GOOD MONEY GONE BAD

Digital Thieves and the Hijacking of the Online Ad Business

A Report on the Profitability of Ad-Supported Content Theft

February 2014

www.digitalcitizensalliance.org/followtheprofit
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ABOUT THIS REPORT

In the early days of the Internet, content theft – also known as online piracy – was often shrugged off. While it significantly impacted the creative community – musicians, artists, movie studios and record producers who lost income for their creative works – it was typically viewed as the isolated activity of high school or college students who wanted to listen to music or watch movies for free. But as the Internet has become an increasingly pervasive force in the economy, the harm caused by content theft now extends well beyond the music and movie industries. It robs designers who rely on the Internet to sell their creations, hurts brands that find themselves associated with illegal and inappropriate sexual and violent content, funds online criminals and provides seed money for other illegal activities.

The future of the Internet depends on all users being able to trust that it will serve their interests.

When well-known premium brands, as well as other legitimate secondary brands, appear on content theft sites due to the “blind” sales channels through which most Internet advertising is sold, they involuntarily lend those sites an appearance of legitimacy that potentially deceives consumers. When those brands see their ads placed next to illegal content and bottom-feeder ads for sex trafficking or illegal drugs it makes these brands think twice about the Internet as a vehicle to reach their target audience. That, in turn, hurts consumers who benefit from an abundance of free-to-the-user – and legitimate – ad-supported content on the Internet. When designers and creators have their works stolen by unscrupulous operators, it makes them think twice about the Internet as a platform to launch or expand their business. And that hurts consumers who want online commerce to be robust, pervasive and trustworthy.

In short, ad-supported content theft has become a big business that harms a wide range of players in the digital economy and threatens the future of a free and open Internet. It cannot be dismissed as a benign act or victimless crime. It undermines our basic trust in the integrity of the platforms that make up the Internet.

As a society we need to protect the Internet from those who want to bleed it for their own profit while making it less attractive for generations to come. It is for this reason that Digital Citizens Alliance set out to understand how content thieves operate and profit from the works of others. To understand the problem fully, we have to follow the profits. In commissioning this study we seek to understand how bad actors make money through advertising, and how much they make.

It is important to note that the advertising profits garnered by content thieves do not equate with the losses incurred by the owners of the content. These losses are unquestionably greater by many orders of magnitude, because content thieves are
responsible for illicitly distributing millions of copies of highly valuable works that cost billions to create, depriving their owners and creators of billions of dollars in rightful income. There is no question that the victims in this equation include a wide range of workers in the creative industries, from ordinary craft guild members, who rely on the revenues from creative productions to fund their health and retirement benefits, to independent creators.

But that economic harm is not the focus of this study, which instead seeks to estimate the advertising profits that content thieves reap for themselves from illicit distribution.

To determine how much money these bad actors are making through advertising, Digital Citizens commissioned MediaLink LLC – an advisory firm that provides critical counsel and strategic direction to the media, advertising, entertainment and technology industries and to companies and institutional investors that interact with those sectors - to undertake a research project focused on the ecosystem’s revenues and profitability. By gaining insight into the ad-supported content theft ecosystem, we can as a society strive to find answers to protect the long-term future of the Internet.

Through this research, we have a snapshot of how much money content thieves make through advertising. We hope that this insight encourages the Internet and advertising industries, consumers, public-interest groups and responsible government officials to strive to make the Internet a stronger, more reliable and open platform for everyone.
EXECUTIVE SUMMARY

Ad-supported content theft is a real and growing threat not only to the content creators whose business it undermines, but also to the credibility of the digital advertising ecosystem that has developed over the last two decades. This research project analyzed advertising-supported web sites that dealt primarily in pirated content, and found that advertising yielded enormous profits.

The web sites MediaLink examined accounted for an estimated $227 million in annual ad revenue, which is a huge figure, but nowhere close to the harm done to the creative economy and creative workers. The 30 largest sites studied that are supported only by ads average $4.4 million annually, with the largest BitTorrent portal sites topping $6 million. Even small sites can make more than $100,000 a year from advertising.

Because their business model relies entirely on illicitly distributing millions of stolen copies of highly valuable works that cost others billions to create, their profit margins range from 80% to 94%, underscoring that crime can pay when you steal other people’s content.

MediaLink’s analysis of the profitability of ad-supported pirate sites provides additional insights into other aspects of the content theft ecosystem, including the prevalence of premium and secondary brand ads, and connections among sites. Below are other highlights of this study:

- **Premium, Secondary Brand Advertisers at Risk:** Weaknesses in the digital advertising ecosystem threaten the value of legitimate brands by allowing ads to be served on offending sites, often alongside offensive ads and links to malware.
  - Nearly 30 percent of large sites in the sample carried ads for blue-chip premium brands – highly recognizable household names.
  - In addition, ads for secondary brands – legitimate gaming, gambling and content aggregation sites - appeared on up to 40 percent of all the sites studied.
- **Low barriers to entry:** Stealing rights-protected content and setting up a site can be achieved with minimal technical expertise or cost and then can be iterated to avoid detection and policing, especially among the largest segments of sites.
- **Traffic generation:** Attracting a user base requires little effort or investment, as millions of users seek free content for download or streaming and as the Internet population grows.

The profitability and ease of execution, complemented by consumers’ desire for free movie, TV, and other content, are the primary drivers of ad-supported content theft. Efforts to deter or degrade these activities through legal, technical, or industry initiatives continue to face a challenge. Nonetheless, the urgency to do so has never been greater in light of advertising trends, technology advances, and a growing intent among individual and organized global bad actors to capitalize on these profitable opportunities.
THREE KEY RELEVANT GROWTH TRENDS

Absent action by stakeholders, ad-supported content theft is likely to continue, supported by three key trends: increased programmatic digital advertising; growth of the global Internet population; and a swelling demand for video content by users who are willing to steal it rather than pay for it.

Trend #1: Programmatic buying and selling of digital advertising:
The digital advertising supply chain has many points of vulnerability. As more ad placement is done through automated systems, it becomes easier for bad actors to funnel ads to their sites, and to generate fraudulent clicks via bots and human operations.

An estimated 53% of US online display ad placement was automated in 2013, according to Magna Global, which projects that volume to increase to 83% by 2017. As buying and selling ads programmatically continues to grow, the opportunity to manipulate technology for further advertising gain only increases.

Trend #2: More Infringing Users and Bandwidth:
The universe of consumers who view stolen content, and the bandwidth that they use in doing so, are on the rise, according to NetNames’ September 2013 report, Digital Piracy: Sizing the Piracy Universe. NetNames reported that the number of infringing users in North America, Europe and the Asia-Pacific region rose nearly 10% from 297.6 million in November 2011 to 327 million in January 2013. Meanwhile, bandwidth used to access infringing content jumped dramatically, by nearly 160%, from 2010 to 2012 in the same regions.

Taken together, the two sets of data point to consumers’ desire to access content, especially video content, enabled by the ability to discover and access the pirated content through peer-to-peer networks and search.

Trend #3: Global Internet Population Growth:
Given the increase in infringing users, the anticipated global explosion in Internet use generally suggests that ever more consumers are likely to want movie, TV, and other digital content, especially as delivery systems increase in speed and decline in cost.

Today’s 2.7 billion global Internet users represent only about 40% of the world’s population, according to the International Telecommunications Union, and new users are coming online steadily. Just 31% of the population is online in the developing world, compared with 77% in the developed world, according to ITU, so there is ample potential for continued rapid growth.

Implications: The convergence of these growth trends suggests that the market size for ad-supported content theft is on the rise and will continue unless concerted diligence by all stakeholders in the digital media value chain is intensified and coordinated. Only through these kinds of efforts can the highly attractive profitability of ad-supported content theft be slowed and degraded.

METHODOLOGY

Sites Studied
In selecting sites for this research, MediaLink focused on the third quarter of 2013 to provide a recent
point in time on which to base calculations. As the basis for finding sites engaged in content theft, it started with Digital Millennium Copyright Act (DMCA) removal request data from the Google Transparency Report.

There are thousands of sites around the world that offer infringing material and are supported by advertising. To allow a deeper dive we focused on a subset, including the largest and most successful. As a result the findings, while significant, reflect only a part of the aggregate profitability of such sites.

The baseline was sites with 25 or more DMCA takedown requests in Q3, that Veri-Site determined were live in the quarter, and for which unique visitor and page view data were available from comScore. The comScore data were used to calculate advertising revenue and to segment the sample by size, as described below. MediaLink validated the sample further using Integral Ad Science ratings on sites determined to be at high risk for content infringement, and its analysts visited and reported on hundreds of sites to further qualify them, and removing from consideration:

- Porn and hate sites;
- Sites where most content appeared to be user-generated, personal in nature or highly localized, e.g., Tamil-language programs or movies unlikely to be interesting to a broader pirating audience; or
- Sites where available content was not primarily movies and TV shows.

Thus, the only sites kept in the sample were those at least partially ad-supported sites where infringing content appeared to be a significant portion of the site.

Because content infringement sites can appear and disappear quickly, a small number of the sites had shut down while subsequent research was conducted in Q4 of 2013, in some cases as a result of civil or police action. Those sites were kept in the sample, as they represented ad-supported content theft within the time frame for this study.

The result was a sample of 596 sites.

Sample Segmentation
The sample sites were categorized into four functional segments, based on technology and business model, before being further segmented by size.

Functional Segments

**BitTorrent and Other P2P Portals**

BitTorrent is the most popular peer-to-peer (P2P) file distribution system worldwide, and sites based on it have become synonymous with content theft. It is the largest method of content infringement, according to NetNames, which reported that 96.2% of unique visitors to such sites accessed infringing content at least once in January 2013. MediaLink also found BitTorrent sites to be predominant in ad-supported content theft.

These portals let users browse or search for files available on peer-to-peer distribution systems. Users following the links can access media files stored on multiple computers across the P2P network and download the content to their own computers for use at no charge. There were 144 sites in this segment, 24.2% of the sample. Figure 2 shows a typical BitTorrent site.

![Figure 2: Example BitTorrent Portal (piratereverse.info)](piratereverse.info)
Linking Sites

These portals aggregate and index links to media content hosted on Direct Download (DDL) Hosts (described below) or other sites. Some allow search within the Linking Site itself to facilitate access to content. They do not host content themselves. Users browse or search for the content they want, all the while exposed to ads. The users then click a link and download the content from the site where it is hosted, at no charge. Many Linking Sites have business affiliations with specific DDLs, promoting their hosted content. There were 283 Linking Sites in the sample or 47.5% of the base. Figure 3 shows a typical Linking site.

Video Streaming Host Sites

This segment includes both the ad-supported portal and a subscription-based storage model. One-third of large, two-thirds of medium and all of the small sites are strictly ad-supported portals with embedded players that allow users to stream videos hosted elsewhere. The remaining sites both stream and host content, offering subscriptions to users who want to store video content and then allow users to stream videos. The sample included 75 Video Streaming Host Sites or 12.6% of the base. Figure 4 shows a typical Video Streaming Host Site.

Direct Download (DDL) Host Sites

Direct Download (DDL) Host Sites allow users to upload media files to cloud-based storage. Users can generate links to be used by themselves or others to download the content for free. DDLs have dual revenue streams: a free, advertising-supported model, and a premium version that lets users pay subscription fees to avoid ads and for faster downloads, and that accounts for the bulk of their total revenue. Ads are typically shown on download pages. DDL Hosts are fundamental to the content theft ecosystem, providing the content to which Linking Sites point. Many of the DDLs offer their users bounty payments for downloads of the users’ popular uploaded files, encouraging users to post links widely across the Internet. There are 94 DDL Host Sites in the sample, comprising 15.8% of the 596 total sites. Only DDLs that displayed advertising were included in the sample. Figure 5 shows a typical DDL site.
Size Segments
To account for differences in scale across the sample, the functional segments were further divided by size into small, medium and large sub-segments, based on 3-month average unique unique visitors. The segments were:

• **Small**: Fewer than 1 million monthly unique visitors
• **Medium**: 1 million to 5 million monthly unique visitors
• **Large**: Greater than 5 million monthly unique visitors

This segmentation allowed for analysis of the traffic and economic realities of the industry leaders separately from myriad small sites. The result was 12 functional/size segments: three sizes for each of the four functional segments. The number of sites per functional and size segment is shown in Figure 6.

P&L Model
To create the financial model for the analysis of ad-supported content theft profitability, MediaLink considered numerous possible drivers of revenue and cost. Through its industry experience and by interviewing advertising and web site hosting experts, combing webmaster forums and blogs, reviewing US Justice Department filings, and studying the sample sites, MediaLink chose 20 data points that paint a picture of the profitability.

The Key Drivers of Ad Revenue:
• Page views
• Number of ad positions per page
• Amount paid per thousand impressions, per click on a banner or text link, and per completion of an action.

MediaLink based these values on rates for similarly sized legitimate sites, discounted because rates for campaigns on infringement sites would be lower, while still generating significant revenue.

Variables included potential click and impression fraud as well as common click-through and conversion rates.

The Key Drivers of Costs:
• Hosting fees
• Human resources.
With cloud-based hosting becoming a commodity, infrastructure costs are low for all but the DDL segment of the ecosystem, which requires more processing and storage capacity than other segments. Because the focus of this research was on ad-supported content theft, subscription revenue, cost and margins are not reported for sites that were not wholly supported by advertising.

The data points are shown in Figure 7 above. See Appendix A: P&L Detail for detailed explanation.

## PROFITABILITY ANALYSIS AND KEY FINDINGS

### Highly Lucrative, Profitable
The aggregate ad revenue for the sample of 596 sites was an estimated $56.7 million for Q3 of 2013, projecting out to $226.7 million dollars annually, with average profit margins of 83%, ranging from 80% to as high as 94%.

### All Sizes Profit
The 45 largest sites, 7.6% of the entire sample, accounted for 62.5% of the total aggregate ad revenue. The average large site makes an estimated $3 million in ad revenue a year – $4.4 million for those that are supported solely by advertising – while even small sites can net $100,000. Small sites comprised 69.3% of the sample but only accounted for 11.8% of aggregate ad revenue. Revenue by size detail can be seen in Figure 8.

### Torrent, Linking Sites Drive Most Ad Revenue
BitTorrent and Linking sites, the segments with the lowest barriers to entry, together accounted for 80% of the aggregate ad revenue, with BitTorrent sites alone generating more than half the total despite making up less than a quarter of the sample. Revenue by segment detail can be seen in Figure 9.

<table>
<thead>
<tr>
<th>Segment</th>
<th>Ad Revenue</th>
<th>Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>BitTorrent and Other P2P Portals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>$2,079,334</td>
<td>85.9%</td>
</tr>
<tr>
<td>Medium</td>
<td>$3,227,159</td>
<td>84.5%</td>
</tr>
<tr>
<td>Large</td>
<td>$23,181,252</td>
<td>94.1%</td>
</tr>
<tr>
<td>Linking Sites</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>$3,690,915</td>
<td>79.9%</td>
</tr>
<tr>
<td>Medium</td>
<td>$8,351,446</td>
<td>89.8%</td>
</tr>
<tr>
<td>Large</td>
<td>$4,498,344</td>
<td>875%</td>
</tr>
<tr>
<td>Video Streaming Hosts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>$529,480</td>
<td>79.9%</td>
</tr>
<tr>
<td>Medium</td>
<td>$1,681,477</td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>$4,661,535</td>
<td></td>
</tr>
<tr>
<td>Direct Download (DDL) Host Sites</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>$401,087</td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>$1,281,344</td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>$3,084,123</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Q3 Aggregate Ad Revenue, Margin for Ad-Supported Sites

**Figure 8: Sample Breakdown (l.), Revenue (r.) by Size**

**Figure 9: Sample Breakdown (l.), Revenue (r.) by Segment**
Problem for Premium and Secondary Brands

Premium brand ads appeared on nearly 30% of large sites, highlighting the ineffectiveness of current approaches to protecting the brands’ reputation and value.

Premium brands are those easily recognizable companies familiar to most consumers, and which suffer reputational damage when their ads appear on content theft sites, often alongside ads for illicit sites and services.

Premium brands listed in Appendix D are only those whose ads were observed by MediaLink analysts visiting the sites in the sample. MediaLink found that:

- Ads for premium brands appeared on 28.9% of large sites, 17.4% of medium and 13.1% of small sites.
- They appeared on 33.3% of DDL Hosts, 16.4% of Video Streaming Hosts, 11.7% of Linking Sites, and 9.7% of BitTorrent portals.

Advertising is often targeted by geography and by user interests as captured in browser cookies, so MediaLink’s US-based analysts would have seen different ads and brands than users in, say, Ukraine.

Many players in the advertising ecosystem profit from placement of ads on content theft sites, whether for premium brands or others. Programmatic placement may involve exchanges, networks, publishers and agencies, and each link in the chain offers weaknesses that can be exploited. While some have taken action in an attempt to prevent premium ads from appearing on infringing sites, clearly more needs to be done, and alternative approaches need to be explored to reduce this contribution by good companies to bad activities.

Secondary Brands and other Advertising

In addition to those blue-chip companies, legitimate “secondary” brands also can find their ads served into content theft sites through the complex and increasingly computer-driven ecosystem of ad networks and exchanges. Categories that MediaLink identified were:

- **Casual Gaming:** These are a range of online single- and multi-player warfare, fantasy and other games that typically require users to create accounts or download software. Game ads appeared on some 40% of the large sites reviewed.
- **Online Gambling:** Ads for online gambling and betting services, many of which may be regulated by consumer protection or other agencies, appeared on 10% of the large sites reviewed.
- **Content Aggregator Sites:** This broad category, which appeared on just over 20% of large sites, included links to non-premium aggregators of news and information, with varying degrees of legitimacy.

The remaining ads studied came from illicit sites and services, often placed next to premium or secondary brands. Categories that MediaLink identified were:

- **Software/Malware Downloads:** These are often hidden behind download buttons, or are presented via links or popups promoting a plug-in the user supposedly needs to view content, or as an update to legitimate software. The actual downloads often contain malware. These ads were extremely common, appearing on 60% of the large sites.
- **Adult Content:** This category includes ads for escort and other sexual services, porn and body part and sexual performance enhancements. Banners frequently display scantily clad or naked women. Adult content ads appeared on just over 20% of the large sites.
- **Easy Money:** This category includes business opportunities and get-rich-quick offers that encourage users to pay to receive the secrets to financial success or to participate in the advertiser’s scheme for wealth generation. These ads appeared on roughly 15% of the large sites reviewed.
Note that the categories add up to more than 100% of the sites because these sites typically display more than one of the identified ad types.

**Site Affiliations and Bad Actors**

Cross-ownership and affiliations between sites help some operators evade enforcement and maximize profits, establishing networks of sites distributing the same stolen content. If one site is shut down by authorities, others may keep running. In addition, some site operators are linked to nefarious activities beyond content theft.

MediaLink asked Veri-Site, a website risk assessment firm, to analyze the 596 sites in the sample. Veri-Site found linkages from 32 of the primary domains. Veri-Site defines these linkages as connections among individuals, businesses and other websites. It found 976 linkages to other websites both within and outside the sample, as well as ownership or business affiliations among those 32 sample sites and 319 individuals and 332 entities, typically companies. This data suggests that while individuals may be operating many of the sites, some individuals and enterprises are operating multiple sites for additional revenue and to hedge their bets against enforcement.

The sites with the three largest networks were thepiratebay.se and bitsnoop.com, both large BitTorrent portals, and ufox.com, a small DDL Host Site. Altogether they had 223 connections: 137 for thepiratebay.se, 52 for ufox.com and 34 for bitsnoop.com. These networks of sites highlight a strategy to conceal relationships with the parent, according to Veri-Site. With so many layers to the sites’ functioning, the risk is distributed, and their ability to evade various laws is enhanced. The sites also operate from various geographies, making it easier to evade legal action. For example, a total of 122 legal actions have been taken against these sites, yet they remained active during Q3 2013.

**ThePirateBay.se:** This is the most notorious BitTorrent portal currently operating. Veri-Site found 16 entities and 31 individuals with connections to this site. The individuals were identified as domain registrants, co-founders, lawyers and associates. Several of the co-founders have been convicted of copyright infringement and fined millions of dollars. In addition, Veri-Site identified 90 web sites linked to thepiratebay.se, many of them simply with different country-specific domains but also other BitTorrent portals and mirrors. Between April and December 2013, The Pirate Bay switched to domains of six different countries to evade authorities. Several of its co-founders have been convicted of hacking, fraud and copyright infringement.

**Ultramegabit.com:** Less well known, perhaps, is this medium-sized DDL that has linkages to 16 sites, entities and individuals. Its owner was convicted of consumer fraud and fined $400,000. His associates through a web of other sites include two companies that violated consumer protection laws while marketing PC registry-cleaning software. The owner of one was fined $400,000 and the other’s president was fined $75,000.

**Bitsnoop.com:** Two registrants are connected to bitsnoop.com through 32 sites that include torrentcrazy.com, a medium BitTorrent portal, and torrentreactor.net, a large BitTorrent portal, both of which are in the MediaLink sample. There also are linkages to zooqle.com, a BitTorrent site outside the sample, and to a number of mirror sites that contain copies of the content found on bitsnoop.com and other BitTorrent portals. Eight of the linked web sites are mirrors of thepiratebay.se.

**Ufox.com:** Two entities connect 50 web sites to ufox.com. Unlike the other two top sites, however, none of the linked sites in this example are content theft sites; almost all are either porn or unsavory content.

Other examples include:
• Torrentzap.com, a small BitTorrent portal, is linked by a common postal address to fileindexer.com, a small Linking site also in the sample, and to fulldls.com, a small BitTorrent portal outside the sample.

• Desitorrents.com, a small BitTorrent portal, is linked by address and registrant to rutor.org, a large BitTorrent portal, and to argentinawarez.com, a medium Linking site. All three are in the MediaLink sample.

Veri-Site analysts research linkages among sites using open source and public domain information, as well as government agencies, news sources, domain registrations and payment registries. The company also includes in its research information from intellectual property holders attesting to infringement, governing bodies and law enforcement bulletins. Its analysts also visit and report on sites to capture data.

### Segment Analysis

#### BitTorrent and Other P2P Portals

BitTorrent portals generate more ad revenue than any of the other segments, and the largest sites have the highest average operating margins, about 94%.

<table>
<thead>
<tr>
<th></th>
<th>Ad Revenue</th>
<th>Cost</th>
<th>Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Quarterly Results</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>$22,358</td>
<td>$3,147</td>
<td>85.9%</td>
</tr>
<tr>
<td>Medium</td>
<td>$89,643</td>
<td>$13,877</td>
<td>84.5%</td>
</tr>
<tr>
<td>Large</td>
<td>$1,545,417</td>
<td>$91,724</td>
<td>94.1%</td>
</tr>
<tr>
<td>Aggregate Quarterly Results</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>$2,079,334</td>
<td>$292,691</td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>$3,227,159</td>
<td>$499,556</td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>$23,181,252</td>
<td>$1,375,863</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Torrent Portal Average/Aggregate Results

The portals represented 23.5% of the sample sites but accounted for 50.3% of advertising revenue, accounting for $28.5 million in the quarter, or $114 million annually. Large BitTorrent portals represented just 10.4% of the 144 sites in the segment but accounted for 81.3% of the aggregate segment ad revenue and 40.9% of the aggregate ad revenue across the entire sample.

Average monthly page views for the segment (52.5 million) are significantly more those of any other, most of them displaying ads, along with the second highest average monthly number of unique visitors (2.7 million) account for the sites’ significant revenue. While small BitTorrent sites have the lowest top-line revenue, the average small site can still make nearly $100,000 annually with very little overhead or infrastructure.

Despite BitTorrent portals’ notoriety as sources of stolen content, premium brand ads appeared on 13.3% of large, 13.9% of medium and 7.5% of small BitTorrent portals.

#### Linking Sites

<table>
<thead>
<tr>
<th></th>
<th>Ad Revenue</th>
<th>Cost</th>
<th>Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Quarterly Results</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>$15,706</td>
<td>$3,149</td>
<td>79.9%</td>
</tr>
<tr>
<td>Medium</td>
<td>$203,694</td>
<td>$20,868</td>
<td>89.8%</td>
</tr>
<tr>
<td>Large</td>
<td>$642,621</td>
<td>$80,462</td>
<td>87.5%</td>
</tr>
<tr>
<td>Aggregate Quarterly Results</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>$3,690,915</td>
<td>$740,069</td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>$8,351,446</td>
<td>$855,597</td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>$4,498,344</td>
<td>$563,233</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Linking Sites Average, Aggregate Results

Linking Sites represented 47.5% of the representative sample, reflecting the extremely low barriers to entry in this segment. In fact, the 235 small Linking sites alone represent 39.4% of the entire representative sample; however, they only accounted for 6.5% of overall aggregate ad revenue.

Nonetheless, even small Linking sites, like small BitTorrent sites, can net $100,000 in ad revenue a year, with margins of 80% or more. Large portals, on the other hand, make up just 2.5% of the 283 sites in the segment but account for 27.2% of the aggregate quarterly ad revenue of $16.5 million.
Large Linking sites made up just 1.2% of the entire sample, while accounting for 7.9% of the aggregate quarterly ad revenue.

Overall, Linking Sites had the lowest average number of unique visitors compared with other segments, at less than 1 million, reflecting the large percentage of small sites in the segment. The large sites averaged 8.7 million unique visitors, reflecting the value of scale. Overall, Linking Sites averaged 13.0 million page views, the lowest segment. Note that the average is reduced by the extremely large number of small sites.

Premium brands appeared on nearly a third (28.6%) of large, 17.1% of medium and 10.2% of small Linking sites.

**Video Streaming Host Sites**

Video Streaming Host Sites represented 12.6% of the sample, and accounted for 12.1%, or $6.9 million, of the aggregate quarterly advertising revenue, or $27.6 million per year. Large sites represented 20% of the 75 sites in the segment and accounted for 67.8% of the aggregate segment ad revenue. Margins are not reported here because a number of the sites in this segment offer subscription access, requiring infrastructure for account management, e-commerce and storage that is not directly related to advertising revenue.

Video Streaming Hosts attracted an average monthly 2.3 million unique visitors and averaged 33.4 million page views for the quarter.

Premium brands appeared on 33.3% of large, 15.4% of medium and 8.8% of small Video Streaming Hosts.

**Direct Download (DDL) Host Sites**

DDLs generate some ad revenue but are primarily subscription-based. Ads are displayed on upload and download pages, and the sites offer premium accounts for a monthly subscription fee that ranges from $5 to $15 to get rid of ads and for increased download speeds.

DDLs have higher barriers to entry and overall costs than other segments. Because DDLs’ infrastructure and operations are scaled to support user management, e-commerce and storage and not directly tied to advertising revenue, their margins are not reported here.

DDLs comprised 15.8% of the sample but accounted for 8.4%, or $4.8 million, of the aggregate quarterly advertising revenue – or $19.2 million per year. Large DDLs represented just 8.5% of the 94 sites in the segment but accounted for 64.7% of the aggregate segment ad revenue.

DDLs attracted the largest average monthly number of visitors at 2.6 million, and ranked third in average total page views at 29.4 million.

Premium brands appeared on 50% of large, 22.9% of medium and 39.2% of small DDLs.
SUMMARY AND RECOMMENDATIONS

Content theft sites are making millions in revenue, at high margins, from advertising. Creating a content theft site is inexpensive and requires little technological expertise, making ad-supported content theft “easy money” for bad actors. Exacerbating the problem for rights-protected content owners and many unwitting premium and secondary brand advertisers are the concurrent trends of a dramatically growing online global universe hungry for cheap, new content, and the explosion of programmatic buying and selling of advertising.

To date, efforts to degrade the viability of ad-supported theft have had only marginal impact and success, as the perpetrators evade detection with considerable ease.

The presence of ads for legitimate brands on content theft sites should be an incentive for those brand marketers to press agencies, ad networks and exchanges to strengthen current blocking methods and to develop new ones.

Advertisers and ad agencies, networks and exchanges can start by enhancing their voluntary best practice standards. The technology and services to identify and filter out content theft sites are available and should be adopted in the online advertising community. Just as brands do not advertise on porn or hate sites, they can take steps to assure they are not on content theft sites.

The online advertising industry knows this is a problem. As an ad industry insider told MediaLink, “Even one premium brand ad on one of these sites is too many.” Another said that having one’s brand appear on content theft sites alongside the kinds of ads that are common there “is a bad day at the office for a brand marketer.”

DCA is not alone in sounding this call to action.

In an August 2013 op-ed, Bob Liodice, the President and CEO of the Association of National Advertisers wrote about the threat of online piracy: “The volume and availability of traffic on rogue sites may be tempting. But rest assured; it is in everyone’s best interest to demonstrate support for brands by protecting them from compromising situations. Our industry must combat and halt the content pirates hijacking our ads.”

Randall Rothenberg, the President and CEO of the Interactive Advertising Bureau, said at IAB’s Annual Leadership Meeting in February 2014: “Advertising, much of it purchased via automated systems, inadvertently supports web sites that deliberately steal and distribute movies, music, and other copyrighted intellectual property, leading to an untold fortune in losses annually to news and entertainment companies.”

A coordinated effort by all stakeholders in the online advertising ecosystem is urgently required to preserve the value of digital media and help make the Internet a safer marketplace for legitimate commerce.
ACKNOWLEDGEMENT

Digital Citizens Alliance greatly appreciates the effort and care that MediaLink and its partners have put into this project. In addition to MediaLink’s own researchers, significant contributions of analysis and data were provided by:

- **Veri-Site**, a global leader in assessing and mitigating risk associated with the rapidly changing online environment. Veri-Site provides risk-relevant intelligence regarding rogue websites, intellectual property theft, cybercrime, web-enabled transnational organized crime, and sanctioned entities operating online. Veri-Site uniquely targets these threats with intelligence to manage operational, regulatory, and reputational risk. More information at [veri-site.com](http://veri-site.com).

- **Integral Ad Science Inc.**, the leading global provider of actionable advertising intelligence data for buyers and sellers of digital media and the industry’s standard for rating media quality. Since launching the industry’s first preventative brand safety solution in 2009, powered by constant growth and innovation, Integral has evolved into a global media valuation platform that is essential to the buying and selling of quality media. Integral focuses on a comprehensive solution set that enables advertising to appear in quality environments and receive favorable exposure — while the sell side can monitor and control its quality and performance. Integral’s technology drives improved visibility, efficiency, and ROI for players across the digital media landscape. More information at [integralads.com](http://integralads.com).

- **DoubleVerify**, the market leader in technology and insights that assure brand performance and effectiveness for the world’s largest advertisers online. DV solutions create value for media buyers and sellers by bringing transparency and accountability to the market, ensuring ad viewability, brand safety, fraud protection, accurate impression delivery and audience quality across campaigns to drive performance. Learn more at [doubleverify.com](http://doubleverify.com).

- **comScore Inc.**, a global leader in digital measurement and analytics, delivering insights on web, mobile and TV consumer behavior that enable clients to maximize the value of their digital investments. Through its Audience Analytics, Advertising Analytics, and Digital Enterprise Analytics product suites, comScore provides clients with a variety of on-demand software, real-time analytics and custom solutions to succeed in a multi-platform world. The proprietary comScore Census Network™ leverages a world-class technology infrastructure to capture trillions of digital interactions a month and power big data analytics on a global scale for its more than 2,000 clients. More information at [comscore.com](http://comscore.com).
APPENDICES

APPENDIX A: P&L DETAIL

As noted above, sites that offered infringing content with no advertising were excluded from the research.

Ad-Supported: BitTorrent and Other P2P Portals, and Linking Sites examined by MediaLink were exclusively ad-supported. The research found impression-, click-, and action-based models in use. The action-based approach applied to what was sometimes identified as affiliate programs, wherein the sites generated revenue by displaying to users opportunities to sign up for a program or a gaming service, or where they could download software, which often turned out to be loaded with malware.

Ad- and Subscription-Supported: Direct Download (DDL) Hosts and about one-third of Video Streaming Hosts were supported by subscription access as well as advertising. These were typically “freemium” services where users could create a free account, but with throttled download speeds and ads displayed. To eliminate ads and to get full-speed downloads, users have to buy a premium package, typically at one-, three-, six- and 12-month terms with discounts as high as 50% off the monthly rate for longer subscriptions. Direct exploration of the sites, including creating both free and premium accounts and uploading and downloading content, verified the sites’ fees and download bounties. Some sites offer users bounties for downloads of the users’ content and for subscriptions resulting from downloads.

The goal of this research was to understand the profitability of ad-supported content theft, so the discussion focuses on just the ad-supported aspects of the business, and the costs and margins for subscription-supported sites are not reported here. What follows is an explanation of the data points and assumptions underlying ad-supported content theft sites.

Revenue
Advertising revenue, as noted, has three components: CPM- or impression-based, CPC- or click-based, and CPA- or action-based. Impression revenue derives from a fee per thousand views of an ad; click-based advertising, a la Google AdWords, generates revenue only when users click a banner or link; and CPA pays when a user completes some action, such as downloading and installing software or registering on a site.

CPM Revenue
Impression-specific data points are:

- **Page Views (PVs):** The monthly average of page views for July, August and September 2013, from comScore. For the model, this data was used to estimate ad revenue.

- **Percent of Page Views with Ads (% Ads):** These assumptions are part of the ad revenue calculation and are based on MediaLink visits to the sites as well as external research. The percentage assumptions by segment are as follows:
  - **BitTorrent and Other P2P Portals:** These sites generally do not show ads on the home page but do on almost all other pages displayed. Assumption is 80% (a 20% reduction of the comScore average) to be multiplied by CPM (cost per thousand) defined below to arrive at CPM ad revenue.
  - **Linking Sites:** Assumed 95% as virtually all pages on all Linking Sites display ads.
  - **Video Streaming Host Sites:** Assumed 75%. One-third of sites are DDL-model sites, which we assume have ads on 30% of page views; two-thirds are linking-type sites, which we assume have ads on 95% of page views. Average is roughly 75%. Sources are MediaLink site visits and external research.
  - **Direct Download (DDL) Host Sites:** Assumed 50%. Ads only display on upload and download pages, conservatively estimated at half of page views.
- Number of Ad Positions per Page (# Ads): This is an average by functional and size segment based on MediaLink researchers’ site visits and direct observation.

• Fraud Multiplier (% Fraud): Impression fraud is a significant challenge to the advertising ecosystem and is likely to be even more significant in the content theft ecosystem. Fraud includes such benign practices as pop-unders, where ads are launched behind a user’s primary browser window, as well as activities such as stacking ads in nested iframes and embedding ad calls in single-pixel images that viewers can never see. The research did not include analysis of log files or data streams, and assumptions for the financial model rely on a combination of third-party sources and direct observation of sites’ business models.

- BitTorrent and Other P2P Portals: Assumed 30%, based on industry reports.

- Linking Sites: Assumed 30%, based on business model equivalence to P2P sites.

- Video Streaming Host Sites: Assumed 20%, adjusting the 30% metric for P2P and Linking sites to account for the number of Video Streaming sites with a DDL-like business model.

- Direct Download (DDL) Host Sites: Assumed 10%, adjusting the 30% metric based on site visit observations that DDL sites have by far more functional pages for account management and signup, and don’t show ads to premium users, resulting in less apparent opportunity for fraud.

• Percent of Page Views Generating Pop-ups (% Pop-Ups): Based on MediaLink site visits, researchers extrapolated that 30% of page views and clicks generated pop-up or pop-under ads.

• Pop-Up Multiplier (# Pop-Ups): While visiting sites, MediaLink researchers counted the number of pop-ups and pop-unders displayed. This data point is an average by functional and size segment.

• Percent of Premium Brand Ads (% Prem): MediaLink researchers visited each site and counted the number of premium ads displayed. This data point is an average by functional and size segment.

• Non-Premium CPM ($ Non-Prem): Based on MediaLink expertise and research with advertising industry members, ads on content theft sites are likely delivered at low CPMs. This reflects the overwhelmingly low quality of most advertisers, including adult dating and gambling sites, games, get-rich-quick schemes, etc. The assumption was a CPM of $0.50 (50 cents) per thousand ads displayed.

• Premium CPM ($ Prem): Based on MediaLink expertise and research with advertising industry members, the assumption is that where premium ads appear they are delivered programmatically by exchanges to fulfill the dregs of campaigns. As such, rates are assumed to be the same for premium and non-premium ads.

Average CPM revenue per site was calculated by functional and size segment, and derived as shown here:

\[
\text{Base Impressions} = (\text{PVs} \times \% \text{Ads} \times \# \text{Ads})
\]
\[
\text{Fraudulent Impressions} = \text{Base Impressions} \times \% \text{Fraud}
\]
\[
\text{Pop-Up Impressions} = \text{Base Impressions} \times \% \text{Pop-Ups} \times \# \text{Pop-Ups}
\]
\[
\text{Total Ad Impressions} = \text{Base Impressions} + \text{Fraud Impressions} + \text{Pop-Up Impressions}
\]
\[
\text{Premium CPM Revenue} = \$ \text{Prem} \times (\text{Total Ad Impressions} \times \% \text{Prem})
\]
\[
\text{Non-Premium CPM Revenue} = \$ \text{Non-Prem} \times (\text{Total Ad Impressions} - \% \text{Prem})
\]
\[
\text{Total CPM Revenue} = \text{Premium CPM Revenue} + \text{Non-Premium CPM Revenue}
\]

Cost-Per-Click (CPC) Revenue

The second advertising model involves payment for each user click on a banner or text link. For click-based (CPC) advertising, these additional data fields and calculations apply:

• Click-Through Rate (CTR): Based on MediaLink expertise and research with advertising industry
members, assumed a click-through rate of 0.08% (eight one-hundredths of one percent).

- **Cost Per Click (CPC):** Based on MediaLink expertise and research with advertising industry members, assumed a cost-per-click rate of $0.21 (21 cents) per click.

\[
\text{CPC Revenue} = \text{Total Ad Impressions} \times \text{CTR} \times \text{CPC}
\]

**Cost-Per-Action (CPA) Revenue**

The final ad model involves paying for users’ completion of an action, generally as part of lead generation activities. Based on MediaLink site visits, the participants in this model in the content theft ecosystem are overwhelmingly software (and malware) distributors, as well as gaming and gambling sites.

For action-based (CPA) advertising, these additional data fields and calculations apply:

- **Percent of Sites with Affiliates (% Affils):** Based on MediaLink site visits, this is an average percentage by functional and size segment of those with ads linking off-site to pages where actions were to be completed.
- **Number of Affiliate Links (# Affils):** Based on MediaLink site visits, this is an average number by functional and size segment of CTA links in sites.
- **CTA Action Rate (CTA):** Based on MediaLink expertise and research with advertising industry members, assumed conversion rate of 0.01% (one one-hundredth of one percent).
- **Cost-Per-Action Fee (CPA):** Based on MediaLink expertise and research with advertising industry members, assumed revenue per completed action of $0.75 (75 cents).

\[
\text{CPA/Affiliate Revenue} = (PVs \times % \text{Affils} \times \# \text{Affils}) \times \text{CTA} \times \text{CPA}
\]

**Operating Costs**

Sites in the content theft ecosystem do not report revenues or operating costs, so assumptions were based on generally accepted practices for similar types of ad- and subscription-supported sites, and used some third-party data. The research considered direct costs for hosting and indirect costs for staff and other overhead.

**General Costs**

Regardless of business model, web sites have hosting costs and some cost for human resources, whether those are employees or freelancers. The following additional data points and calculations were used for these costs applicable to all sites.

- **Monthly Hosting Costs:** MediaLink used the site MuStat (www.mustat.com) for hosting costs. The site compiles data from a number of sources and appears to base its calculations on a combination of unique visitors, page views, bandwidth utilization estimates and location. While more detail about its observations is not available, Mustat provides a consistent and conservative number for the sites.
- **Head Count:** Estimated number of people involved in operating the sites, based on research and general expertise in web site operations. This varies significantly based on the size and type of site. For example, small BitTorrent and Linking sites are likely run by one person, probably with no additional full-time employees. The need for staff likely increases with size as more effort is required to manage additional servers and to deal with affiliate and advertising relationships and compliance with DMCA takedown requests. DDLs and DDL-like Video Streaming sites, on the other hand, are more complicated. They involve e-commerce, subscription and account management, significant content storage infrastructure, and integration with content distribution networks (CDNs), to name a few key functions.
- **BitTorrent and Other P2P Portals:** Assumed 0.25 FTE for small, 1.0 FTE for medium and 5 FTE for large sites. Torrent software is increasingly common and not difficult to operate, and once sites are built ongoing operation would mainly focus on monitoring, indexing and dealing with advertising.

- **Linking Sites:** Assumed 0.25 FTE for small, 1.5 FTE for medium and 5 FTE for large sites.

- **Video Streaming Host Sites:** Assumed 0.25 FTE for small sites, which operate the same as small BitTorrent and Linking sites. The DDL model only exists in the medium and large segments, where the average FTE count was adjusted downward slightly to accommodate the blend of DDL-type and portal-type sites. For medium sites, assumed 2.0 FTEs and 4.0 for large sites.

- **Direct Download (DDL) Host Sites:** Assumed 0.5 FTE for small, 2.5 FTE for medium and 6 FTE for large sites. As noted above, these are more complicated to maintain and there’s need for customer service and marketing resource that doesn’t apply to torrent and Linking sites.

  - **Average Monthly Salary:** Based on published salaries for web and system administrators and developers, assumed an average monthly salary per person of $4,000.

  - **Overhead:** Most sites in the content theft ecosystem are presumed to operate without offices and that the only significant infrastructure beyond hosting and network. That likely changes as the sites grow and especially in regard to DDLs, which as noted have more complex needs. To account for overhead despite the opacity of the business, researchers assumed overhead of 0%-1% of revenue for BitTorrent, Linking and Video Streaming sites and 1% across the board for DDLs.
### APPENDIX B: COST & REVENUE DETAIL

#### Q3 2013 Average Site Performance by Segment

<table>
<thead>
<tr>
<th>Segment</th>
<th>CPM Rev</th>
<th>CPC Rev</th>
<th>CPA Revenue</th>
<th>Total Ad Revenue</th>
<th>Total Cost</th>
<th>Margin %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BitTorrent and Other P2P Portals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>$14,144</td>
<td>$7,920</td>
<td>$294</td>
<td>$22,358</td>
<td>$3,147</td>
<td>85.9%</td>
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<td>Medium</td>
<td>$56,173</td>
<td>$31,457</td>
<td>$2,014</td>
<td>$89,643</td>
<td>$13,877</td>
<td>84.5%</td>
</tr>
<tr>
<td>Large</td>
<td>$969,597</td>
<td>$542,974</td>
<td>$32,845</td>
<td>$1,545,417</td>
<td>$91,724</td>
<td>94.1%</td>
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<tr>
<td><strong>Linking Sites</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>$9,793</td>
<td>$5,484</td>
<td>$429</td>
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<td>Medium</td>
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<td>$72,683</td>
<td>$1,221</td>
<td>$203,694</td>
<td>$20,868</td>
<td>89.8%</td>
</tr>
<tr>
<td>Large</td>
<td>$405,959</td>
<td>$227,337</td>
<td>$9,325</td>
<td>$642,621</td>
<td>$80,462</td>
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</tr>
<tr>
<td><strong>Video Streaming Host Sites</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>$9,517</td>
<td>$5,330</td>
<td>$726</td>
<td>$15,573</td>
<td>$3,127</td>
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</tr>
<tr>
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<td>$22,327</td>
<td>$2,475</td>
<td>$64,672</td>
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</tr>
<tr>
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<td>$16,691</td>
<td>$310,769</td>
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<td><strong>Direct Download (DDL) Host Sites</strong></td>
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<tr>
<td>Small</td>
<td>$4,736</td>
<td>$2,652</td>
<td>$477</td>
<td>$7,864</td>
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<tr>
<td>Medium</td>
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<td>$10,873</td>
<td>$6,319</td>
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<tr>
<td>Large</td>
<td>$205,998</td>
<td>$115,359</td>
<td>$64,158</td>
<td>$385,515</td>
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</tr>
</tbody>
</table>

#### Q3 2013 Aggregate Site Performance by Segment

<table>
<thead>
<tr>
<th>Segment</th>
<th>CPM Rev</th>
<th>CPC Rev</th>
<th>CPA Revenue</th>
<th>Total Ad Revenue</th>
<th>Total Cost</th>
<th>Margin %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BitTorrent and Other P2P Portals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>$1,315,359</td>
<td>$736,601</td>
<td>$27,374</td>
<td>$2,079,334</td>
<td>$292,691</td>
<td>85.9%</td>
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<td>Medium</td>
<td>$2,022,214</td>
<td>$1,132,440</td>
<td>$72,505</td>
<td>$3,227,159</td>
<td>$499,556</td>
<td>84.5%</td>
</tr>
<tr>
<td>Large</td>
<td>$14,543,956</td>
<td>$8,144,615</td>
<td>$492,681</td>
<td>$23,181,252</td>
<td>$1,375,863</td>
<td>94.1%</td>
</tr>
<tr>
<td><strong>Linking Sites</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>$1,288,780</td>
<td>$100,742</td>
<td>$3,690,915</td>
<td>$740,069</td>
<td>79.9%</td>
</tr>
<tr>
<td>Medium</td>
<td>$5,321,407</td>
<td>$2,979,988</td>
<td>$50,050</td>
<td>$8,351,446</td>
<td>$855,597</td>
<td>89.8%</td>
</tr>
<tr>
<td>Large</td>
<td>$2,841,712</td>
<td>$1,591,359</td>
<td>$65,274</td>
<td>$4,498,344</td>
<td>$563,233</td>
<td>87.5%</td>
</tr>
<tr>
<td><strong>Video Streaming Host Sites</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>$323,594</td>
<td>$181,213</td>
<td>$24,674</td>
<td>$529,480</td>
<td>$106,305</td>
<td>79.9%</td>
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<td>$1,681,477</td>
<td>$1,117,063</td>
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</tr>
<tr>
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<td>$2,827,670</td>
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<td>$250,370</td>
<td>$4,661,535</td>
<td>$1,575,050</td>
<td></td>
</tr>
<tr>
<td><strong>Direct Download (DDL) Host Sites</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>$241,524</td>
<td>$135,253</td>
<td>$24,310</td>
<td>$401,087</td>
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<tr>
<td>Medium</td>
<td>$679,593</td>
<td>$380,572</td>
<td>$221,180</td>
<td>$1,281,344</td>
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<tr>
<td>Large</td>
<td>$1,647,986</td>
<td>$922,872</td>
<td>$513,266</td>
<td>$3,084,123</td>
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<td></td>
</tr>
</tbody>
</table>
APPENDIX C: SITES STUDIED

Note: Sites marked with an asterisk were no longer active as of January 2014, but were active during Q3 2013.

<table>
<thead>
<tr>
<th>BitTorrent and Other P2P Portals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Large</strong></td>
</tr>
<tr>
<td>bitsnoop.com</td>
</tr>
<tr>
<td>extratorrent.com</td>
</tr>
<tr>
<td>fast-torrent.ru</td>
</tr>
<tr>
<td>isohunt.com*</td>
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<tr>
<td>rutor.org</td>
</tr>
<tr>
<td>rutracker.org</td>
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<tr>
<td>t411.me</td>
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<tr>
<td>tfile.me</td>
</tr>
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<td>thepiratebay.sx</td>
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<td>torrentdownloads.me</td>
</tr>
<tr>
<td>torrenthound.com</td>
</tr>
<tr>
<td>torrentino.com</td>
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<tr>
<td>torrentreactor.net</td>
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<tr>
<td>torrent.eu</td>
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<tr>
<td>vitorrent.org</td>
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<tr>
<td>yify-torrents.com</td>
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<tr>
<td>yourbittorrent.com</td>
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<tr>
<td>yyets.com</td>
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<td><strong>Small</strong></td>
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<tr>
<td>10torrent.net</td>
</tr>
<tr>
<td>5gg.biz</td>
</tr>
<tr>
<td>absolutorrent.com</td>
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<tr>
<td>ahashare.com</td>
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<tr>
<td>ba3a.org.ua</td>
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<tr>
<td>bayproxy.org</td>
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<tr>
<td>bigtorrent.org</td>
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<tr>
<td>bit2bit.org</td>
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<tr>
<td>bitcoca.com</td>
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<tr>
<td>bitnova.info</td>
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<tr>
<td>bitreactor.to</td>
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<tr>
<td>bit-torrent.bz</td>
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<tr>
<td>bt-chat.com</td>
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<tr>
<td>btmom.com</td>
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<tr>
<td>byte.to</td>
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<tr>
<td>chhola.com</td>
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<tr>
<td>crazy-torrent.com</td>
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<tr>
<td>cztorrent.net</td>
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<tr>
<td>desitorrents.com</td>
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<tr>
<td>dht-tracker.org</td>
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<tr>
<td>emuleday.com</td>
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<tr>
<td>filestoreroom.com</td>
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<tr>
<td>firebit.org</td>
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<tr>
<td>freestorrent.com</td>
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<tr>
<td>free-torrents.org</td>
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<tr>
<td>friends-torrent.com</td>
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<tr>
<td>fulldis.com</td>
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<tr>
<td>goldenshara.com</td>
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<tr>
<td>hdirector.org</td>
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<tr>
<td>helltorrents.com</td>
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<tr>
<td>jarochos.net</td>
</tr>
<tr>
<td>kickassunblock.info</td>
</tr>
<tr>
<td>kinokubik.com</td>
</tr>
<tr>
<td>kino-zal.tv</td>
</tr>
<tr>
<td>kinsburg.ru</td>
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<tr>
<td>lanunbay.org</td>
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<tr>
<td>limetorrents.net</td>
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<tr>
<td>megatorrents.kg</td>
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<tr>
<td>megatorrents.org</td>
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<tr>
<td>netz.ru</td>
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<tr>
<td>newtorrents.info</td>
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<tr>
<td>now torrents.com</td>
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<tr>
<td>online-freebee.ru</td>
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<tr>
<td>opensharing.org</td>
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<tr>
<td>ourrelease.org</td>
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<tr>
<td>piratebayalternative.me*</td>
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<tr>
<td>pirateby.info</td>
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<tr>
<td>pirateproxy.nl</td>
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<tr>
<td>piratereverse.info</td>
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<tr>
<td>polskie-torrenty.pl</td>
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<tr>
<td>psian.com</td>
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<tr>
<td>psychocydd.co.uk</td>
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<tr>
<td>publichd.se</td>
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<tr>
<td>rapidzona.com</td>
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<tr>
<td>realtorrentz.com</td>
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<tr>
<td>rustorka.com</td>
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<tr>
<td>rustorrents.org</td>
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<tr>
<td>rus-torrents.ru</td>
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<tr>
<td>svilvertorrent.org</td>
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<tr>
<td>sparkmovies.com</td>
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<tr>
<td>streamzone.org</td>
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<tr>
<td>tamil torrents.net</td>
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<tr>
<td>tapochek.net</td>
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<tr>
<td>titanshare.to</td>
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<td>torentilo.com</td>
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<td>torrentazos.com*</td>
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<tr>
<td>torrentbar.com</td>
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<tr>
<td>torrentbee.com*</td>
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<tr>
<td>torrentbutler.eu</td>
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<tr>
<td>torrent-cinema.net</td>
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<tr>
<td>torrentdownloadz.com</td>
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<tr>
<td>torrentfilms.net</td>
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<td>torrent-films.net</td>
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<tr>
<td>torrent-finder.info</td>
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<tr>
<td>torrent-francais.com</td>
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<tr>
<td>torrent-free.ru</td>
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<tr>
<td>torrentkereso.hu</td>
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<tr>
<td>torrent-loc.com.ar</td>
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<tr>
<td>torrentman.com</td>
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<tr>
<td>torrento.net</td>
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<td>torrentom.com</td>
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<td>torrents.to</td>
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<td>torrent-shara.net</td>
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<td>torrent-shara.org</td>
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<td>torrents-load.net</td>
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<td>torrentv.org</td>
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<td>torrentz.me</td>
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<td>torrentzap.com</td>
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<td>torrtilla.ru</td>
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<td>tvboxnow.com</td>
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<td>unionpeer.org</td>
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<td>utorrents.org</td>
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<td>zlottracker.org</td>
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Linking Sites

**Large**
- filestube.com
- filmix.net
- free-tv-video-online.me
- kinox.to
- myegy.com
- watchfreemovies.ch
- zerx.ru

**Medium**
- 1channelmovie.com
- 1kinobig.ru
- 1tvlive.in
- argentinawarez.com
- bobfilm.net
- castordownloads.net
- cinetube.es
- couchtuner.eu
- cwerws
- desirulez.net
- desitvforum.net
- divxonline.info
- ekino.tv
- eqla3.com
- filetram.com
- filmlinks4u.net
- ganool.com
- gratispeliculas.org
- identi.li
- ikinokz.net
- kinobar.net
- kinopod.ru
- letmewatchthis.ru
- m5zn.com
- masteev.com
- newalbumreleases.net
- nnm-club.ru
- pebl.net
- peliculasyonkis.com
- primewire.ag
- seedoff.net
- stepashka.com
- torrentfrancais.com
- uakino.net
- ugrove.com
- video.az
- vn-zoom.com
- watchseries.lt
- watchseries-online.eu
- worldfree4u.com
- zone-telechargement.com

**Small**
- 1movie.ru
- 300mblinks.com
- 3dl.tv
- 5fantastic.pl
- 720pmkv.com
- 720pmovies.net
- 990.ro
- actorpedia.net
- ajo.pl
- albumhunt.com
- alive-ua.com
- allcandl.org
- allyoulike.com
- astatalk.com
- atomload.at
- baixardegraca.com.br
- baixeturbo.org
- bajui.com
- bartzmovie.com
- bergfiles.com
- berglib.com
- bochinchewarez.com
- btarena.org
- burning-seri.es
- byhero.com
- cinemaaz.com
- cinevip.org
- cokemandpopcorn.ch
- collb9.org
- come.in
- coolmoviezone.com
- copywarez.com
- dacho.co.il
- dangbuon.com
- darkmachine.pl
- ddl-search.biz
- ddivalley.eu
- derinport.in
- descargamela.com
- descargarpelicula2.com
- desicorner.net
- directoriow.com
- divxadresi.com
- divxatope.com
- divxm.com
- divx.net
- dl4all.com
- dl4v.com
- downloadarquivo.com
- downloadbox.me
- dwntr.co
- dwntrwarez.com
- dupemonkey.com
- egybest.com
- enlacewarez.com*
- epidemz.net
- ergor.org
- esdvx.com
- estrenosgo.com
- estrenosonline.org
- exclusivitees.eu
- excluzive.net
- exsite.pl
- fastdown.info
- fdmovie.com
- filebeta.com
- filebox8.com
- fileindexer.com
- filemirrors.info
- filenewz.com
- filerapid.pl
- files4you.org
- filesput.com
- fileslinx.com
- filesocean.net
- filesresidence.com
- filesseacher.com
- fileszon.com
- film-stream.tv
- forum-maximus.net
- forumtv.pl
- free-filmy.ru
- freerutor.com
- french-movies.net
- freshupnow.com
- ftdworld.net*
- fullepisode.info
- fullmovie-kolkata.com
- fullpelis.com
- fullseries.net
- fzmovies.net
- general-search.net
- getmediafire.com
- golden-ddl.com
- gram24.pl
- hatemtai.com
- hdkinoklub.ru
- hd-world.org
- hinditvlinks4u.ch
- hhnmovies.com
- hotfilesearch.com
- hotshare.pl
- identi.info
- ineedfile2.com
- itvmovie.eu
- iwannawatch.ch
- iwatchonline.to
- kinodoma.eu
- kinox-x.ru
- kinoylie.ru
- klipzona.net
- kohit.net
- leecher.to
- letitbit-files.net
- libertyland.tv
- linexdown.net
Linking Sites (continued)

linxdow.me
majaa.net
mamega.com
mayonez.net
mechoddll.com
mechownload.com
mediafire.li
mediafire.vc
mediafiredownloads.net
mediafireho.com
mediafiremoviez.com
mediafiretrends.com
megaparadiz.com*
megaparadiz.com*
megauploaders.com
megawarez.eu
mesddl.net
moloto4ka.net
mov1.ru
movie2k.tv
movie2kproxy.com
moviedetector.com
moviesberg.com
moviesdatcenter.com
movieshacks.com
movieswamp.com
movizet.tv
moviz.net
mp4yukile.com
nabolister.com
neomaks.ru
netzor.org
newdivx.net
newpct.com
nizaika.ru
norapidsearch.com
novycinema.ru
onlinemix.ru
onlinemoviesplayer.com
ourphorum.com
pelicanaswarez.com
pirat.ca
planetakino.com
plus-soft.ru
pordescargadirecta.com
posteando.com
powerddl.com
precy1.com
proc.com.ua
programaswarez.com
prostokino.net
ps3iso.com
qi.ru
qkshare.com
raidrush.ws
rapidbizz.com
rapide-ddl.com
rapidfiledownload.com
rapidmoviez.com
rapidgog.com
risbb.com
rislog.net
ri-team.net
roomyshare.com
rpds-download.net
rslinks.org
ru-admin.net
saugking.net
scteam.net
sharepirate.com
sharethefiles.com
skatay.com
soft-6.com
soft-best.ws
soft-catalog.net
softvnn.com
speedlounge.in
streaming-ddl.net*
streamxd.com
super-warez.net
takeavailable.com
tehparadox.com
telechagementz.org
telecharger-tout.com
teluga.com
thalathalapathy.com
thedarewall.com
timeparty.com
tinydl.com
tkshare.com
tnt24.info
todotaringa.com
top-hit.com
trumjortv.com
tvcric.com
tvmuze.com	
twilight.ws
ultra-vid.com
vagoslatino.com
vcdq.com
videoanons.ru
vidics.ch
viz4u.net
vostfr-gb.com
vpsite.ru
war4u.sk
warcenter.cz
warez-home.net
warmacher.com
watch-free-movie-online.net
watchonlineseries.eu
watchtvfree.me
watchtvseries.ch
wawacity.su
waz-warez.org
wewatchmoviesfree.net
x1tvwarez.ru
xmovies8.com
za-frik0.com
zonaplus.net
Video Streaming Host Sites

**Large**
allmyvideos.net
bigcinema.tv
chomikuj.pl
ex.ua
flashx.tv
kinobanda.net
kinostok.tv
movshare.net
novamov.com
nowvideo.eu
played.to
sockshare.com
veoh.com
videoweed.es
vodly.to

**Medium**
allserials.tv
baskino.com
bestkino.su
faststream.in
films-online.su
kinohome.net
kinomaniak.tv
kinomoov.net
kinoprosmotr.net
minizal.net
moiserialy.net
movierulz.com
movpod.in
movreel.com
movzap.com
nosvideo.com
online-life.ru
playtube.pl
purevid.com
the-cinema.ru
tushkan.net
uploadc.com
vidbull.com
vidbux.com
video.com
viddub.com
vodly.to

**Small**
2gb-hosting.com
300mbfilms.com
arm-tube.am
delishows.com
dom-filmov.ru
dpstream.tv
esoft.me
fifostream.tv
film4ik.ru
filmmodrom.net
glowgaze.com
hddizizle.com
kino-az.net
kinoclips.net
kinolot.com
kinolubim.ru
kinomatrix.com
kinovam.com
levtor.org
linecinema.org
mytv.kz
mytvline.com
nzbmovieseeker.com
series-cravings.tv
smotri-filmu.ru
smusla.net
tubemotion.com
videobb.com
videonette.com
videoxalyava.ru
vipzal.tv
vreer.com
vzale.tv
zalaa.com
Direct Download (DDL) Host Sites

**Large**
4shared.com  
bitshare.com  
depositfiles.com  
freakshare.net  
rapidgator.net  
sendspace.com  
turbobit.net  
uptobox.com

**Medium**
180upload.com  
1fichier.com  
akafile.com  
billionuploads.com  
cloudzer.net  
crocko.com  
divxstage.eu  
eyny.com  
filecloud.io  
filepost.com  
fsshare.vn  
ge.tt  
hipfile.com  
hugefiles.net  
junocloud.me  
lumfile.com  
megafiles.se  
novafile.com  
queenshare.com  
rhost.net  
sharebeast.com  
share-online.biz  
solidfiles.com  
tusfiles.net  
uloz.to  
ulozto.net  
ultramegabit.com  
uploadbaz.com  
uploading.com  
vidhog.com  
vidup.me  
vip-file.com  
xvidstage.com  
yunfile.com

**Small**
4upfiles.com  
albafile.com  
arabloads.com  
batshare.com  
bayfiles.com  
cramit.in  
creafile.net  
data.hu  
dataport.cz  
davvas.com  
easybytez.com  
easyfiles.pl  
epicshare.net  
euroshare.eu  
exoshare.com  
expressleech.com  
fastshare.cz  
fileflyer.com  
fileparadox.in  
fileplaneta.com  
files2upload.net  
filesflash.com  
filevice.com  
gigasize.com  
hellupload.com  
henchfile.com  
hitfile.net  
hostingbulk.com  
hulkfile.eu  
hulkload.com  
jheberg.net  
jumbofiles.org  
load.to  
muchshare.net  
multiup.org  
myupbbox.com  
myupload.dk  
prefiles.com  
project-free-upload.com  
rapiledge.com  
rodfile.com  
sanshare.com  
sendmyway.com  
sendspace.pl  
sharefiles.co  
sinrho.net  
speedshare.eu  
swankshare.com  
ufox.com  
upfile.biz  
uploadboy.com
APPENDIX D: PREMIUM BRANDS APPEARING ON SAMPLE SITES

The following premium brands were observed by MediaLink analysts during visits to the sites in the sample.

Aereo
Air Wick
Airborne
Allstate
Ally Bank
Amazon
Amazon (Audible)
American Express
American Girl
Ancestry.com
Angry Birds
Ann Taylor
AT&T
Autonomy
Banana Republic
Benjamin Franklin Paint
Birchbox
Bose
BP
Broadway Theatre
Cablevision
Chevrolet
Chromecast
Citrix
Clarks
Clinton Foundation
Crate & Barrel
Crest
Dell
Delsun
Delsym
Delta
Dish Network
Dominos
Durex
Extended Stay America
Facebook
Fiat
Ford
GE
GEICO
GloboTech
Google
Google Nexus
Grainger
H&M
Hulu Plus
Iceland
iStockphoto.com
Jcrew
Keller Graduate School of Management
Keurig
L.L. Bean
Lego
LG
Lime-a-way
McDonalds
Merck & Co.
Microsoft
Microsoft (Bing)
Monster.com
Motorola
NYU Langone
Opel Auto
Petsmart
Progressive
Puffs
Rackspace
RAM
REI
Sapphire
Seattle’s Best
Sensodyne
Target
TD Bank
Time Warner Cable
Toyota
Ugg
UNICEF
Verizon
Wall Street Journal
Walmart
Western Union
Whole Foods
Xfinity
Zales
Zappos
zipcar
APPENDIX E: REFERENCES

Research


Published Reports


Here Come the Bots: Assessing the Latest Ad Fraud Fear, DigiDay.com, October 2013.

How sites like MegaUpload make millions from pirated video, c|net, February 2012.

How the gambling industry funds copyright theft, The Kernel, December 2013.


Online Ad Fraudsters are Stealing $6 Billion from Brands, adweek.com, October 2013.

Pirate sites are raking in advertising money from some multinationals, theguardian.com, February 2013.

The Pirate Bay Is Now the World’s Largest File-Sharing Site, Gizmodo, April 2013.