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INTERTRUST WHITE PAPER

2019 Mid-Year Global Overview of Live OTT Sports



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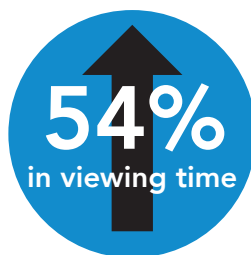
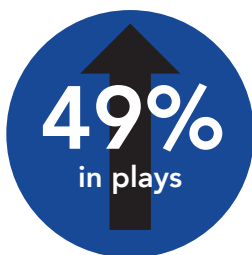
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Introduction: OTT Sports Coming Into Its Own

Over-the-top (OTT) video consumption continues to grow in popularity. In 2018, the number of subscriptions to online video services around the world increased to 613.3 million, 27% growth from 2017, passing the number of cable subscriptions (556 million) for the first time¹. This increase in online viewing has been led by video entertainment in recent years, but OTT sports is coming into its own, as viewers seek out specific sporting events, with the convenience of watching those programs when and where they want.

Until recently, live sports has been a major force in keeping many subscribers tethered to their pay-TV subscription. However, with recent improvements in live streaming technology, as well as new subscription video on demand (SVOD) packages and stand-alone OTT sports services popping up regularly, sports fans – especially the younger generations – are moving from traditional to online viewing at a steady pace. The variety and ease of accessing on-demand content is accelerating OTT viewership across the global market, but it doesn't come without challenges. OTT video providers must offer a high quality, glitch-free viewing experience and also ensure that licensed content is secure across a gamut of digital channels and devices.



Live OTT sports streaming increased 49% in plays and 54% in viewing time year-over-year between Q3 2017 and Q3 2018 across Conviva's global footprint of 50 billion streams/year².

From monthly subscriptions to one-off matches, fans can use OTT to take control of what they watch, how they watch it, and where they watch it. This is just a sampling of the wide range of services available to sports fans around the globe from a variety of providers:

vMVPD Services Offering Sports: DirecTV Now, fuboTV, MySports (UPC), Now TV (Sky), Sling TV (Dish Network)

Traditional Broadcasters with OTT Sports Platforms: BBC Sport, CBS All Access (NFL)

Mobile Service Providers: Verizon (NFL)

DTC OTT Multi-sport Platforms: BeIN Sport Connect, B/R Live, DAZN, Eleven Sport, Eurosport, ESPN+, Eurovision Sports Live, FloSports, Fox Sports, Kayo (Australia), Sportsnet NOW

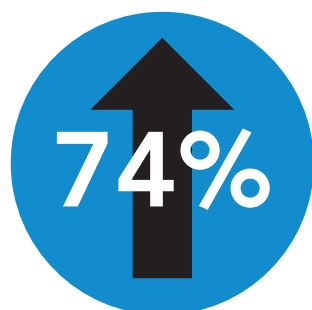
DTC OTT Single-sport Platforms: Cricket Australia, Formula One, MLB.TV, MotoGP, NBA League Pass, NFL Network, Onefootball, RugbyPass, Star, Tennis TV, UFC, WWE

New Media Platforms Offering Live Sports Streaming (with limited games): Amazon Prime/Twitch, Facebook, Twitter, Yahoo Sports, YouTubeTV

Platform Agnostic Sports Service: Eleven Sports

As streaming video consumption continues to expand, even the once invincible king of cable sports – ESPN – has seen a decline from 100 million U.S. households in 2010 to 86 million in 2018³, reporting a loss of 2 million subscribers in the last fiscal year alone⁴. This steady decline drove owner Walt Disney Co. to create an over-the-top offering in the form of ESPN+. This new direct-to-consumer (DTC) service added 2 million subscribers in less than a year⁵, which is no small feat (and coincidentally – or not – the number of subscribers lost in fiscal 2018 by the traditional ESPN), showing that sports fans are eager and willing to switch to a reliable OTT sports service. As ESPN+ continues to add rights to more top-tier leagues – a goal laid out by ESPN president Jimmy Pitaro – the service is expected to grow, with a target of “8 million to 12 million subscribers in just a few years time.”⁶

While it may be happening at a different pace in different regions, this shift in viewing platforms is a global phenomenon. And as fans discover the power to take control of when and where they watch their favorite teams, uptake of OTT sports is only going to accelerate, transforming OTT from a supplemental source to a primary one for many sports viewers.



**Between Q117 and Q119
global subscribers to
sports-focused
OTT services grew 74%.**

OTT Sports Around the World

UNITED STATES & CANADA*

Subscribers to Sports-focused OTT
Services Q117: 8,343,600

Subscribers to Sports-focused OTT
Services Q119: 13,571,661

GROWTH: 63%

*Source: Dataxis estimates, does not include ad-supported services; these are sports-focused services while sports may be available from other services with entertainment too.

United States & Canada: Sports No Longer a Tether to Pay-TV

For live sports, the United States is a coveted market. The large and diverse U.S. population with its multi-cultural sports fans has made it a battleground for viewers of leagues, sports and events, such as the NBA, NFL, MLB, English Premier League, Tour de France, rugby, tennis, boxing, the FIFA World Cup and the Olympics, just to name a few. In the recent past, loyalty to live sports viewership in the U.S. was one of the primary reasons customers gave for not cutting the cord. In a 2017 survey 82% of U.S. sports fans stated that if they no longer needed their pay-TV subscription to access live sports they would end or trim their subscription.⁷

However, the relationship pay-TV operators have with sports fans is growing more tenuous. A 2019 survey found that two-thirds of fans are willing to pay up to US\$39 per month for OTT-delivered sports, driven by a desire to cut the cord and experience more flexible viewing. The remaining one-third are willing to spend even more for the convenience and flexibility of streaming games and other sports content to any device. In fact, only 15% of these fans believe the status quo of sports broadcast will remain the same over the next three years.⁸ This awareness and willingness to transition away from the traditional sports viewing model create tremendous opportunity for OTT sports providers.



Challenging its better established U.S. Competitor – ESPN+ – FloSports is mixing things up with its recent agreement with college football's Colonial Athletic Association (CAA)⁹, a member of the prestigious NCAA Division I conference made up of 10 universities on the U.S. East Coast. The four-year deal makes the ACC the first college conference to select an OTT service provider as their primary media partner, providing live and on-demand streaming of 22 sponsored sports, highlighted by extensive coverage of the conference's football and basketball programs. Whether or not this is a sign of things to come for other conferences, it certainly highlights the strength of the streaming model.

Taking the company in a direction different from most sports platforms, fuboTV added entertainment and news from Turner in 2018¹⁰. This addition included Turner Sports, putting it in competition with Turner's own B/R Live, launched earlier in the year.¹¹ fuboTV also announced the addition of entertainment programming from Viacom in early 2019. These changes are designed to increase engagement – as a company executive stated: "You come for the sports and you stay for the entertainment."¹² In another change to its service, the company has indicated that it is preparing to launch a free ad-supported streaming service later in 2019, while also complementing its current offering with original content. This move is expected to expand the service into 50 million homes by the end of 2019.¹³ Whatever the model, OTT sports programming remains the key to success.

Streaming Spurs Global Expansion

Every Canadian Football League (CFL) game will be made available to stream on ESPN+, starting with the 2019 season, helping the league with its plans for global expansion.¹⁴



EUROPE* **

Subscribers to Sports-focused OTT Services Q117: 985,132

Subscribers to Sports-focused OTT Services Q119: 3,530,781

GROWTH: 258%

*Source: Dataxis estimates, does not include ad-supported services; these are sports-focused services while sports may be available from other services with entertainment too.

** Includes: Austria, Belarus, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, UK, Ukraine.

Europe: Testing New Models

The European sports streaming market continues to be a hotbed of activity, testing new models and strategies. In April of 2019, UK-based OTT sports streaming service provider DAZN announced DAZN Connect, a platform that will enable sports rights holders, broadcasters and media partners access to more than 30,000 live sporting events across multiple leagues and competitions. Claiming to have "more sports content on our network than anyone else in the industry," DAZN has secured early European customers BT Sport and Fox Netherlands for the service, as well as ESPN and China-based iQiyi, and will offer native support for UHD/4K.¹⁵

Testing out a new format for the distribution of digital football rights, platform agnostic sports service Eleven Sports and football platform Onefootball are teaming up for a pay-per-view offering of La Liga – Spain's top football league. This partnership brings live streaming to the Onefootball app for the first time and offers flexibility to fans to watch only the games they are interested in, without committing to a monthly subscription. 2019 test markets will include La Liga matches in the UK and Ireland, plus Serie C matches in Italy.¹⁶

INDIA*

Hotstar Total Subscribers*** Q117: 1,260,000

Hotstar Total Subscribers*** Q119: 3,910,000

GROWTH: 210%

SonyLIV Total Subscribers*** Q117: 70,000

SonyLIV Total Subscribers*** Q119: 365,700

GROWTH: 422%

*Source: Dataxis estimates, does not include ad-supported services.

*** Includes all paid subscribers for sports and entertainment content

India: Cricket Shattering Global Live Streaming Records

India's streaming platform Hotstar, operated by pay-TV provider and media conglomerate Star India (a wholly owned subsidiary of The Walt Disney Company India), boasts over 300 million monthly active users (MAU) including premium tier paying subscribers and users of its ad-supported (free) service. This huge user base makes it one of the largest video platforms in the world,¹⁷ by far outpacing the OTT competition in its market. Star claims a 65% share of the sports viewership in India, according to Uday Shankar, Chairman of Star and Disney India.¹⁸

Between June and November 2018, the portion of India's smartphone users who had the OTT provider's video streaming app installed on their phones averaged over 45%, with the next closest competitor – JioTV – averaging less than 35% over the period.¹⁹ What's their biggest differentiator? Live streaming sports, including English Premier League, Formula One, most Grand Slams, Pro Kabaddi League, and Indian Premier League (IPL).

In the first three weeks of the 2019 IPL cricket tournament, Hotstar registered 267 million viewers, a 32% increase over the 202 million viewers across the entire 2018 season. The OTT provider also once again set a global live streaming record with a concurrency of 12.7 million viewers during the Royal Challengers Bangalore vs. Mumbai Indians match,²⁰ only to surpassed it less than a month later with a new concurrent streaming record of 18.6 million set during the IPL final match between the Chennai Super Kings and Mumbai Indians,²¹ and then set yet another record during the ICC Cricket World Cup semi-final match between India and New Zealand, recording 25.3 million viewers.²² Clearly a very popular sport – not only in India, but Australia and England as well – global media rights for cricket are forecast to reach \$1.7 billion in 2019, with a valuation estimated to top \$2 billion in 2021.²³ There is no doubt that a large and growing OTT opportunity exists in this market.

In another sign of its growing dominance – Hotstar was an official streaming partner of the 2019 ICC Cricket World Cup, included in its new VIP subscription service, along with other sports and entertainment content. Existing subscribers to the Hotstar All Annual Sports plan were automatically upgraded to the new plan.²⁴ This dedicated sports subscription plan is credited as a major driver in the OTT provider's initial success.²⁵

While dominant, Hotstar isn't the only streaming provider bringing sports to viewers in India. Sony Pictures Networks India has been awarded the broadcast rights for the Olympic Games Tokyo 2020, as well as the Winter Youth Olympic Games Lausanne 2020, for India and the Indian Subcontinent. This deal includes rights for streaming on Sony's digital platform, SonyLIV. Sony will also work with the International Olympic Committee to create an Olympic Channel within the SonyLIV service, providing year-round coverage of Olympic athletes and sports for the India market.²⁶

CHINA & ASIA-PACIFIC* ***

iQiyi Service Total Subscribers Q117:
25,980,000

iQiyi Service Total Subscribers Q119:
95,324,800

GROWTH: 267%

Tencent Service Total Subscribers
Q117: 30,000,000

Tencent Service Total Subscribers
Q119: 89,000,000

GROWTH: 197%

*Source: Dataxis estimates, does not include
ad-supported services.

*** Includes all paid subscribers for sports and
entertainment content

China & Asia-Pacific: Diversity of Content

While sports-only data were not available, it is clear that China, with its massive population, represents a very lucrative market for all sports leagues. Chinese internet giant Tencent has signed multi-year streaming contracts with both the National Basketball Association (NBA)²⁷ and Major League Baseball (MLB).²⁸ Its 2015 contract with the NBA makes Tencent the only company in China to offer the NBA's League Pass package, granting the digital broadcasting rights to all games for a reported US\$500 million.²⁹ Highlighting the success






of this deal, 10 million viewers watched Game 7 of the 2018 Western Conference Finals between Golden State and Houston, and it's estimated that an average of three million streamed regular season games on Tencent, even though an 8 p.m. game in New York tips off at 9 a.m. the next day in China. With Tencent employing as many people devoted to the NBA in China as the league itself, there is clearly an expectation for OTT streaming growth in the country.³⁰



Without local competition from global platforms like Google and Facebook, Chinese streaming and social sites – including iQiyi (Baidu), ByteDance, QQLive (Tencent), Weibo and Youku (Alibaba) – have a tremendous opportunity to build out their local distribution model for streaming content as they investigate and negotiate deals with top international leagues.

China Primed for OTT Sports

With 782.8 million smartphone users, the top 4 grossing non-game apps in China in 2018 were video streaming apps.³³

#	APP	GENRE	PUBLISHER
1	 QQTV	Video	Tencent
2	 iQiyi	Video	iQiyi
3	 Kuaishou/Kwai	Video	Kwai
4	 Youku	Video	Youku
5	 QQ	Social Networking	Tencent

A 2019 survey of Chinese internet users, conducted by Ampere Analysis, identified the NBA as the most popular sports league in China, followed by the Premier League, Champions League, FIFA World Cup, Olympic Games, La Liga, Serie A, World Table Tennis Championships, UEFA European Championships and the FIBA Basketball World Cup.³⁴ These and other leagues – including MLB, the NHL and the NFL – are working to capitalize on the massive market. With the Ampere survey showing that Chinese sports fans are younger than the national average, with around 65% aged 44 or younger, this is a market ripe for streaming success.



With recently formed DDMC Fortis securing the commercial rights to the Asian Football Confederation (AFC) in a massive \$4 billion, eight-year deal beginning in 2021, look for progressive new digital rights negotiations across the region, as well as more sophisticated direct-to-consumer offerings.³⁵

Deals to Come

In a region as large and diverse as Asia-Pacific, there are many differences in culture and sporting tastes, as well as infrastructure capabilities from country to country that must be considered. OTT sports providers across the region are innovating in different ways to meet the needs of a growing streaming audience.

South Korea is seeing a major shift to mobile viewing. For viewers aged 19 to 49, mobile was the most popular way to watch the PyeongChang 2018 Olympic Winter Games and the 2018 FIFA World Cup, with mobile viewing of the Winter Olympics surpassing TV for this age group.³⁶ And things are poised to shift even more dramatically as South Korean wireless carriers roll out their 5G networks in 2019. Global leaders in 5G – SK Telecom, KT and LG U+ – have reportedly indicated plans to prioritize sports content on their 5G video services, taking advantage of improvements in bandwidth and latency. KT trialed video streaming at gigabit speeds at the PyeongChang games,³⁷ including “immersive broadcasting” techniques, such as time slicing and virtual reality.³⁸

South Korea Goes Mobile

68% of South Koreans use smartphones, making South Korea the leader in smartphone penetration in Asia and #11 in the world.³⁹ With 34.6 million smartphone users in 2018, it is well on its way to grow to 39 million by 2021.³³



In Southeast Asia, Facebook attempted to secure exclusive rights to broadcast all 380 English Premier League football matches in Thailand, Vietnam, Cambodia and Laos beginning in 2019 – reportedly outbidding several sports-focused OTT providers – however the deal couldn’t be finalized, putting the opportunity back out to bid.⁴⁰ As live streaming sports continues to increase in popularity, look for Facebook and other non-traditional media platforms to become competitive bidders for sports rights and play a bigger role in distribution.

While often competing with incumbent operators, in Japan, DAZN has partnered with local mobile provider NTT DoCoMo to offer ‘DAZN for DoCoMo’ giving DoCoMo’s customers access to DAZN’s full portfolio of live and on-demand sporting content on their phones and TVs. The centerpiece of the offering is the J.League – Japan’s professional football league – and includes the rights to broadcast all J1, J2 and J3 league tournaments through the 2026 seasons, marking the first time that all games from all leagues are being broadcast in Japan.⁴¹

LATIN AMERICA

Subscribers to Sports-focused OTT Services Q117: 854,770

Subscribers to Sports-focused OTT Services Q119: 1,152,420

GROWTH: 35%

*Source: Dataxis estimates, does not include ad-supported services; these are sports-focused services while sports may be available from other services with entertainment too.

**** Includes: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay, Venezuela.

Latin America: Sports Fans Making the Move to OTT

According to an e-Marketer report, pay-TV has long dominated the sports landscape in Mexico, partly because the incumbent networks have offered free streaming to their subscribers.⁴² However, consumer interest in a wide range of sports is pushing streaming providers to offer new OTT services.



Venezuela Loves Baseball

Over 76K Venezuelans were subscribed to Major League Baseball's MLB.TV in Q1 of 2019.

Source: Dataxis estimate

Already established in Argentina and Chile, Fox Sports Latin America launched its Fox Sports Premium OTT streaming service in Mexico and Central America in early 2019, featuring exclusive games from top international soccer leagues such as Mexican Liga MX, German Bundesliga, and Superliga Argentina. Other coverage will include matches between Mexican and Central American clubs in the CONCACAF Champions League, UEFA Champions League, and UEFA Europa League, as well as streaming content from a range of other sports, including Formula 1, UFC, WWE, and select fights from the International Boxing Organization. At an average monthly price of US\$8 for the a-la-carte service – nearly twice the \$4.99 price tag of ESPN+ – Fox Sports Latam appears confident that there is a high demand for viewing coveted games included in the service.⁴³

Top 5 Latin American Countries by OTT Sports Subscribers – Q12019

*Source: Dataxis estimates, does not include ad-supported services



ARGENTINA



BRAZIL



COLOMBIA



MEXICO



VENEZUELA

DAZN has again expanded its OTT service, launching in Brazil in early 2019 – its ninth market since its 2016 inception. Domestic and international football features prominently on the service, but it also includes the EuroLeague and British All-Star Championship basketball, Matchroom Boxing, WTA tennis, NTT IndyCar Series, Professional Fighters League, and Glory Kickboxing.⁴⁴ While pay-TV remains the primary outlet for sports in Brazil, the service will also compete against OTT services from Grupo Globo (Premiere Play) and Fox Sports. Additionally, Facebook and Twitter are working towards live-streaming select games for Brazilian viewers.⁴⁵ As a sports-loving nation, there is plenty of opportunity for OTT sports in this country.

The Olympic Games – The Road to OTT Sports

As the biggest sporting event in the world, with a 100+ year history, the Olympic Games provides an interesting timeline of sporting broadcast evolution. While the first modern Olympics in Athens in 1896 certainly wasn't televised, it set off a phenomenon that gained steam with the first broadcast in 1936 to a local Berlin audience. Below is a timeline of key Olympics broadcast events,⁴⁶ culminating in over a billion people watching the last Summer Olympics via online technology that the 241 athletes at the first Olympics could never have imagined.

<p>THE OLYMPIC GAMES</p> 	<p> 1936 BERLIN, GERMANY</p> <p>The first Olympic Games to be televised, in and around Berlin only, with a total of 138 viewing hours and 162,000 viewers. Only one of three cameras is capable of live coverage, and only when the sun is shining.</p>	<p> 1952 HELSINKI, FINLAND</p> <p>The OCOG conducts broadcast rights negotiations for the 1st time.</p>
<p> 1956 CORTINA D'AMPEZZO, ITALY</p> <p>The Olympic Winter Games are broadcast live for the 1st time.</p>	<p> 1964 TOKYO, JAPAN</p> <p>Satellite broadcast coverage is used to relay images overseas for the 1st time.</p>	<p> 1968 MEXICO CITY, MEXICO</p> <p>The Olympic Games are broadcast live in color for the 1st time.</p>
<p> 1984 LOS ANGELES, UNITED STATES</p> <p>More than 2.5 billion people view the Olympic Games.</p>	<p> 2000 SYDNEY, AUSTRALIA</p> <p>Olympic broadcast reaches 3.7 billion viewers in 220 countries.</p>	<p> 2004 ATHENS, GREECE</p> <p>Live coverage available on the internet in several territories for the 1st time.</p>
<p> 2006 TORINO, ITALY</p> <p>Coverage is available for the 1st time on mobile phones.</p>	<p> 2008 BEIJING, CHINA</p> <p>400 million global online users viewed digital broadcast coverage, with 700 million digital video views.</p>	<p> 2014 SOCHI, RUSSIA</p> <p>For the 1st time at any Olympic Games, the amount of digital coverage available exceeded that of traditional broadcasts, with 230 dedicated digital channels, including 155 websites and 75 apps, carrying a total of 60,000 hours of digital broadcast coverage.</p>
<p> 2016 RIO, BRAZIL</p> <p>1.3 billion global online users viewed digital broadcast coverage, with 4.4 billion digital video views.</p>	<p> 2018 PYEONGCHANG, SOUTH KOREA</p> <p>97,041 hours of digital coverage produced; 1.6 billion video views on social platforms.</p>	<p> 2020 TOKYO, JAPAN</p> <p>Digital-First Olympics</p>

"The future of content delivery is multi-media, multi-platform, personalised, mobile and social. To stay relevant and continue our mission of serving the rights holders, and to help them captivate their digital audiences, our focus needs to be on the digital arena."

RAQUEL ROZADOS
Director of Broadcaster Services
Olympic Broadcasting Services⁴⁷



OLYMPIC GAME
2020 TOKYO,
JAPAN

"Sport's impact on society is timeless: bringing communities together to celebrate achievement, health benefits and its fundamental values. It has connected fans with athletes to inspire the world since the ancient Games and will do so beyond 2038."

TIMO LUMME
Managing Director
Television and Marketing Services IOC
Sports Business Predictions: 2038
Sports Business Journal⁴⁸



Continuing the Innovation

As the competition heats up and improvements in technology bring the live OTT viewing experience closer to broadcast TV – live OTT sports service providers are starting to innovate in other areas in order to attract and retain new viewers. These are just a few emerging trends that are expected to fuel the uptake of live OTT sports consumption in the coming year.

Expanding Access & Improving Experience



With the emergence of OTT sports platforms, local, regional and niche content is becoming more accessible to fans who previously may have had trouble watching their favorite sports and local teams. For example, Eleven Sports has secured the exclusive live rights in Belgium and Luxembourg for the Unibet Premier League – a popular darts league in the region. Through its “darts pass,” it streams tournament games live on its platform, and will also exclusively live-stream the World Cup of Darts, the World Darts Championships and the World Series of Darts.⁴⁹



Social platforms provide a very accessible means for fans to watch their favorite sports from anywhere on the globe, as well as to discover new ones. After a successful 2018 collaboration, the International Table Tennis Federation (ITTF) and Twitter announced a renewed deal for live streaming the 2019 ITTF Challenge Series to a global audience. The ITTF says that its 2018 Twitter broadcasts of the Challenge Series helped the league increase its worldwide reach, with more than 22 million video views of match action, a number they hope to beat in 2019.⁵⁰ The organization is also using YouTube to reach new people, hoping to convert them to viewing fans.⁵¹



While wide-spread 5G networks are still some time off, they are starting to roll out in parts of the world where they can begin to have an impact on the distribution and consumption of live sports streams, from faster mobile production to improved viewing of all the action in high definition on mobile devices.⁵² Eventually, 5G networks will provide the bandwidth and low latency needed for even local community sports teams to live stream in 4K.⁵³

New Payment Models: Making Access Easy & Affordable Across Markets



Even before the viewing experience becomes a critical factor in subscriber acquisition and retention, OTT service providers must onboard subscribers smoothly and make it easy for them to maintain their subscriptions. DAZN is trying to do just this by partnering with Boku to enable easy sign-up and ongoing payments via existing mobile, broadband and pay-TV accounts. This global agreement, kicking off later in 2019, will help attract new fans as they seamlessly watch their favorite live sports.⁵⁴



On the other end of the spectrum, Hotstar's VIP subscription service is breaking new ground by becoming the first OTT platform to offer the option to pay by cash. Once a subscriber registers, the payment will be collected from their doorstep within 48-72 hours. This innovation highlights the need for providers to understand the needs of local markets and to adapt to subscriber lifestyles in order to expand their subscriber base.⁵⁴



The NBA has seen recent surges in viewing of its International League Pass OTT offering, which could at least in part be attributed to a new offering allowing fans to buy any ten-minute period in a game for US\$0.99. This new purchase option draws fans in who may only be interested in one team, or maybe even a single home town player.⁵⁵



NBA League Pass subscriptions outside the US have risen by 21% during the 2018/19 season.⁵⁵

"OTT sports have been driving technological innovation in sports broadcasting for many years, and the trend is expected to continue in the years to come. IP-delivery makes it possible to enhance the video experience and strengthen engagement through the deployment of a range of forefront services including multi events broadcast, resolution improvements (4K, HDR), and the integration of analytics to personalize the viewing experience.

On the production side, standards should evolve concurrently with the adoption of advanced filming technologies and AI.

Finally, significant changes could be triggered by the possibility for new types of players such as smaller leagues, right holders or digital companies, to address their viewer base directly, provided that they tackle the most crucial issue that sports OTT can face: latency."

SA EVA NEBIE
Research Analyst
Dataxis



Capitalizing On All This Interest

With overwhelming evidence, it's clear that live OTT sports viewing has reached a critical mass, and with continuing innovation and increasing consumer interest, will stay on its growth path for years to come. However, this new paradigm presents OTT sports publishers and service providers around the globe with new challenges. Netflix has set a global standard for the streaming user experience, but sports are a whole different ball game. As millions of users watch simultaneously, live content must be scaled for massive global throughput in a manner that ensures viewers are given the experience they expect, while rights owners maximize their return on investment.

We turn next to the technology platform requirements needed to deliver a great user experience to a global audience clamoring for live OTT sports.

Protecting Your Investment from End to End

Content security is paramount to a successful premium live sporting OTT service. As with highly sought after VOD/SVOD entertainment content from the likes of HBO and Netflix, streaming sports content is under significant threat from pirates. This in turn has driven content producers and rights holders to demand protections from the full supply chain.



Over 41 million viewers watched illegal streams during the 2018 FIFA World Cup via social media alone.⁵⁶

DRM: End to End Integrity

Helping to ensure the best user experience possible, adaptive bitrate (ABR) technology is used for most of today's video streaming, utilizing protocols such as HTTP Live Streaming (HLS) and MPEG-DASH. An ABR encoder/packager creates multiple short content segments with varying bit rates for delivery over the Internet from a content delivery network (CDN). The content uploaded to a CDN must be encrypted to prevent unauthorized access. Unlike approaches that rely solely on content encryption and/or authentication, Digital Rights Management (DRM) ensures the end to end integrity of the encryption keys – from CDN to user – and enforces playback on trusted devices with advanced protection requirements (e.g. use of HDCP, Hardware crypto, Hardware decode, etc.).

Rotating Keys are Key

Further enhancing security, it's important to implement periodic rotation of the keys used to encrypt a live stream. This action prevents pirates from viewing the stream indefinitely without maintaining a valid subscription and raises the cost and difficulty of redistributing the stream illegally.

Forensic Watermarking Prevents DRM Bypass

Today, pirates typically use screen recording software or an external camera to record and restream the content, thus effectively bypassing the DRM system. Acting as a crucial complement to DRM, user-specific forensic watermarking technology embeds a unique identifier for each session, enabling identification of the device that is “leaking” or restreaming the content to allow for real-time shutdown of the illegal redistribution or the ability to take other action subject to the service provider’s policy.

Watermarking can be applied either on the server side or in the client device itself. For Live OTT services, avoiding latency when adding a forensic watermark is crucial. Server-side technology requires heavy integration with the live encoder and edge components, and can add additional latency to live events. On the other hand, the major requirement for addressing the piracy of sports content is the capability of the fast extraction for the embedded watermark. Therefore vendors are focusing on client-side watermarking technologies as the most practical approach for live sports.

In conjunction with session-based watermarking, monitoring of known piracy sites for pirated streams enables the collection of the forensics required to prosecute pirates and take action to disrupt the entire value chain from illicit source to consumer.

Content Security: What to Look For

As with other streaming media technologies, there are several criteria to look for in a content security solution in order to provide a robust delivery platform.

Global Presence in the Cloud

OTT live streaming is a global business, bringing with it many benefits and challenges. With consumer interest growing worldwide, as well as the ubiquity of IP networks, global cloud-based platforms, such as AWS, Alibaba, Azure, and Google Cloud enable cost-effective development and deployment of scalable, high-availability services with a global reach. At the same time, local CDNs enable content to be served from the edge, putting resources closer to users and providing a superior user experience in a cost-effective manner.

DRM technology is an essential enabler for OTT video as content delivered at the edge must be encrypted at rest and played on trusted clients.

Scaling for Peak Viewing

Live sports are appointment-driven viewing – everyone watches at the same time – creating peaks in traffic during major events. And those peaks are growing as more people consume live OTT sports content anywhere and everywhere. Being able to scale for millions of simultaneous viewers is critical.

DRM technology is not trivial to master and a poor implementation results in a frustrating viewer experience, and ultimately may lead to costly subscriber churn. With live events, this challenge is compounded by the need to deliver a large number of DRM licenses at a high rate of speed to a global audience on a broad range of devices. A managed multi-DRM solution provides a cost-effective alternative to in-house development of globally distributed, high-availability, fault-tolerant services for license delivery.

Reducing Latency

Despite advancements in delivering live OTT sports, streaming services continue to experience latency, potentially leading to spoilers and ultimately, subscriber attrition. Recent industry innovations, such as low latency Common Media Application Format (CMAF; an emerging standard intended to simplify delivery of HTTP-based streaming services) and Low-Latency HLS (LHLS), provide an “equivalent to broadcast” transmission delay of 3-5 seconds versus 10 times or more that in typical adaptive bitrate encoding and delivery scenarios. As the effort to reduce latency progresses, it is bringing back issues of freezing, buffering and poor picture quality. It’s important that any solution in the delivery chain maintain low latency while minimizing other impacts on the user experience.

High Availability & Resiliency

You don’t get two chances to witness live that important goal, impressive kick, or once-in-a-lifetime play. Traditional broadcast services, using managed networks, have honed their high-availability performance over many years of development and operation. In order to retain subscribers, OTT live streaming needs to match and exceed that performance.

OTT services can achieve this goal by utilizing a scalable and redundant architecture that is deployed across multiple data centers and CDNs for performant access to content, and a reliable and scalable solution for DRM license delivery.

Protect Your OTT Live Sports Content with ExpressPlay™

OTT technology offers a unique opportunity to deliver live sports without regard for geographical borders, allowing global audiences to access content on a broad range of devices, platforms and networks. However, that valuable content must be protected all along the delivery chain. All aspects of media delivery, including the DRM license services must be designed for global delivery, high availability, scale and resiliency.

Intertrust’s ExpressPlay DRM has successfully served some of the largest sporting events in the world. Deployed globally on highly redundant and available infrastructure, it offers seamless failover between data centers and the scalability to support the large throughput needed to ensure millions of users can watch events at the same time. With ExpressPlay, the service provider can employ any monetization method, including pay-per-view, subscription, or freemium. As an integral element of content protection, ExpressPlay also offers forensic watermarking of live, linear and on-demand OTT services to prevent piracy.

Conclusion: Addressing the Live OTT Sports Challenge

As the business of delivering live action to sports fans around the world changes rapidly, new challenges take the field for media and broadcast companies. Ensuring that OTT content is received by the intended user in a secure, high-quality manner and based on subscription service, device and location can be a complex challenge and requires a robust technology solution. The Intertrust ExpressPlay suite is a single content security solution that ensures content publishers, network operators, and broadcasters receive their full media monetization. ExpressPlay offers multiple pricing plans to accommodate various business models and to reduce operational costs. As the pioneer and long-time leader in DRM technology, Intertrust is uniquely positioned to help content publishers and service providers deliver secure, high-quality live OTT sports content to eager fans around the globe.

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About Intertrust

Founded in 1990, Intertrust is headquartered in Silicon Valley, with regional offices in London, Tokyo, Mumbai, Beijing, Seoul, Riga, and Tallinn. The company has a legacy of invention, and its fundamental contributions in the areas of computer security and digital trust are globally recognized. Intertrust holds hundreds of patents that are key to Internet security, trust, and privacy management components of operating systems, trusted mobile code and networked operating environments, web services, and cloud computing. Additional information is available at [intertrust.com](https://www.intertrust.com), or follow us on Twitter or LinkedIn.

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