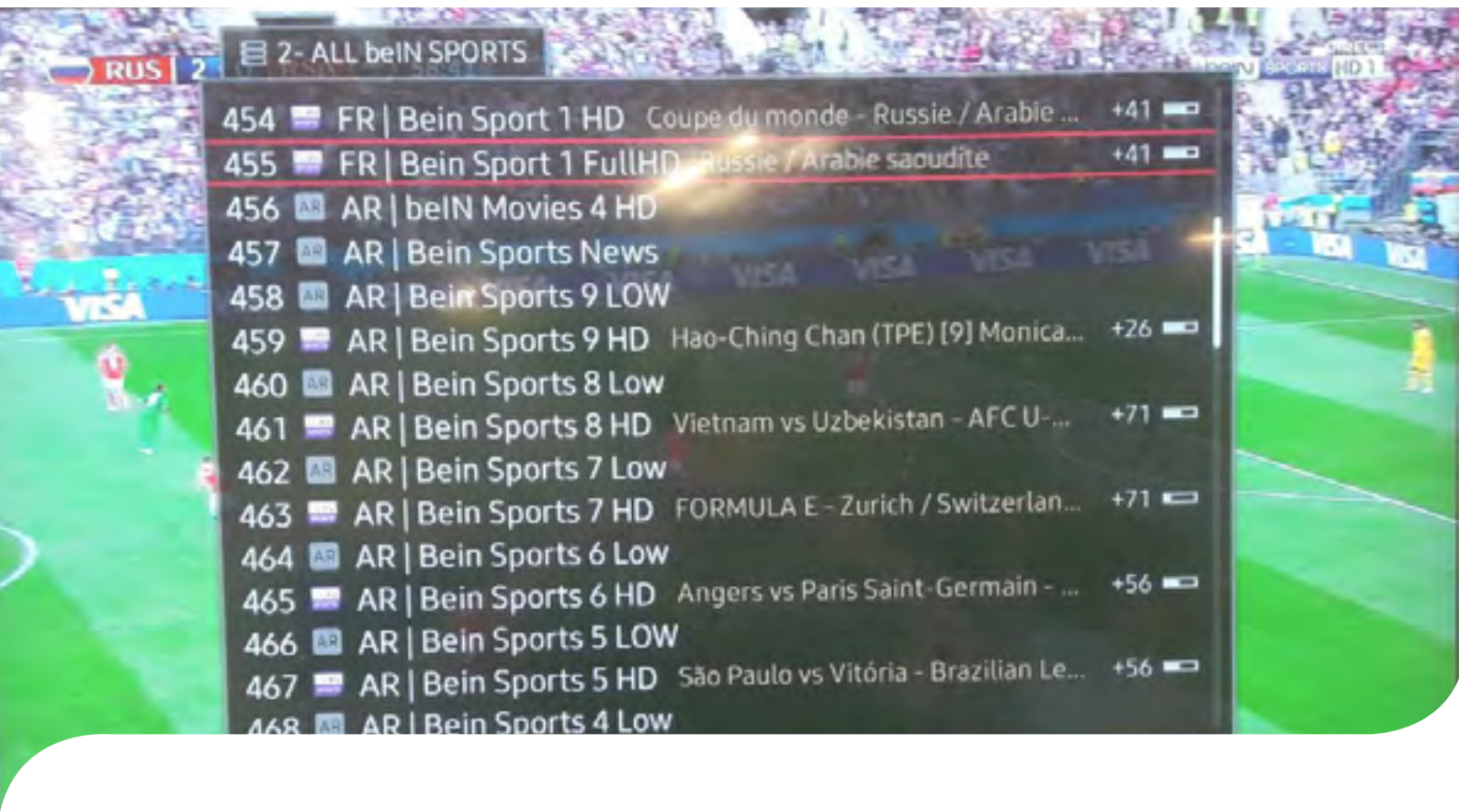
Ex: http://m-iptv.net:6204/live/benzema/ndkgji857483/10970.ts

SMART-TV

Another form of content redistribution is via an application available on connected TVs (Smart-TV).

The principle is quite simple: via a subscription content is played directly on the TV, the video streams directly through the internet (via WIFI or Ethernet, depending on the configuration).

OTT Boxes and IPTV Packages

Different packages are available with different prices, according to usage. You can easily find various OTT boxes on any market place such as Amazon or eBay. Bundles of OTT boxes and IPTV subscriptions are often sold together.

Forums and pirate marketplaces also advertise the distribution services, and even keep recruiting new IPTV networks resellers.

"MORE THAN 5200+ HD CHANNELS AND 2000+ VOD FOR RESELLER IPTV"

A report issued last year by the Intellectual Property Office, FACT, City of London Police, Police Intellectual Property Crime Unit (PIPCU) estimated that more than one million illegal set-top-boxes, which allow customers to stream pirated content, had been sold in the past two years in the UK. The providers generate their revenues via advertising, using banners and pop-up ads to advertise, for example, casinos and dating sites.

Heavy jail sentences have already been handed down for these illegal set-top-boxes, again recently in Hong Kong. On 28 December 2017, the District Court of Hong-Kong handed down sentences varying from 21 to 27 months' imprisonment against three individuals who took part in a scheme that enabled users of the "Maige set-top-box" to view Pay TV channels for free. This case sets one of the heaviest custodial penalties imposed in Hong Kong for Internet piracy to date.

Online giants are now cracking down on fully loaded OTT set-top-boxes. Amazon officially banned them first, threating to suspend the accounts of anyone who attempts to sell "fully loaded" media players and withhold payments (however, in fact the boxes continue to be widely available on their market place); eBay followed the lead and issued a total ban on Kodi boxes. Google removed "Kodi" from search autocomplete in an anti-piracy effort.

The UK has now adopted a new Act whereby the maximum prison sentence for those found guilty of infringement has jumped from two years to ten years of jail time. The Premier League obtained a unique High Court injunction in August 2017 which required ISPs to block "pirate" football streams in real-time. In January 2018, police arrested three men operating a streaming network with 160 channels, who had taken in 3.5 M zlotys (approximately 810,000 Euros).

Munich courts also blocked pirate sites in early 2018. The courts are now more and more aware of these new forms of piracy and do not hesitate to pronounce heavy sentences. Governments such as the UK government recognize the growing problem and adopt enforcement strategies.
The role of all public and private stakeholders in the whole chain is key – from the set-top-boxes manufacturers, to the resellers, the market place, the ISP, the rights-owners and Pay TV operators, the police and courts, without forgetting the two main actors, social media and the consumer. Much awareness and effort at all levels must to continue to be constantly deployed.

ANTI-PIRACY ACTIONS: INTERVIEW - HERVÉ LEMAIRE, CEO, LEAKID

As part of its 360° security services, Viaccess-Orca has created an exclusive partnership with LeakID for the use of a service that tracks, fights and dereferences links for illegal streaming sites. We have asked Hervé Lemaire, CEO, LeakID, to tell us more about the services.

HERVÉ, CAN YOU INTRODUCE YOUR COMPANY AND YOUR SERVICES?

LeakID was founded in 2007. Our protection services cover movies, series, music, press, IPTV, sports and google deindexing; we are Google's Number 1 partner worldwide in dereferencing through our subsidiary Rivendell.

IN YOUR OPINION, WHAT ARE THE MOST IMPORTANT ANTI-PIRACY ACTIONS TO FIGHT ILLEGAL STREAMING?

For instance, several weeks ago, we noticed a pirated movie before the theater window, so we immediately informed the customer and dereferenced 8000 links on Google in three days. This shows how important it is to react quickly.

For soccer games, the service detects an average of 400 to 800 unique links in addition to those detected by a YouTube fingerprint or Facebook. If we get initial sources with a fingerprint, this figure can go up to 2500 to 3000 links, and for the most important events like Champions League events it can represent more than several thousand.

Our services also send several takedown notices during an event for each detected link to all impacted stakeholders, to the live hoster, the domain platform, and to all impacted ISPs. We start searching one day before the event, during the day of the event and continuously during the live event; this may represent a few thousands of notices per event. The services record all of this, providing evidence to support legal cases. One of Viaccess-Orca's customers has requested a special format as requested by its local courts; they send our reports to the local authorities for them to take the required legal action.

WHEN YOU CONSIDER THE NUMBER OF LINKS, AND ESPECIALLY THE NUMBER OF LINKS NOT AFFECTED BY EXISTING TOOLS, WHAT IS YOUR FEELING?

None of the current well-known anti-piracy tool suppliers has taken into account the importance of Google deindexing. On top of that, social networks are not sufficiently protected. Facebook and Periscope have not really addressed sport events protection programs. Most of the IPTV playlists are open for all and this is also true for the majority of the Kodi plugins.

We address all these options in our anti-piracy offering. On average, for an important championship event, Facebook links will represent around 30% to 40% of the illegal links and YouTube represents something like 20%. By closing down 100% of those links, we clean a significant portion of the piracy landscape.

WHAT DIFFERENTIATORS DOES YOUR SOLUTION BRING?

Considering our 11 years' experience in media and our background in content ownership, we can easily anticipate customers' needs and reactions. We have a unique service addressing all aspects of the problem, including Google deindexing and complementary search by experienced people on all remaining links that are not captured by fingerprinting systems (usually 30% to 40% of the links).

Typically, we use numerous key words, searching for them in all local languages; we also look for access to pay sites or forums. In addition we check all possible posts in various social networks and, compare the data with our web hoster and domain databases.

We have established solid partnerships with Google, YouTube and Facebook with the ability to remove illegal links within minutes. We also believe it is important to establish transparency with our customers by publishing data in real-time and to discuss improvements and implement action plans.

ONLINE RESPONSIBILITY

The question of who should be held responsible for what, where and when in the days of the Internet is certainly not a new question. The recent active role played by public bodies like the EU IPO, EUROPOL etc., or by private bodies fighting audio visual piracy or counterfeit, together with the alarming figures around these new forms of infringement of rights, have created more awareness among all the stakeholders. It has become evident that the notions of responsibility and liability, and their enforcement have to apply in the digital age as well.

The real challenge is to open the debate with each stakeholder in the chain, from the rights-owners to the consumers, without forgetting the distributors of the content, the ISPs, the platforms, the Ad servers, the payment providers and the OTT set-top-box suppliers for online piracy. It is critical that this topic be addressed very quickly; pointing fingers at certain stakeholders is not solving the issue. Inviting them to the discussion table so that each participant has a clear view of what they are getting into, what is their role online, and how they can interact is key. Once this is defined we'll be able to define each one's role, rights and liabilities.

Many debates are currently going on in Europe regarding the EU Copyright Reform which aims to adapt EU copyright rules to the digital environment. Many issues are still being discussed, among them:

○ Protection of press publications

○ The so-called "value gap" (the difference between the remuneration received by the authors and performers, and the profit made by Internet platforms when they make their work accessible)

○ Improved cooperation between rights-holders and online platforms

○ The latest controversial overhaul of this EU's Copyright Reform putting more responsibility on websites to enforce copyright laws. This means, that as per Article 13 of the Reform, any online platform that allows users to post text, images, sounds or code would need a way to assess and filter content, which has engendered a fierce debate between Internet giants and content creators; it was rejected on July, 5 by the European Parliament by a margin of 318-278. However, the debate continues.

INTERVIEW - ROMAIN BEECKMAN, ANTI-PIRACY DIRECTOR, OVH

We have asked Romain Beeckman, Anti-Piracy Director at OVH, a European Cloud & Infrastructure Service Provider. to tell us more about illegal streaming and ways to combat piracy.

ROMAIN, CAN YOU INTRODUCE YOUR COMPANY?

As an ISP, we offer several kinds of services (from the domain name, the mail platform, the website hosting, to the complex cloud infrastructure) to our 1.4 million customers worldwide. We are one of the largest IaaS providers in the world, therefore we provide unmanaged, dedicated infrastructure to our customers, who are mostly companies and businesses. They can build added-value products from our IaaS building blocks, so as to offer to their own users and customers any kind of services such as storage solutions, games servers, emailing platforms, VPS (virtual private services), hosting services and more.

HOW DO YOU WORK WITH COPYRIGHT OWNERS ON STRUGGLING PIRACY?

Because of the scale of our network (we have close to 3 million IP addresses), we receive reports for any kinds of fraudulent activities such as spamming, DDoS attacks, phishing, malware, and of course, copyright infringements.

To ensure the more efficient results of our abuse team, we try to identify reliable partners so we can create a direct and dedicated relationship. As IaaS services are very specific, it is important to spend time with copyright owners to explain what we do, and what our current legal framework is.

At the same time as we improve the common understanding, we have a more successful impact on struggling piracy activities. For the last few years, we have had the opportunity to discuss several business associations; we usually create a dedicated point of contact and explain more in detail how we will process their reports. As we do not offer managed solutions, the role of our customer is key. They are the sole administrator of the infrastructure and therefore are the only ones able to directly take down the fraudulent content.

As copyright owners do not always have the possibility to identify our customers and contact them directly, they have to contact us first as the ISP.

On our side, we do not have the capability of removing any specific content on a server; we only can implement a single one action which consists of suspending the whole infrastructure. As our customers are using our services for their own business, such actions would generate massive collateral effect. It is also our role to give them time, so they can take actions towards their own customers or users.

We try to ensure that our customers behave responsibly and take actions when a report is legitimate. We educate them, so they comply with take down notices. We do not hesitate to take strong actions such as terminations of their services when they do not react or deliberately ignore our reports.

WHAT DO YOU CONSIDER AS THE BIGGEST CHALLENGE FOR AN ISP WHEN WE TALK ABOUT PIRACY?

As a large IaaS provider, we have to deal with a large amount of reports per day, we have a dedicated abuse form available on our websites, but most of these complaints are still sent by email to our generic email address.

That does not help to ensure good processing of these reports as we have to cope with very different formats and standards. The key in our industry is automation, so the only option that we can consider is to standardize the way people report to us by using generic templates. Formats such as X-ARF are a very good solution that allow us to parse the body of the mails and identify the services and customers behind these reports in an automatic manner.
The more automation we can implement, the faster we will be able to contact our customer and the sooner the content will be removed.

We are members of ISPs business associations and the question of a standard format or even a standard API is also a concern for all of us. We have regular workshops about this topic and we hope to be able to share with copyright owner's community the results of our discussions. That will be a great step forward for both industries.

At the same time, we have seen a real change in the way live sport events are streamed. With the increase of OTT boxes and IPTV Packages, it becomes difficult for an ISP to confirm that its services are fraudulently used to stream. This is why it is so important for us to create a direct relationship with copyright owners, so they can adapt their reports to our requirements. Therefore, we often have to ask them for additional logs, screenshots etc. so that we can use them as legal evidence if we have to terminate the contracts of a reluctant customer.

INSIDE PIRATE PLATFORMS

As expected, our investigation during the tournament revealed once again that the pirate networks are well organized and keen to hide their activities. They use standard stream protection techniques and proxy servers. The pirate only needs to enter a list of domain names that are allowed to access the stream, preventing anybody else that the given domains from connecting directly to the server.
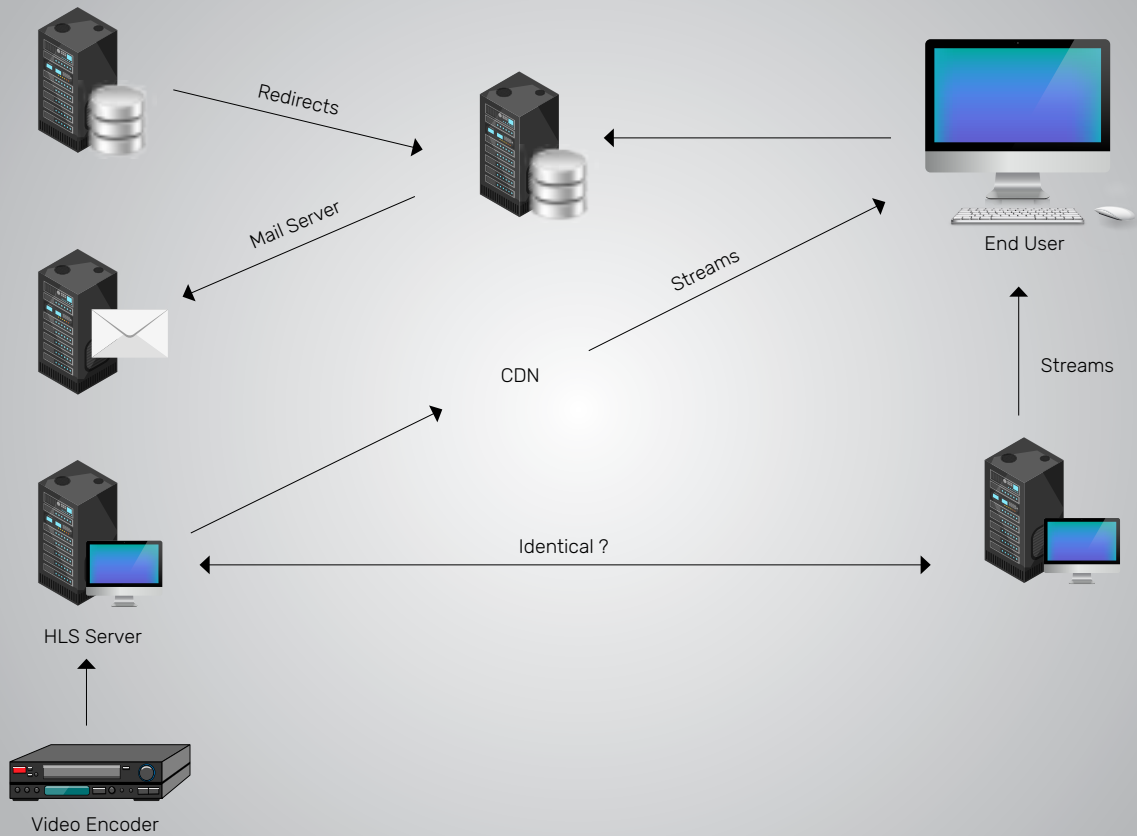
Example of a Typical Platform Infrastructure

Then, the links for the authorized domains are shared on the link farms and anybody can watch the stream.

In another example, DNS resolution of the host name usually indicates that the web service is hidden behind protection services, such as CloudFlare for instance.

Our study further confirmed that most of the content platforms use CDNs (Content Delivery Networks). They usually use their own CDN rather than use known professional ones, such as Akamai or Cloudfront.

They may also use commercial HLS servers such as Nimble. One company like Wowza Media Server, (http://www.wowza.com/), is an HLS solution very popular among illegal streaming services. Building streaming servers sounds pretty easy too. Tools like Wowza do everything for you and they can be quickly found and deployed. Considering how easy it is to create a web site, and integrate streaming servers you can then understand how these networks can be so volatile, a key feature for all these illegal streaming platforms that move and evolve so quickly.

One exception is for one of the most popular platforms; it only contains links to streams and does not embed any player on the site. Thus clicking on a link redirects the visitor to another external platform. This seems to always have been the operating model for this platform.

PLATFORMS STATISTICS AND RANKING

We have used several web tools such as alexa.com, and rank2traffic.com that are available on the web to estimate the traffic on these pirate platforms. The figures below are rough estimates, but are still a good indicator of how much revenue these sites can generate.

Platform A: estimated pageviews of approximately 3.5 million pageviews per day

Estimated Valuation	
Advertising revenue per day	$ 2.5 Thousand per day
Advertising revenue per month	$ 75.1 Thousand per month
Advertising revenue per year	$ 901 Thousand per year
Estimated worth of this website	**$ 4.51 Million**
Traffic Report	
Estimated visits per day	830 Thousand visits/day
Estimated visits per month	24.9 Million visits/month
Estimated visits per year	299 Million visits/year
Estimated pageviews per day	3.58 Million pageviews/day
Estimated pageviews per month	107 Million pageviews/month
Estimated pageviews per year	1.29 Billion pageviews/year

Platform B: according to Alexa.com reports, platform B has a ranking of 6792. This means that according to their statistics, it is the 6702th most popular website in the world (NB: with an evident bias toward their panel).

- Visitors per month: 10 million

- Pageviews per month: 32 million

- Advertising revenue per month: 22,500 USD

Platform C: according to Alexa.com reports, platform C has a ranking of 6516. This means that according to their statistics, it is the 6516th most popular website in the world (NB: with an evident bias toward their panel).

Estimated page views per day is about 1.87 million

| Estimated Valuation	
Advertising revenue per day	$ 1.31 Thousand per day
Advertising revenue per month	$ 39.2 Thousand per month
Advertising revenue per year	$ 470 Thousand per year
Estimated worth of this website	**$ 2.35 Million**
Traffic Report	
Estimated visits per day	270 Thousand visits/day
Estimated visits per month	8.11 Million visits/month
Estimated visits per year	97.3 Million visits/year
Estimated pageviews per day	1.87 Million pageviews/day
Estimated pageviews per month	56 Million pageviews/month
Estimated pageviews per year	672 Million pageviews/year

AD REVENUE

Another aspect of the business is the advertisement revenue on these pirate platforms. Like the majority of live streaming platforms, Platform A shows some advertisements, which is probably its only source of revenue. The source code of the site pages has several references to ad banners.

A second reference to an ad server has been found through the browser debugging console just by looking at web requests.

HOSTING PROVIDERS

While many content platforms hide their real IP address behind anti-DDOS / CDN services like CloudFlare, we could get the real server IP address, showing that many of these hosting companies are incorporated in countries like Panama or the Seychelles. We can mention for instance PRIVATE LAYER, a hosting company incorporated in Panama with data centers in Switzerland.
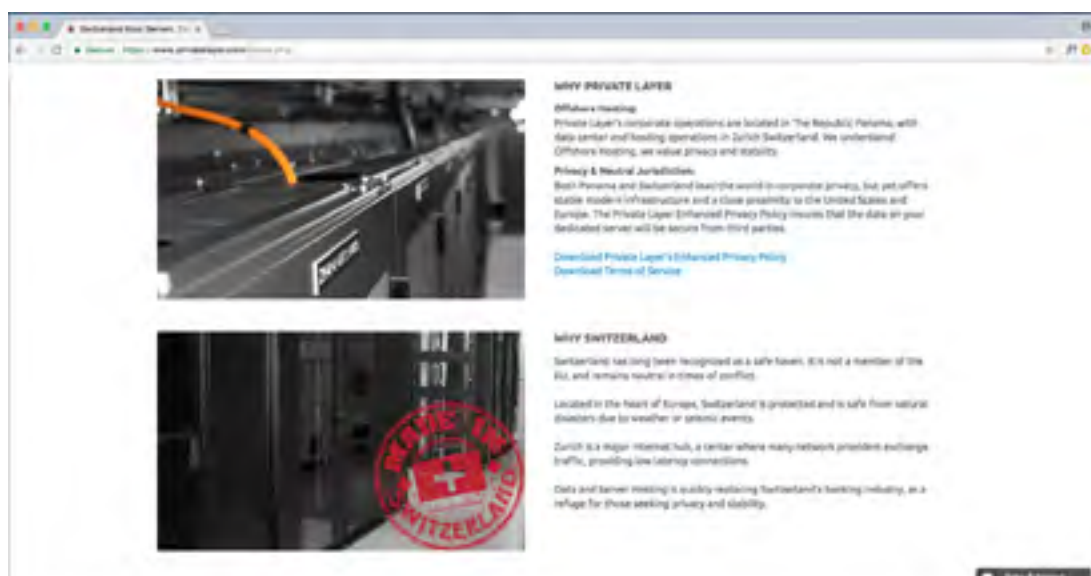
As often with illegal streaming platforms, there are multiple domains pointing to the same website. Along with the illegal streaming web sites, we have discovered a lot of domain names related to the platform and its possible owner or webmaster.

It is worth noting that the different domains of Platform A do not point to the same IP address, but both are owned by QuasiNetworks.

QuasiNetworks are a quite secretive hosting company and seem to be accustomed to government requests as their sibylline web page indicates.

SOCIAL NETWORKS

Most of the time, the pirate platforms have dedicated accounts or groups on the social network platforms. Many examples can be found on Twitter or Facebook.
Platform B has also a Twitter account which is relatively new, being registered in January 2016. Interesting to note is that figures are available on their "official" platforms gathering the number of viewers. For example, the table below shows the total viewer counts for the Brazil vs Belgium match that took place during the World Football Tournament, for each detected Facebook link for any link higher than 10 end users.

TOTAL VIEWER COUNTS FOR BRAZIL-BELGIUM FOR EACH DETECTED FACEBOOK LINK

Live hoster	Viewer count	Detected at
https://www.facebook.com/434008063675791	146 875	2018-07-06T21:25:32
https://www.facebook.com/1044796875686717	96 000	2018-07-06T21:29:02
https://www.facebook.com/135785340663625	85 200	2018-07-06T20:19:54
https://www.facebook.com/125256501714090	74 065	2018-07-06T21:40:18
https://www.facebook.com/304228803452814	70 739	2018-07-06T20:30:13
https://www.facebook.com/1964745583576327	26 500	2018-07-06T21:32:07
https://www.facebook.com/413760542443111	20 256	2018-07-06T20:23:28
https://www.facebook.com/243783959764033	19 711	2018-07-06T20:46:24
https://www.facebook.com/10156056634163183	18 100	2018-07-06T21:29:54
https://www.facebook.com/2341061279456413	18 067	2018-07-06T21:46:33
https://www.facebook.com/2009350999394835	16 988	2018-07-06T21:46:53
https://www.facebook.com/483476348774217	14 700	2018-07-06T20:23:33
https://www.facebook.com/10215399008382430	12 458	2018-07-06T20:06:14
https://www.facebook.com/196756624329009	10 393	2018-07-06T21:29:08

PLATFORMS - INDIVIDUALS PROFILES

In the "early" days of piracy, the profile of the individuals behind smart card piracy was almost the same for all. Illegal streaming gathered many types of profiles, from official well-known writers to sons of wealthy industrial families, to photographers or engineers. Most are in their thirties and forties, often having been sued by sports rights owners, or even by Google in certain cases, for having registered domain names very close to Google's. They have been sentenced several times already, even given high penalties, but they seem well protected and benefit from large amounts of money to hire highly-specialized intellectual property lawyers.

Many of them are in Europe, in countries like Spain and Italy, others are in Canada or New Zealand. Even if certain jurisdictions, like those in England are active and can deliver five year jail sentences and high penalties to owners and operators of pirate streaming services, as was the case at the Newcastle Crown Court, site owners seem to remain unaffected.

In the Newcastle case, the owners of the Evolution Trading pirate services sold over 8000 illegal devices, and as per FACT generated more than UKP 750,000 from this activity between 2013 and 2015. They were also involved in "other activities" and had supplied the Immigration Services with false documents to sponsor an Egyptian national who maintained illegal streaming for their company. Site owners often also use the huge revenues originated from the illegal streaming to fund other activities.

INTERVIEW WITH IDO SHNEIOR, CHIEF CUSTOMER OFFICER, CHARLTON

We now wish to give the floor to one of our Anti-Piracy Services customers to tell more about his views on illegal streaming as a content owner and how he sees ways to eradicate sources of piracy.

To you Ido!

INTERNET INFRINGEMENT - FROM VISIBLE TO INVISIBLE

Criminal activities have always been clandestine in the physical world.

After all, if a criminal publicly announces fake or stolen goods on the street, it will be a matter of minutes before the police arrest him.

The reason for these activities to be hidden is that in the physical world a dealer of drugs, fake watches or fake CDs cannot open a store where people are walking around, without being exposed and identified on the registry records of the city, the mall, utility bills, electricity, etc.

In today's Internet the same criminal can set up a website that is hosted in a country like Panama and get to a much wider audience, and all that without Proof of Identity.

When the Internet first became public we all preferred fast adoption of the technology at the expense of the rules and laws that protect us from crime in the physical world. This is how criminals obtained the ability to market and sell goods publicly and yet remain anonymous.

The unbearable simplicity in which it is possible to operate anonymously on legitimate Internet services is the root of the problem of the increase in piracy, both in terms of distribution and consumption.

The desire of Facebook, YouTube and others to enable potential users to create an account quickly and easily, comes at the expense of a good and effective identification process that provides the ability to pursue the owner or operator if a crime was committed on the account.

A person can open countless Facebook accounts without any personal identification and still get all the capabilities that come with it, like uploading videos, live streaming and more, without technical knowledge.

Where there is no obligation for identification - chaos reigns.

As we see it, the digital assets revolution (bitcoin, XRP etc.) is very similar to the Internet revolution, with one major difference.

Because it's in the money/currency space and not the Information space like the Internet, governments and regulators were more alert and quickly realized that rules of the game must be set before it's too late. So they began implementing a known physical world rule that solves the anonymity problem, **KYC (Know Your Customer)**.

It can already be seen that businesses that offer ownership of asset accounts for holding or trading digital assets are obligated to identify their users by requiring an **ID DOCUMENT** and **PROOF OF RESIDENCE**.

In some cases those businesses also ask users to upload a recent photo taken of the account holder, along with a hand-written note with the name of the business next to the user's face and include the current date. The owner of a Facebook account, website or YouTube page can commit a crime as damaging as an owner of an anonymous Bitcoin account can use it for tax evasion or financing terrorism.

Infringing content distribution can also produce money that will finance terrorism or be used for tax evasion.

The problem of anonymity is in the root of the Internet space, and therefore the solution must be fundamental, from the ground up.

Finally I'll leave you with something to think about, imagine how difficult it will be to handle this kind of site: **https://bit.tube/dashboard**

This is a decentralized video platform site similar to YouTube, that uses blockchain technology to store data in a worldwide Peer2Peer network.

Their model is:

Viewer agrees that while viewing content, the platform uses its computing power for mining cryptocurrencies

The content "owner" (thief) earns a percentage from those cryptocurrencies which were mined by uploading or streaming illegal content

We have to come to an understanding that ownership needs to come with "the Liability of Identification."
Thank you Ido for your thoughts!

ONLINE COUNTERFEIT

Piracy is not the sole intellectual property infringement online. Counterfeit and pirated trade is a global and dynamic phenomenon, originating like piracy from all economies on all continents — all segments are targeted.

A study led in 2016 by the EU Intellectual Property Office (Trade In Counterfeit and Pirated Goods; Mapping the Economic Impact) has offered a unique analysis in that respect and estimates that in 2013 the international trade of such products represented up to 2.5% of world trade, or as much as USD 461 billion. This is the equivalent of the GDP in Austria!

We wanted to see if online counterfeit could have some common ground with online piracy. We have investigated the situation with Julien Serres, CEO of Paris-based anti-counterfeit specialist, Insiders Corp.

AN INTERVIEW WITH JULIEN SERRES, CEO OF INSIDERS CORP

JULIEN, DO WE SEE A PROGRESSION IN THE SALE OF COUNTERFEIT PRODUCTS ONLINE DURING THE FOOTBALL TOURNAMENT IN RUSSIA?

Online sales of counterfeit products during the tournament have just exploded.
The focus is on the sale of fake jerseys of the national teams. We believe that the number of online sales has increased tenfold in the three months preceding the event.

Then come all the FIFA stamped products, for instance you find a lot of fake trophies, mugs or T-shirts. Most of the time, the FIFA logo is used without any authorization, either by sites desirous to benefit from the event, or worse, by sites intending to swindle naive Internet users by proposing fake tickets or hospitality packages.

WHO ARE THE AUTHORS OF SUCH ILLEGAL SALES?

Fake team shirts come from China, Pakistan and Turkey. They are transported by road, entering Europe via the Ukraine and the Balkan countries. Big Taiwanese industrial companies are behind this trade, promoting the shirts on all key online sites from Taiwan, where trademark protection is weak.

But they are not the only ones; you have also a lot of opportunistic manufacturers, producing UEFA, FIFA and Roland Garros jerseys, as per the demand. This second category mainly sells via B2B platforms.

The third category is made up of multiple smaller resellers, selling with an important margin, the products that they have bought themselves from Indonesian or Chinese online platforms.

WHAT ARE THE MEASURES TAKEN BY THE RIGHT HOLDERS TO FIGHT AGAINST THESE ONLINE SALES?

Most of the sport equipment providers or the national and international sport leagues have automated detection and fraud notification programs. Some of them can dereference above one million links per year and succeed in having hundreds of sites closed each year. In the longer term, they try to negotiate filters with the biggest social network platforms so as to proactively prevent online infringing ads. In parallel, right holders create a lot of awareness with national and international authorities in order to get more favorable legislation, permitting efficient actions.

IS THERE A LINK BETWEEN ALL THESE ONLINE SALES AND THE ILLEGAL STREAMING SITES?

We have tried in the course of this tournament and during other events involving League 1 clubs to identify if there is a link between counterfeit online sales and streaming sites. So far this is not obvious; we did not detect any advertisement for fake products on the illegal streaming sites despite the fact that they get most of their revenues from advertisements. We have not yet detected a clear connection between of illegal streaming sites and counterfeit sites.
It is clear however, that convergence could happen with the growing illegal live streaming on social networks, as social networks are widely used by suppliers of fake products.

WHAT ARE THE NEXT CHALLENGES FOR RIGHTS HOLDERS?

Both FIFA and sports equipment manufacturers have to deal with the proliferation of mobile marketplaces: these offer great flexibility for counterfeiters. On a geolocated basis and/or social networks, they trigger flash sales. An efficient solution has the ability to monitor these new sales channels. Blurring of the images is another challenge but incorporating artificial intelligence tools enables detection of blurred or distorted images.

WHEN YOU LOOK AT OUR TOP 5 LOCATION DOMAINS OR ISPS HOSTING SUCH DOMAINS, ARE THERE SOME COMMON POINTS?

Yes, definitively, the ISP Quasi Networks (Netherlands) and Private Layers (Switzerland) belong to our Top 5 of the worst ISPs as well. This is true for all fake products, from luxury goods, to sport, to perfumes, alcohol and similar products. These ISPs refuse to cooperate and host huge volumes of sites, especially for the second type, they probably host above one thousand sites.

About Insiders

Julien Serres is President and Co-Founder of Insiders. Insiders offer a global range of solutions in the fight against counterfeiting, and protection of brand and distribution networks, both online and offline.

RESULTS

With our dedicated anti-piracy services, we were able to measure several aspects of illegal streaming observed in the course of the matches listed below. Please note that these figures solely represent the links that were not affected nor targeted, nor seen by the tracking tools used by many right-owners or TV operators in the course of these matches. In no way do they represent the total of the links present during these football matches.

FIRST SET JUNE 14 - JUNE 17

Spain - Portugal, June 15   **France - Australia, June 16**   **Brazil - Switzerland, June 17**

Russia - KSA, June 14,   **Germany - Mexico, June 17**

TOTAL NUMBER OF LINKS ON THE TOP 5 HOSTER DOMAINS FOR THE FIVE SELECTED MATCHES

By hoster domains, we refer to a site that hosts illegal videos, either directly or through or behind a protector used as a proxy.

TOP 5 – LINK HOSTER DOMAINS	
1. Facebook	1762 links
2. Emb.aliez.me	699 links
3. 0eb.net	401 links
4. YouTube	364 links
5. Cdn.Livetvcdn.net	168 links

TOTAL NUMBER OF LINKS FOR THE TOP 5 LOCATION DOMAINS

Location domains are sites that are openly advertising for illegal redistribution of content

TOP 5 – LOCATION DOMAINS	
1. Facebook.com	1752 links
2. Livetv.sx	929 links
3. Rojadirecta.me	1142 links
4. Ishunter.net	555 links
5. YouTube.com	322 links

Where are the links that are listed above hosted the most?

TOP FIVE ISPₛ HOSTING THE SITES DESCRIBED ABOVE

TOP 5 – ISP	
1. NFOrce Entertainment (Netherlands)	699 links
2. Quasi Networks (Netherlands)	520 links
3. Private Layer (Switzerland)	400 links
4. Marosnet (Russia)	238 links
5. Contabo GmbH (Germany)	203 links

RESULTS PER MATCH

Thursday 14 June

GROUP A	RUSSIA	Score	KSA	# of Illegal Streams
		5 - 0		890

Friday 15 June

GROUP B	SPAIN	Score	PORTUGAL	# of Illegal Streams
		3 - 3		636

Saturday 16 June

GROUP C	FRANCE	Score	AUSTRALIA	# of Illegal Streams
		2 - 1		854

Sunday 17 June

GROUP F	GERMANY	Score	MEXICO	# of Illegal Streams
		0 - 1		880

Sunday 17 June

GROUP E	BRAZIL	Score	SWISS	# of Illegal Streams
		0 - 1		1017

SECOND SET JUNE 18 –JUNE 27

Tunisia - England, June 18

Russia - Egypt, June 19

Portugal - Morocco, June 20

Argentina - Croatia, June 21

France - Peru, June 21

Germany - Sweden, June 23

Tunisia - Belgium, June 23

Argentina - Nigeria, June 26

France - Denmark, June 26

Brazil – Serbia, June 27

TOTAL NUMBER OF LINKS ON THE TOP 5 HOSTED DOMAINS FOR THE 9 SELECTED MATCHES

By hosted domains, we designate a site that hosts illegal videos, either directly, or through or behind a protector used as a proxy.

TOP 5 – LINK HOSTER DOMAINS	
1. Facebook	2928 links
2. Emb.aliez.me	1128 links
3. Periscope	934 links
4. YouTube	753 links
5. 0eb.net	734 links

If we compare these new numbers to the numbers of the first set, it is clear that the overall number of links has grown; Periscope and YouTube are now entering the top 5 link hosted domains. Facebook is still by far number one in terms of illegal links hosting, on average representing 30% of the total links.

TOTAL NUMBER OF LINKS FOR THE TOP 5 DOMAIN LOCATIONS

Domains locations are sites that are openly advertising for illegal redistribution of content.

TOP 5 – DOMAIN LOCATIONS	
1. Rojadirecta.me	2168 links
2. Facebook.com	1859 links
3. Livetv.sx	1568 links
4. Ishunter.net	904 links
5. Pscp.tv	887 links

The same trend can be observed here as the number of links has grown and the type of ranking remains the same. Periscope TV (pscp.tv) has now entered the top 5 domain locations ranking. Where are the links that are listed above, hosted the most?

TOP FIVE ISPs HOSTING THE SITES DESCRIBED ABOVE

TOP 5 – ISP	
1. NFOrce Entertainment (Netherlands)	1138 links
2. Quasi Networks (Netherlands)	1095 links
3. Private Layer (Switzerland)	862 links
4. Marosnet (Russia)	584 links
5. Contabo GmbH (Germany)	535 links

Comparison with the first set shows that the same ISPs are still present with the same ranking.

RESULTS PER MATCH

Monday 18 June

GROUP G	TUNISIA	Score	ENGLAND	# of Illegal Streams
		1 - 2		841

Tuesday 19 June

GROUP A	RUSSIA	Score	EGYPT	# of Illegal Streams
		3 - 1		775

Wednesday 20 June

GROUP B	PORTUGAL	Score	MOROCCO	# of Illegal Streams
		1 - 0		780

Thursday 21 June

GROUP D	ARGENTINA	Score	CROATIA	# of Illegal Streams
		0 - 3		976

GROUP C	FRANCE	Score	PERU	# of Illegal Streams
		1 - 0		915

RESULTS PER MATCH

Saturday 23 June

	GERMANY	Score	SWEDEN	# of Illegal Streams
GROUP F		2 - 1		786

	TUNISIA	Score	BELGIUM	# of Illegal Streams
GROUP G		1 - 2		743

Thursday 26 June

	ARGENTINA	Score	NIGERIA	# of Illegal Streams
GROUP D		2 - 1		630

	FRANCE	Score	DENMARK	# of Illegal Streams
GROUP C		0 - 0		628

Wednesday 27 June

	BRAZIL	Score	SERBIA	# of Illegal Streams
GROUP E		2 - 0		914

THIRD SET JUNE 28- JULY 3

England - Belgium June 28   Spain - Russia July 1

Uruguay - Portugal June 30   Belgium - Japan July 2

France - Argentina June 30   Brazil - Mexico July 2

Croatia - Denmark July 1   Sweden – Switzerland July 3

TOTAL NUMBER OF LINKS ON THE TOP 5 HOSTED DOMAINS FOR THE FINAL PHASE MATCHES

TOP 5 – LINK HOSTER DOMAINS	
1. Facebook.com	4841 links
2. Periscope.tv	2906 links
3. Emb.Aliez.me	1775 links
4. Sport365.Live	1302 links
5. Sport247.Live	1214 links

If we compare these figures to those in the first two phases, it is clear that the overall number of links has drastically grown; as the tournament progressed, the more the number of illegal streaming links increased. Facebook and Periscope are by far the top two link hosted domains in terms of illegal link hosting.

TOTAL NUMBER OF LINKS FOR THE TOP 5 DOMAIN LOCATIONS

TOP 5 – LOCATION DOMAINS	
1. Sport365.Live	3709 links
2. Sport247.Live	3408 links
3. Streamwoop.net	1940 links
4. Pscp.tv	1872 links
5. Livetv.sx	1712 links

Here again, we note significant changes, with new location domains entering the top three sites for illegal link hosting. Platforms such as Rojadireta disappear from the table.

TOP FIVE ISPs HOSTING THE SITES DESCRIBED ABOVE

TOP 5 – ISP	
1. 3NT Solutions	2986 links
2. NFOrce Entertainment	1775 links
3. Marosnet	977 links
4. Contabo GmbH	860 links
5. Namecheap	451 links

The above results are the mere translation of the changes in the location domains, here we have different names in line with the changes.

RESULTS FROM JUNE 28 TO JULY 3, 2018

Date	Match	Scoring	Total Detected Links	Links on Facebook	Links on YouTube	Links on Periscope
28.6.18	England - Belgium	0 - 1	918	205	67	42
30.6.18	Uruguay - Portugal	2 - 1	1108	270	63	150
30.6.18	France - Argentina	4 - 3	1193	312	94	174
1.7.18	Croatia - Denmark	1 - 1 (3-2)	1162	426	62	23
1.7.18	Spain - Russia	1 - 1 (3-4)	1359	380	75	230
2.7.18	Belgium - Japan	3 - 2	1079	180	38	166
2.7.18	Brazil - Mexico	2 - 0	1188	259	72	274
3.7.18	Sweden - Switzerland	1 - 0	969	207	17	68

FINALE JULY 3 – JULY 15

Columbia - England July 1

Uruguay - France July 6

Brazil - Belgium July 6

Sweden – England July 7

Russia – Croatia July 7

France - Belgium July 10

Croatia – England July 11

Belgium – England July 14

France - Croatia July 15

FINALE FROM JULY 3 TO JULY 15, 2018

Date	Match	Scoring	Total number of Links	Links on Facebook	Links on YouTube	Links on Periscope
3.7.18	Columbia - England	1 - 1 (3-4)	1522	466	53	253
6.7.18	Uruguay - France	0 - 2	2264	340	85	218
6.7.18	Brazil - Belgium	1 - 2	4325	261	47	269
7.7.18	Sweden - England	0 - 2	1104	285	67	129
7.7.18	Russia - Croatia	2 - 2 (3-4)	1337	389	54	235
10.7.18	France - Belgium	1 - 0	1303	261	92	269
11.7.18	Croatia - England	2 - 1	4442	391	75	305
14.7.18	Belgium - England	2 - 0	947	323	32	101
15.7.18	France - Croatia	4 - 2	1406	415	75	265

BRAZIL AND BELGIUM - DETAILED FIGURES

We would like to focus on Friday July 6th. We were asked by one of our customers to monitor the illegal streaming links and used our **Anti-Piracy Services**. Thanks to these services, we could have **all** illegal links dereferenced on Google (in total **3684** illegal links); we could further shut down **47** illegal videos detected on YouTube, as well as **262** illegal streams on Facebook and **269** on Periscope TV.
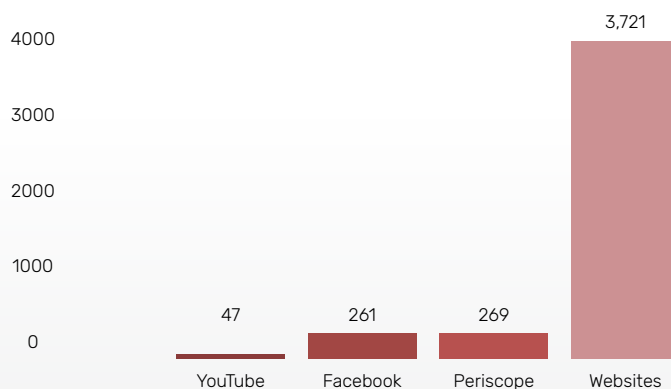
In the course of the match, the total viewers on Facebook represented approximately 887,956 end-users with around 40% in Arabic. At the same time, we had around 80,300 viewers on YouTube and more than one million for Periscope TV.
We were able to dereference 100% of those links during live events on Facebook, Periscope TV and YouTube.

PERISCOPE

Periscope is an app present on Twitter that allows users to stream videos from any part of the world. Periscope users can either publish their video or keep it private. In any event, the video

can only be seen within 24 hours after the recording. You can "like" such videos.
These videos are streamed live from the app; you just have to create an account to view videos from thousands of users worldwide. You can track people and publish your own videos to share with user community.
For each periscope link, we are able to capture the number of viewers; this number is given by the Periscope App.
For instance, we noticed during the given matches, important illegal links can reach above 10K users. Since 2016, the App is also integrated with a GoPro camera.

LINKS FOUND ON PERISCOPE:

	RUSSIA	Score	KSA	Number of links
GROUP A		5 - 0		20
	SPAIN	Score	PORTUGAL	
GROUP B		3 - 3		30
	FRANCE	Score	AUSTRALIA	
GROUP C		2 - 1		27
	GERMANY	Score	MEXICO	
GROUP F		0 - 1		72
	BRAZIL	Score	SWISS	
GROUP E		0 - 1		24

AUDIENCE MEASUREMENT

Since the beginning of the World Football Tournament, we have monitored a total of sixteen selected matches. The total number of illegal streams is more or less consistent with some peaks for the most popular events.

One important aspect for all broadcasters and content owners is the estimation of the audience measurement. We were asked whether it was possible to measure the exact number of viewers behind each domain. This is certainly a complex topic. There is no standardized solution today for audience measurement; however, we are able to capture all figures available on all social networks and UGC platforms. The table below indicates the number of available views on the different platforms namely Facebook, YouTube and Periscope.

Date	Match Events	Views on Facebook	Views on YouTube	Views on Periscope
June 14	Russia - KSA	101 063	142 598	19 508
June 15	Portugal - Spain	190 122	35 100	40 744
June 16	France - Australia	72 412	28 515	45 959
June 17	Germany - Mexico	2 033 834	36 758	59 031
June 17	Brazil - Switzerland	743 111	88 215	12 424
June 18	Tunisia - England	618 585	30 628	84 478
June 19	Russia - Egypt	535 706	25 048	72 135
June 20	Portugal - Morocco	393 982	686 480	75 962
June 21	France - Peru	295 978	98 900	169 679
June 21	Argentina - Croatia	583 111	217 731	64 443
June 23	Belgium - Tunisia	321 471	62 926	63 458
June 23	Germany - Sweden	242 586	1 927	200 651
June 25	Spain - Morocco	365 582	117 787	76 937
June 26	Denmark - France	54 931	1 975	15 067
June 26	Nigeria - Argentina	606 430	10 180	65 708
June 27	Brazil - Serbia	199 784	34 150	22 459
June 28	Belgium - England	193 338	1 536 530	7 576
	TOTAL	7 552 026	3 155 448	1 096 219

These figures do not need in-depth explanations - they are significant on their own.
On these social networks platforms, the number of viewers reaches hundreds of thousands of illegal viewers for the most popular matches. Germany vs. Mexico was definitively the most viewed match with more than two million viewers on Facebook. On YouTube the number is close to 1,500,000 for Belgium vs. England.

Closing down 100% of those links, something that is possible to achieve with our Anti-Piracy Services, thanks to our special agreement with the platform's partners, allows cleansing of a significant portion of the piracy landscape.

TWITCH.TV: A NEW "ENABLER" OF ILLEGAL STREAMING

Twitch, or Twitch.tv, is an official streaming and VOD service for video games, electronic sports and related programs, launched in 2011. The site was created as the site dedicated to the Justin.tv video games branch, which was the most popular part of the service.
With video games experiencing particularly strong growth, until they became the most popular category on the site, the company decided to create a separate entity "Twitch.tv".
The site officially launched in a public Beta version in 2011. Since then, it has attracted over 35 million unique visitors per month.

While monitoring most of the matches since the beginning of the tournament, we noticed that it was possible to access all of them on twitch.tv. Video game platforms are not heavily targeted in the current battle against online illegal streaming, but it appears that they play a major role there as well as an "enabler" of illegal streaming. As a cooperative platform, they could be easily addressed by tools like VO's Anti-Piracy Services and all the notified player links could be removed.

THE ROLE OF VPN IN ILLEGAL STREAMING DELIVERY

In the context of OTT delivery, the use of Virtual Private Networks is quite often used to bypass geo-blocking and geo-fencing requirements. A VPN typically uses a "gateway" to access the outside world, which allows the apparent source IP address of its connections to be changed to the corresponding targeted country IP, thus allowing avoiding the geographical restrictions of certain services offered on the Internet.

This threat has been addressed recently by most of the content owners and sports leagues since the last World Football Tournament. They are nevertheless still widely used in recent events this makes it more difficult for any service provider to identify the location of the transmitting computer.
The VPN infrastructure (usually a server) contains enough information to identify the user: for example, companies offering free or paid VPNs can collect navigation data from their customers, which questions the anonymity of these services.

We have recently seen Netflix and other companies take anti-piracy actions that could lead to banning VPN users altogether, using IP blocking and other techniques. In the context of the World Football Tournament, social networks and forums exchange information on how users can access the tournament matches from various locations and do not hesitate to provide lists of unblocked VPNs providers. This indicates that piracy is not only supported, but encouraged by these social networks.

CLOSING WORDS

Tackling audiovisual piracy can only be a joint and global approach, recognizing these two fundamentals as pre-requisites:

- Streaming is the favorite way of accessing and consuming content. Even if most of the matches could be seen for free on local channels, the figures of illegal streaming definitively show that linear TV is less and less considered; viewing habits have changed once and for all

- The Internet is making all content accessible from everywhere

The European Copyright Directive currently being revisited should take these two aspects as a "given" that they are irreversible. It is therefore the right time to:

- Review the notion of copyright in depth, to clearly and jointly define online responsibilities for all stakeholders, from the right owners to the consumers, via the ISPs, the data centers, the Ad players, the market places, the payment and social platforms

- To jointly define a responsible approach for each of these players and then revisit the overall rights' monetization process

This should be dealt with urgently as illegal streaming networks are growing, they all are very well organized, protected; they are wealthy and have a feeling of impunity. We should not ignore that they do not solely address illegal streaming but also fund other networks with the revenues originated from their illegal streaming services.

Creating awareness on the end to end chain within all these stakeholders and sharing it with public stakeholders is key, so that each player has a deep view on the overall landscape, and on the role that he can play and the responsible attitude expected from him. Only a clear jointly-defined allocation of roles and responsibilities can maintain cohesion in the digital sphere.

About VO

Viaccess-Orca is a leading global solutions provider of OTT and TV platforms, content protection, and advanced data solutions for a personalized TV experience.

The company offers an extensive range of innovative, end-to-end, modular solutions for content delivery, protection, discovery, and monetization. With over 20 years of industry leadership, Viaccess-Orca helps content providers and TV operators shape a smarter and safer TV and OTT experience. Viaccess-Orca is part of the Orange Group and the company's solutions have been deployed in over 35 countries, reaching more than 27 million subscribers.

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