

A man with a beard is shown in profile, looking down at a smartphone he is holding in his right hand. He is wearing a dark blue hoodie. The background is dark, and the lighting is dramatic, highlighting the man's face and the phone. A large, light-colored curved shape is overlaid on the bottom left of the image.

Video Piracy in Canada

Sandvine **Global Internet Phenomena Spotlight**



Introduction

In 2017, as part of Sandvine's Global Internet Phenomena program, we released four spotlight reports that examined data fraud and revenue assurance issues that are facing network operators around the world.

Two of those reports focused specifically on the threats that the "Fully-Loaded Kodi Ecosystem" and "Subscription Television Piracy" pose to network operators, content creators, and rights holders.

With the issue of copyright enforcing becoming a growing topic of interest to many in Canada, Sandvine has amalgamated the Canadian data collected from those reports, plus new data on BitTorrent, into this singular report to provide real-network data on the prevalence of video piracy in Canada.

While this report does provide high-level context for the video piracy issues at hand, for additional technical context and background on these issues, we encourage interested parties to download the following reports from Sandvine's website:

- [Video and Television Piracy: Ecosystem and Impact](#)
- [Global Internet Phenomena Spotlight: The "Fully-Loaded" Kodi Ecosystem](#)
- [Global Internet Phenomena Spotlight: Subscription Television Piracy](#)



FILESHARING VIA BITTORRENT

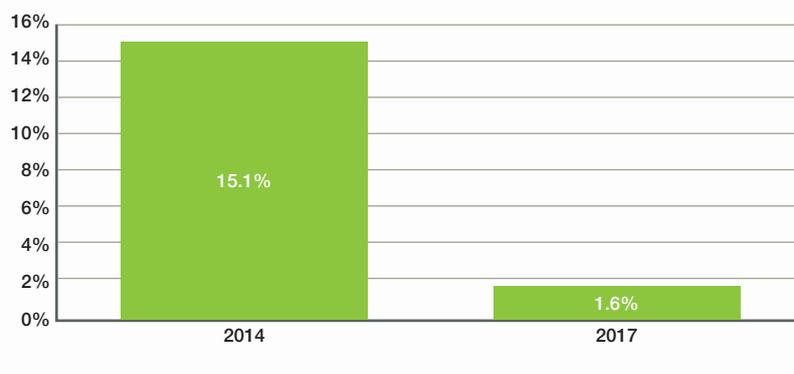
Developed originally in 2001, BitTorrent is an Internet communication protocol that enables peer-to-peer file sharing across the Internet. BitTorrent surged in popularity after the decline of filesharing application such as Napster and Limewire and is currently the most popular peer-to-peer file transfer protocol in the world.

While not covered in the reports issued by Sandvine in 2017, Sandvine felt it is important to highlight the decline in the prevalence of BitTorrent, which we believe has been caused directly by the invention and growing adoption of newer forms of technology that enable video piracy such as the “fully-loaded” Kodi ecosystem and subscription television piracy services.

In studies of Canadian networks that Sandvine conducted in 2014¹ and 2015², BitTorrent accounted for over 15% and 10% of total daily traffic respectively. When examining the Canadian network data from September 2017, BitTorrent’s share is now only 1.6%.

Figure 1

BitTorrent aggregate daily traffic share
(Canada, fixed access)



As an encrypted protocol (HTTPS), it is impossible for Sandvine to determine what share of BitTorrent traffic may be pirated video content or not. While BitTorrent does have legitimate uses which include the distribution of legal content by artists, open source applications, and paid application updates, in Sandvine’s expert opinion, the total share of BitTorrent that is used for legal content is negligible.

ON DEMAND VIDEO PIRACY VIA THE “FULLY-LOADED” KODI ECOSYSTEM

Kodi (formerly known as “XBMC” and “Xbox Media Center”) is open source media player software that allows users to view local media and to stream remote media such as videos, music, and pictures on PCs, set-top boxes, smartphones, and tablets.

1 Sandvine News Release: Sandvine Data: Canadians Love Netflix (and Hockey) - <https://www.newswire.ca/news-releases/sandvine-data-canadians-love-netflix-and-hockey-515640921.html>

2 Sandvine News Release: Sandvine: Canada twitches, steams, streams and snaps - <https://www.newswire.ca/news-releases/sandvine-canada-twitches-steams-streams-and-snaps-529081051.html>

This remote streaming is accomplished via small “Add-on” modules that a subscriber can easily add to their Kodi installation via a menu within the application. Kodi offers a large catalog of official Add-ons that stream content from their original sources (e.g., YouTube and BBC iPlayer), but it is also possible to use install unofficial Add-ons created by third-parties to stream pirated material hosted online.

One of the biggest misconceptions about Kodi is the belief or presumption that the application itself hosts unlicensed content. The image below, taken from the Kodi download page, makes it very clear that their application ships with no preloaded content at all; it is left to the individual user to configure the application to play either local files or stream remote ones.



Figure 2

Content disclaimer from Kodi's download page

i The official Kodi version does not contain any content whatsoever. This means that you should provide your own content from a local or remote storage location, DVD, Blu-Ray or any other media carrier that you own. Additionally Kodi allows you to install third-party plugins that may provide access to content that is freely available on the official content provider website. The watching or listening of illegal or pirated content which would otherwise need to be paid for is not endorsed or approved by Team Kodi.

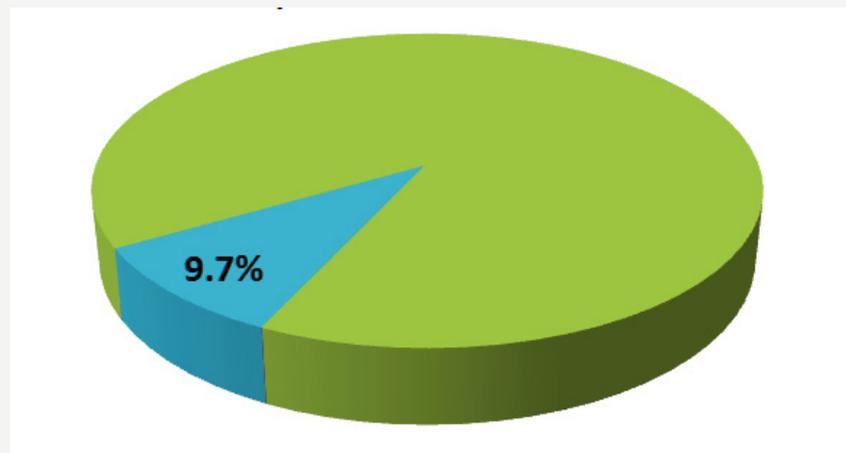
Armed with this understanding, it's best to view Kodi as a piece of software in the same way that we think of web browsers and other media players. With the right technical know-how, many different software applications - Kodi, Chrome, Firefox, VLC, etc. - can easily be configured to access both licensed and unlicensed content, and it is at the intention of the user as to what content they access.

In 2017, Sandvine examined sample data from multiple North America tier one fixed-line communications service providers (CSPs), which included a dataset that had over 100,000 anonymized households from Canada.

The Kodi application itself does not generate much data, but it is easy to detect within a household due to its 'heartbeat' traffic which can easily be identified. Of the sample examined, 9.7% of Canadian households had an active Kodi installation; this Kodi installation could come in the form of a PC, smartphone, tablet, or set-top box, and in many instances includes Kodi installations on multiple devices within a household.

Figure 3

Kodi adoption in Canadian households



Of course, not all Kodi users consume pirated content. To determine the portion of users who do consume such content, we examined the streaming behavior and content sources associated with both official and unofficial Add-ons.

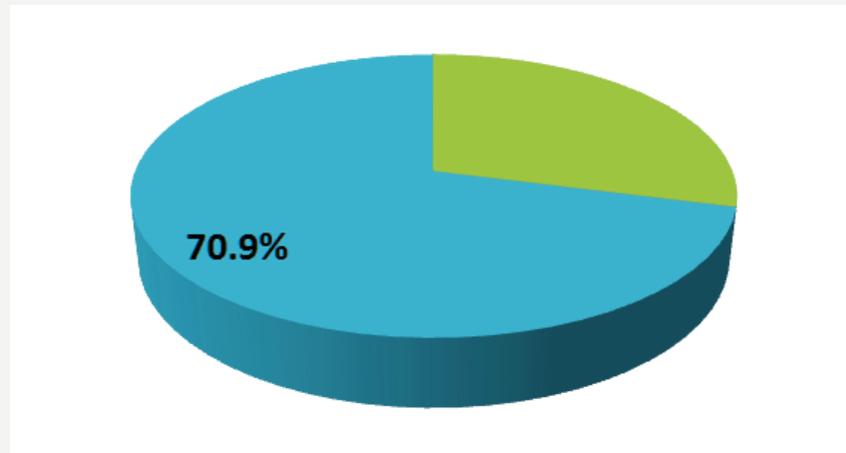
³ For more detail on how Sandvine made this determination see: [Global Internet Phenomena Spotlight: The "Fully-Loaded" Kodi Ecosystem](#)

The result: Sandvine determined that 70.9% of households in Canada with Kodi devices also have unofficial Add-ons configured to access unlicensed content³.



Figure 4

Canadian Kodi households
accessing unlicensed content
using unofficial add-ons



It's straightforward to conclude that 70.9% of the 9.7% of households with Kodi, or roughly 7% of all households in Canada, had a Kodi device configured to access unlicensed content, which is slightly higher than the 6% rate observed in the US.

SUBSCRIPTION TELEVISION PIRACY

By producing or licensing TV, film, sports, and other premium content, communications service providers (CSPs) aim to create content libraries that increase the appeal of bundled offers (e.g., triple and quad play services), stand out from the competition, and provide exclusive value to their subscribers.

As discussed earlier in this report, television content can be pirated in many ways. BitTorrent can be used to share files with peers, the media player app Kodi can be modified with unofficial add-ons, and even websites can host files that subscribers can easily stream in a browser.

A new emergent form of subscription television piracy aims to replicate the live television experience offered by cable and satellite providers is seeing increased adoption in Canada and other developed markets. For as little as \$10 a month, these services allow subscribers to access thousands of channels from both Canadian and international broadcaster, with no money at all going into the pockets of the content producers or rights holders.

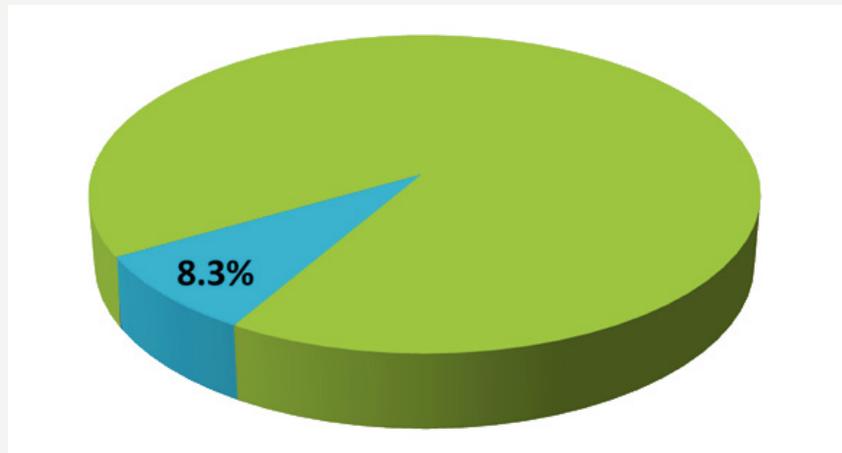
To better understand the problem of live television piracy services, Sandvine worked with several North American fixed access CSPs to research the adoption of subscription television piracy services on their networks.

As the first step towards understanding the prevalence and characteristics of TV piracy service consumption, Sandvine researched and identified the leading TV piracy services using both network data and information from online forums that openly discuss the topic (e.g., r/iptv on Reddit). This research allowed us to construct and maintain an up-to-date list of TV piracy services; this list could then be used to measure and to project the number of subscribers accessing TV piracy services on a real-time basis.



Figure 5

Adoption of subscription television piracy in Canadian households



Our research across multiple tier-1 North American fixed access networks, from which there were more than 100,000 Canadian subscribers, revealed that 8.3% of Canadian households are communicating with known subscription TV piracy services, and these services accounted for more than 7.5% of downstream traffic in the peak evening hours.

This same research allowed us to reveal that almost 95% of TV piracy traffic in Canada is driven by purpose-built set-top boxes (STBs) that are designed to faithfully recreate the experience of using a set-top box with a traditional cable or satellite television subscription.

CONCLUSIONS

Sandvine is publishing this report due to increasing interest from numerous network operators, content creators, and media outlets in Canada, all of whom are aware of the challenges posed by the distribution of pirated video content, but none of whom have access to data that quantifies the problem.

Sandvine believes that emergent forms of piracy such as the “Fully-Loaded” Kodi ecosystem and subscription television piracy represent a real threat to the revenue streams of network operators. Not only because the content is being stolen, but because in some instance subscribers are paying to pirate these services, with no money going into the pockets of the content creators or rights holders.

While legal services like Netflix are still more widely adopted in Canada, subscription pirate television services and the “Full-Loaded” Kodi ecosystem have grown rapidly after having no adoption five years ago. The piracy figures reported in this report should also be considered a floor and not a ceiling because, our data does not capture all video piracy conducted from a traditional web browser, and it is very likely that many households are not participating in both emergent forms of video piracy covered in this report.



STUDY DETAILS

Sandvine's Global Internet Phenomena Reports examine a representative cross-section of the world's leading fixed and mobile communications service providers (CSPs) and are made possible by the voluntary participation of our customers. Collectively, Sandvine's customers provide Internet and data service to hundreds of millions of subscribers worldwide.

The data gathered for these reports was collected in February 2017 (the "Fully-Loaded" Kodi ecosystem) and September 2017 (subscription television piracy and BitTorrent) and is completely subscriber-anonymous. No information regarding specific content or personally-identifiable information (including, but not limited to, IP or MAC addresses and subscriber IDs) was collected during this study.

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ABOUT SANDVINE

Sandvine helps organizations run world-class networks with Active Network Intelligence, leveraging machine learning analytics and closed-loop automation to identify and adapt to network behavior in real-time. With Sandvine, organizations have the power of a highly automated platform from a single vendor that delivers a deep understanding of their network data to drive faster, better decisions. For more information, visit sandvine.com or follow Sandvine on Twitter at [@Sandvine](https://twitter.com/Sandvine).



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