



The State of Affairs

Video and Television Piracy Worldwide

Over the past two years, as part of Sandvine's Global Internet Phenomena Report activities, we released spotlight reports that examined the data fraud and revenue assurance issues that network operators are facing around the world. Several of these reports focused specifically on the threats that subscription television piracy poses to network operators, content creators, and rights holders.

With the issue of copyright enforcement becoming a growing topic of interest worldwide, Sandvine released the first worldwide market study on subscription television piracy services to provide real network data on the prevalence of video piracy.

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 you to download the following reports from Sandvine's website:

[Video and Television Piracy Whitepaper](#)

[2019 Global Internet Phenomena Spotlight: Piracy Revived: File sharing is again over 30% of worldwide upstream bandwidth consumption](#)

[2018 Global Internet Phenomena Spotlight: Video Piracy in North America](#)

[2018 Global Internet Phenomena Spotlight: Video Piracy in Canada](#)

[2017 Global Internet Phenomena Spotlight: Subscription Television Piracy](#)

INTRODUCTION TO SUBSCRIPTION TELEVISION PIRACY

Today, despite the continued growth in licensed services, there are still consumers committing content fraud and using piracy services offered for below the cost of legal content. This new breed of piracy providers is penetrating the market, and their network usage is of the same order of magnitude as many live television streaming services.

An emergent form of subscription television piracy (aimed at replicating the live television experience offered by cable and satellite providers) is seeing an increased adoption in developed markets. Left unchecked, we expect this live television piracy trend to grow both due to the ease and relatively low cost of accessing unlicensed content and due to the infrastructure available on the internet for pirates to leverage.

The risk to content service providers is enormous; networks will struggle with bandwidth consumed and content providers will not get revenue for their content and, with the increasing fragmentation of the market, we expect these issues to grow over the next few years.



SANDVINE STUDY DATA DETAILS

Sandvine's Global Internet Phenomena Report examines a representative cross-section of the world's leading fixed and mobile content service providers. This report is made possible by the voluntary participation of our customers.

The data gathered is completely subscriber-anonymous and no information regarding specific content or personally identifiable information including, but not limited to, IP or MAC addresses and subscriber IDs were collected during this study.

The data behind this report is inclusively representative of the following:

Regional Information

Canada, United States, Europe, Middle East, and North Africa

Network Coverage Information

- Information from six networks
- Networks collectively have 65 million fixed internet subscribers
- Sandvine study participation is a percentage of the 65 million fixed internet subscribers

Data Coverage

Data collected over two months, from the end of July to the end of September.

Statistics analyzed include:

- Network-wide subscription television piracy proliferation rates
- 1+ billion usage records from fraudulent subscription television piracy activity
- Data is reported as a monthly usage figure

SUBSCRIPTION TELEVISION PIRACY

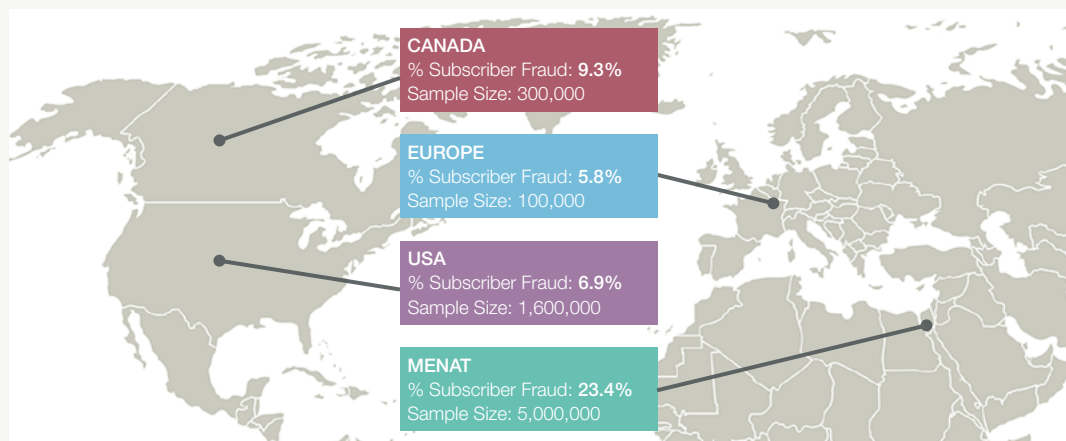
By producing or licensing television, film, sports, and other premium content, content service providers aim to create content libraries that increase the appeal of bundled offers (e.g., triple and quad play services) to stand out from the competition and provide exclusive value to their subscribers.

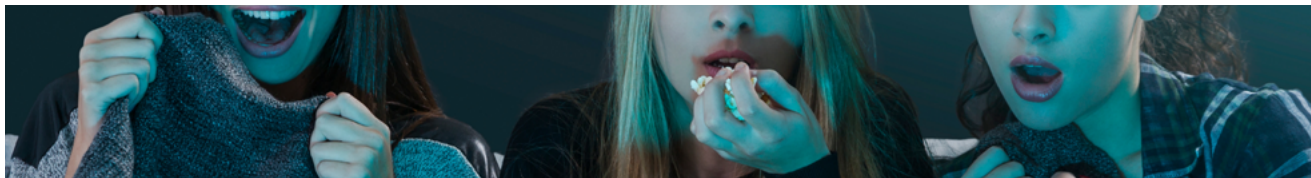
To better understand the problem of live television piracy services, Sandvine worked with fixed access content service providers worldwide to research the adoption of subscription television piracy services on their networks.

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

Figure 1

Subscription television piracy adoption rates





The data in **Fig. 1** presents monthly usage subscriber fraud averaged over the course of the two months of the study (July-September 2019).

Our research across multiple Tier 1 fixed access networks reveals that adoption rates of subscription television piracy vary regionally. As discussed in prior reports, demographics matter; this is reflected in the MENAT 23.4% fraud numbers, where subscribers turn to illicit services merely to get access to content, as there are few legitimate means of attaining the content they desire to view.

Since the [2018 Global Internet Phenomena Report](#), there has been growth in both the American market (up from 5.5%) and Canadian markets (up from 8.3%). For the first time, IPTV usage has been reported from a European operator coming in at 5.8%, but Sandvine expects subscribership growth as the soccer (football) season gets underway.

The applications and hardware enabling subscription television piracy itself do not generate sufficient identifiable data; however, by looking at the heartbeat traffic, it can be easily be identified within a household. As such, one can classify the usage behavior of an average household that is pirating content.

For further information, please [contact us](#) and Sandvine can provide further information on how to interpret subscription television piracy adoption data.

SUBSCRIPTION TELEVISION PIRACY ECOSYSTEM

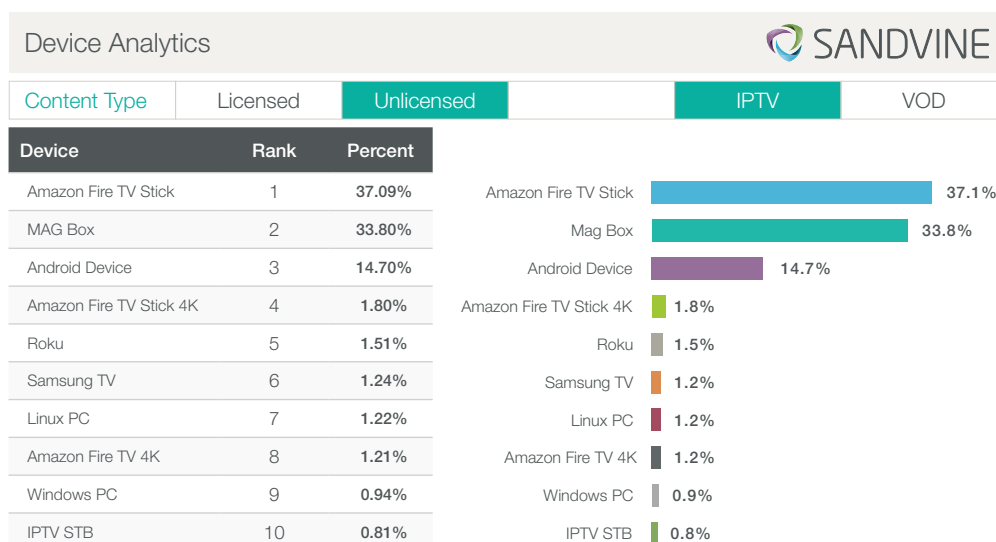
Beyond satisfying curiosity about the device and software ecosystem, investigating the devices subscribers are using can help content service providers gain a more comprehensive understanding of the security threats on the network.

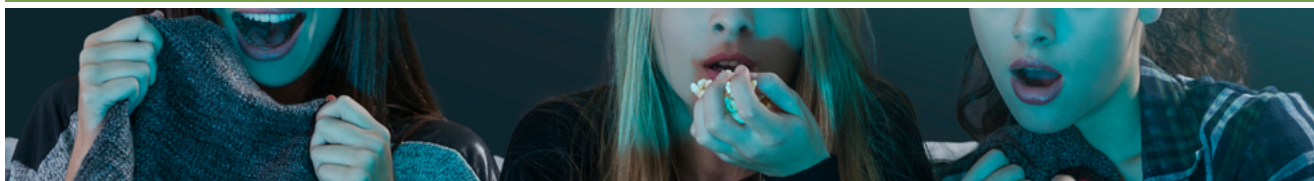
Most importantly is that these fraudulent IPTV services share the same ecosystem as platforms that can be configured to use completely legal, fee-paid services, as an alternative to a cable or satellite connection, but modified with piracy configured add-ons to access premium content. For unlicensed content being delivered over this ecosystem, we classify services for Video on Demand (VOD) and for live streaming IPTV.

The bulk of live streaming IPTV fraudulent subscription television traffic (**Fig. 2**) utilizes the Amazon Fire Stick, the Mag Box, or an android device (likely running KODI or KODI-like applications) taking up 85.6% of the market share of devices. It is also interesting to note that there is an extremely long tail of devices that make up this ecosystem.

Figure 2

Analytics of the market share of devices generating live streaming IPTV, fraudulent subscription television traffic

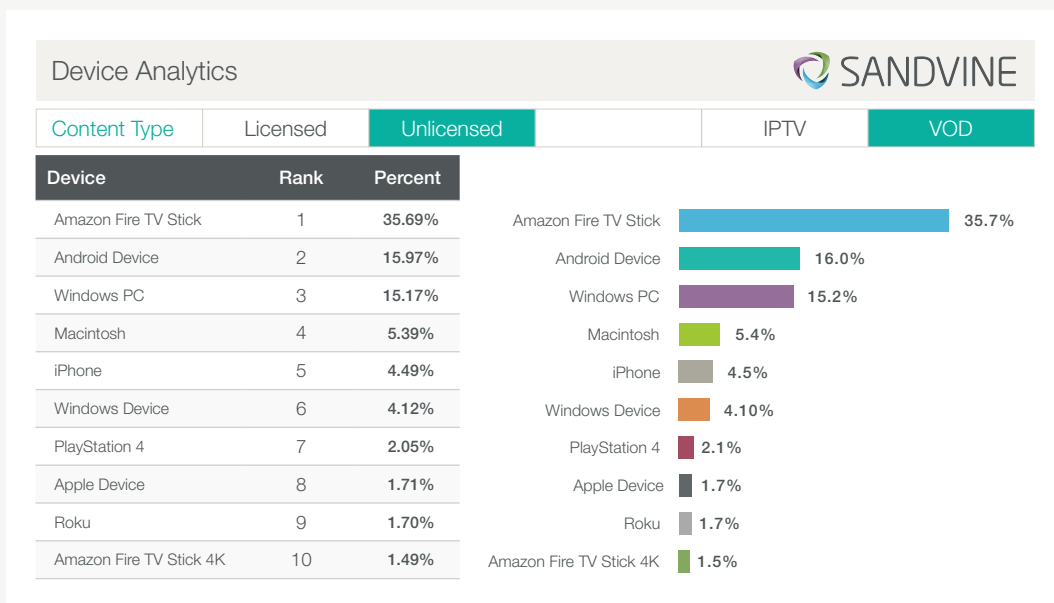




The majority of VOD fraudulent subscription television traffic utilizes the Amazon Fire Stick, an android device (likely running the KODI or KODI-like applications), or an emulator on a Windows PC, which takes up 66.9% of the market share of devices. Noticeably, the MAG box, an exclusively IPTV set-top box, is not in the top 10. For VOD (**Fig. 3**), we are seeing a growth in emulator-type applications that are often circulated as apps in app stores.

Figure 3

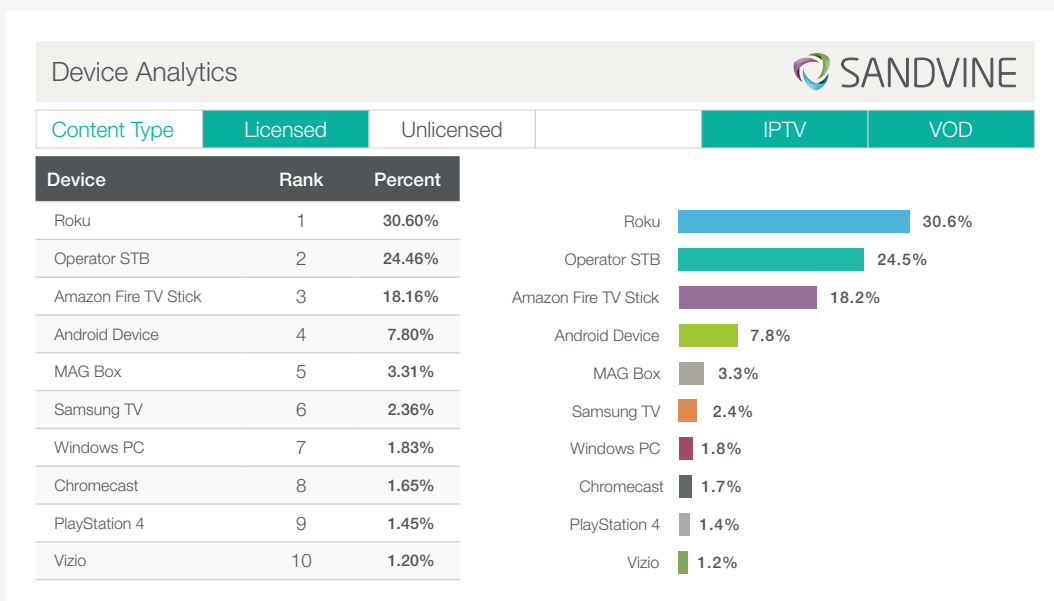
Top 10 analytics of the market share of devices generating the bulk of VOD, fraudulent subscription television traffic

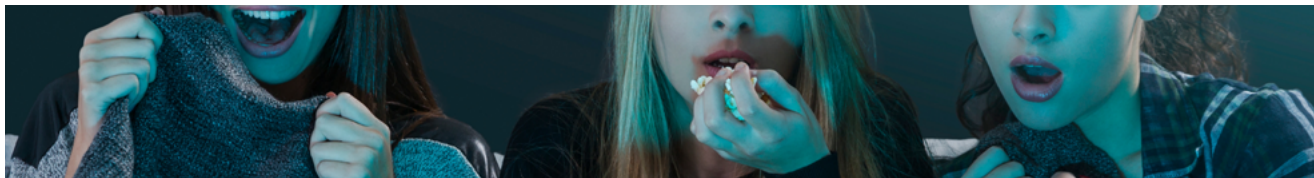


From a licensed perspective, it is observed that the operator-owned set-top box is providing almost the bulk of the licensed subscription television traffic, with Roku, the Amazon Fire Stick, and an android device rounding out the top four (**Fig. 4**). The challenge within this complex ecosystem is to be able to accurately understand which services are providing illicit content as opposed to legal content.

Figure 4

Top 10 devices generating licensed content based on market share





With the same ecosystem providing legal services, it is not a stretch to think that an average, non-tech-savvy consumer who buys a set-top box from an electronics or computer store and then pays money to subscribe to a service could conclude that the actions are legitimate, rather than contributing to an ecosystem of fraud and piracy.

Nevertheless, the reality is different.

SUBSCRIPTION TELEVISION PIRACY ORIGINS

Understanding the fraudulent ecosystem, including the differentiation between legal and illicit services provided on the same application, allows for Sandvine to have a global context in understanding where the data behind the illicit services is being served from.

Taking a look at a cross section of data from multiple Tier 1 American content service providers, we can see the interesting trends that emerge from where the data is coming from.

Figure 5

Geographic distribution
by server count

Rank	Country
1	USA
2	Canada
3	UK
4	Netherlands
5	France



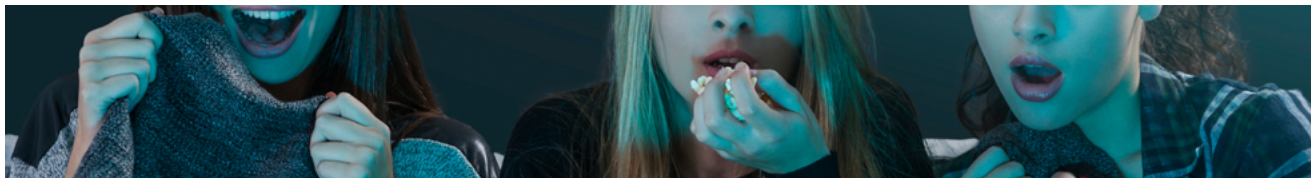
Logistically, the most servers servicing the ecosystem come from the United States (Fig. 5), but in terms of actual bandwidth (Fig. 6), it is overtaken by servers hosted internationally. Due to the complexity of the legal issues, many providers are based internationally to make it more difficult to pursue direct legal action against both the hosting service (if hosted) and the owner of the service provider themselves.

Figure 6

Geographic distribution
by bandwidth

Rank	Country
1	Canada
2	Czech Republic
3	USA
4	Germany
5	Netherlands



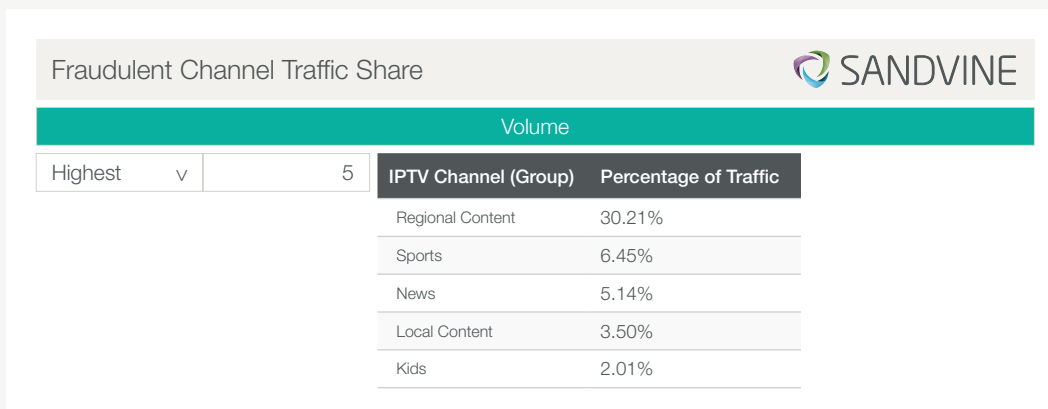


SUBSCRIPTION TELEVISION PIRACY VIEWERSHIP

Because millions, and even billions, of dollars are invested by content service providers to produce, license, and distribute content, understanding which channels subscribers are watching can provide valuable insight (Fig.7).

Figure 7

An example of the traffic share in a major North American city



International/Regional Content

The most significant channels, in terms of overall bandwidth usage, are international channels. The top channels vary from network-to-network (and even from neighborhood-to-neighborhood) because of shifting demographics but, as an example, two of the top five channels were channels originating from Southeast Asia.

While local cable and satellite providers do offer some channels from Southeast Asia, those channels are typically offered as a bolt-on to an existing television package. Without paying to legitimately license the content, television piracy services can meet the demand for non-local content at a price that is significantly lower than official channels.

News

The top bandwidth-consuming channels on every network examined are 24/7 cable news channels, which may come as a surprise to many. What is interesting about the shape of the traffic curves is that the levels remain relatively constant throughout the day. Like all video applications, pirate television bandwidth peaks in the evening as people come home, but the traffic curve of news channels differs from the shape of the television piracy services as a whole.

This use case makes us believe that pirate television services could be common in locations like waiting rooms, office lobbies, or bars where a television is installed to help distract clients while they are waiting for an appointment.

Live Sports

One of the main sources of revenue for modern sports leagues is television rights. During our study, there were a few marked events that occurred over the summer, but three significant spikes associated with the India versus West Indies matches occurred (Fig. 8). For broadcasters, the business case for live sports content is a simple one; unlike Game of Thrones, where it is possible to avoid spoilers and watch the next day, sporting events are best experienced live.

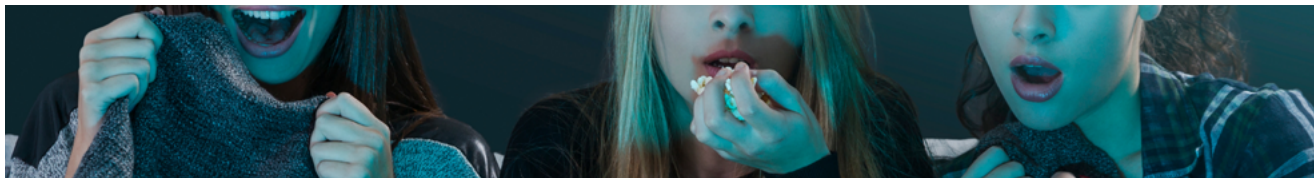
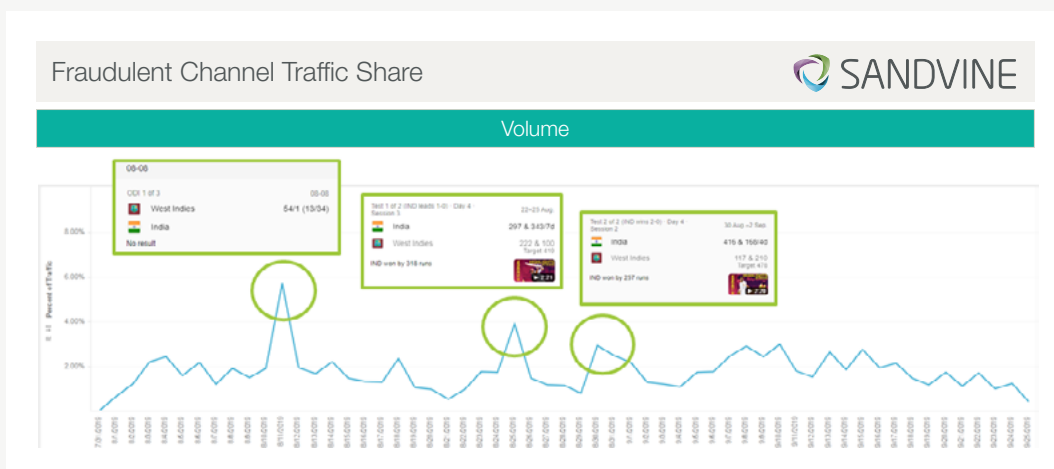


Figure 8

Analysis of the percentage of IPTV traffic related to sports, highlighting the three significant spikes in traffic during the India and West Indies matches



CONCLUSIONS

Sandvine is publishing this report due to the increased interest from numerous network operators, content creators, and media outlets, 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 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 instances 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, subscription pirate television services 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 as 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.

For further information, please [contact us](#). We would be happy to provide further information on how to interpret subscription television piracy adoption data and answer any questions you may have.

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](#).



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