NetNames
One step ahead

Sizing the piracy universe



David Price

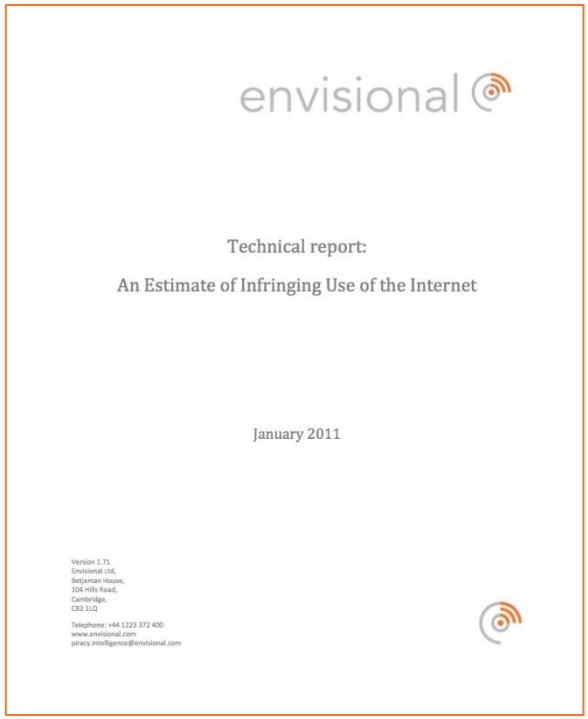
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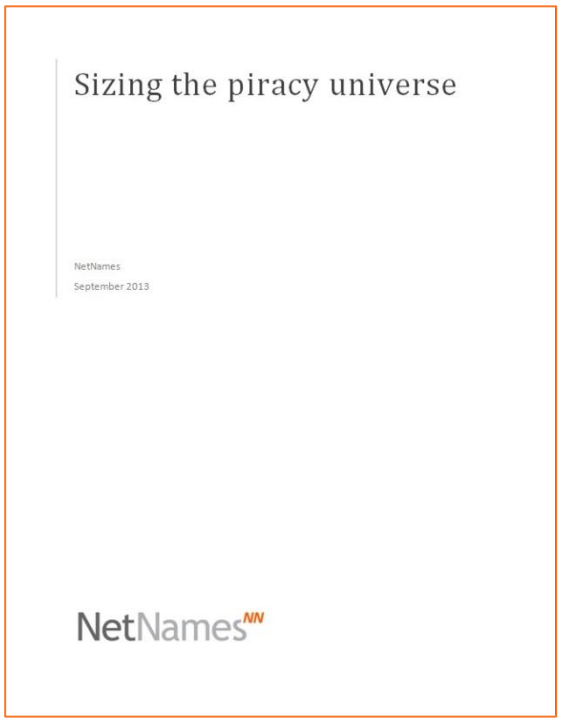
Sizing the piracy universe

Introduction

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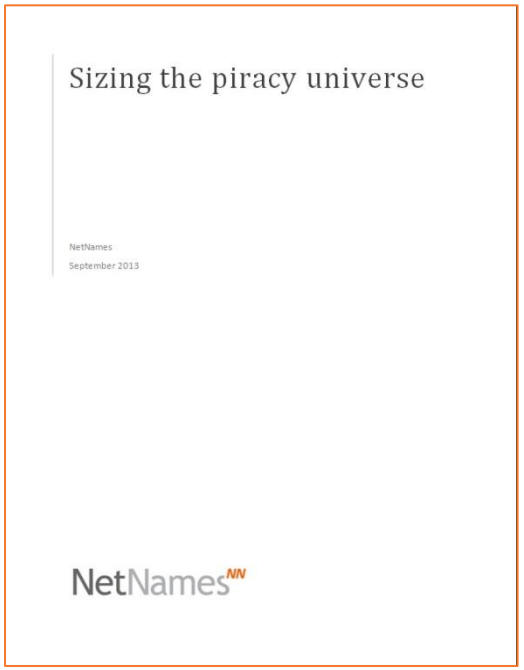
NetNames



Sizing the piracy universe

Aims and objectives

- Consolidate and extend the 2011 bandwidth research
- Estimate the size and shape of the piracy universe
- Examine the number of unique users in the internet ecosystems used for infringement
- Determine the level of infringing activity in those ecosystems
  - BitTorrent
  - Video streaming
  - Cyberlockers
  - Other file sharing networks



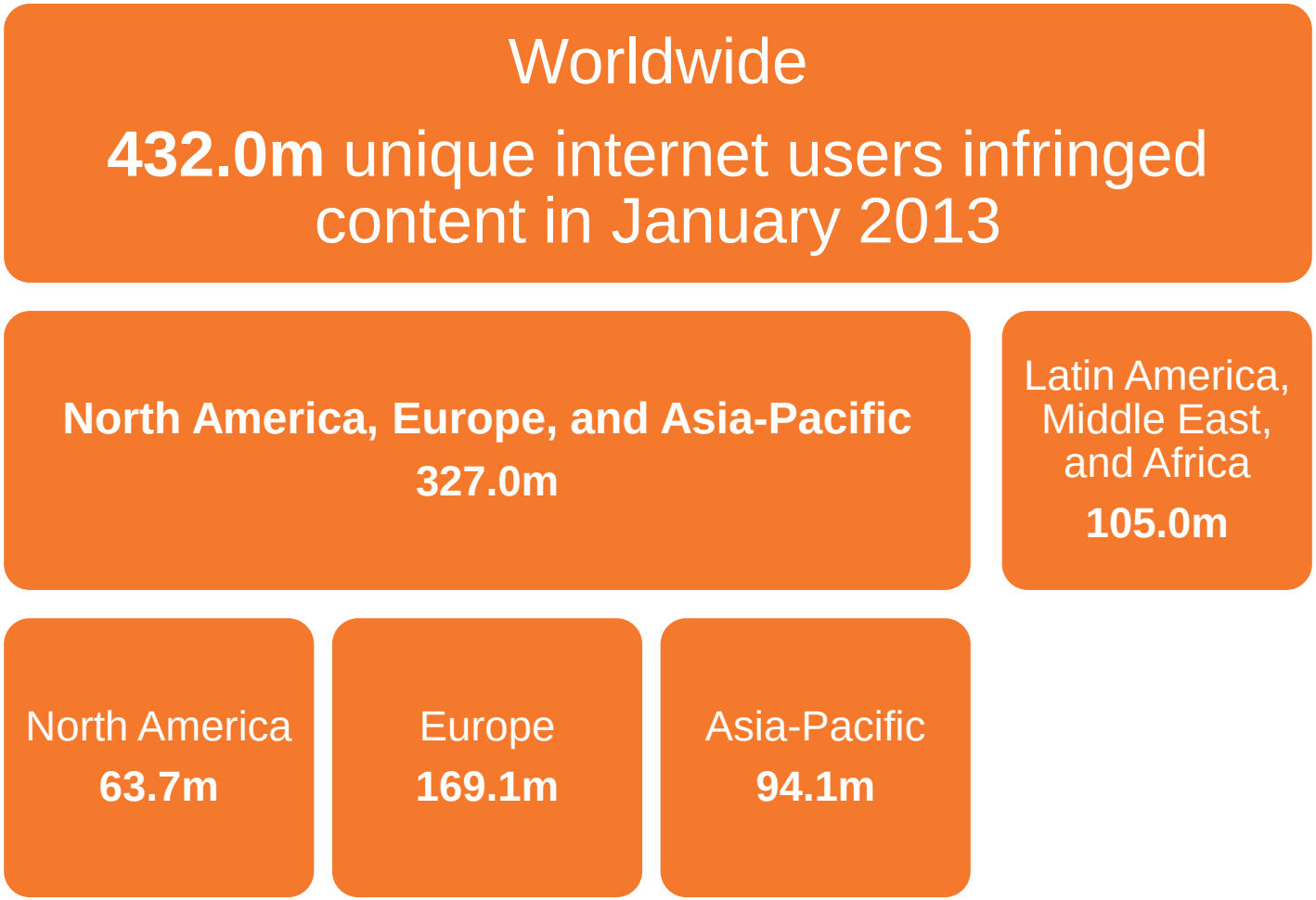
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Definition of an infringing user

Infringing user (n): **a user of the internet who obtains infringing content at least once during a given month**

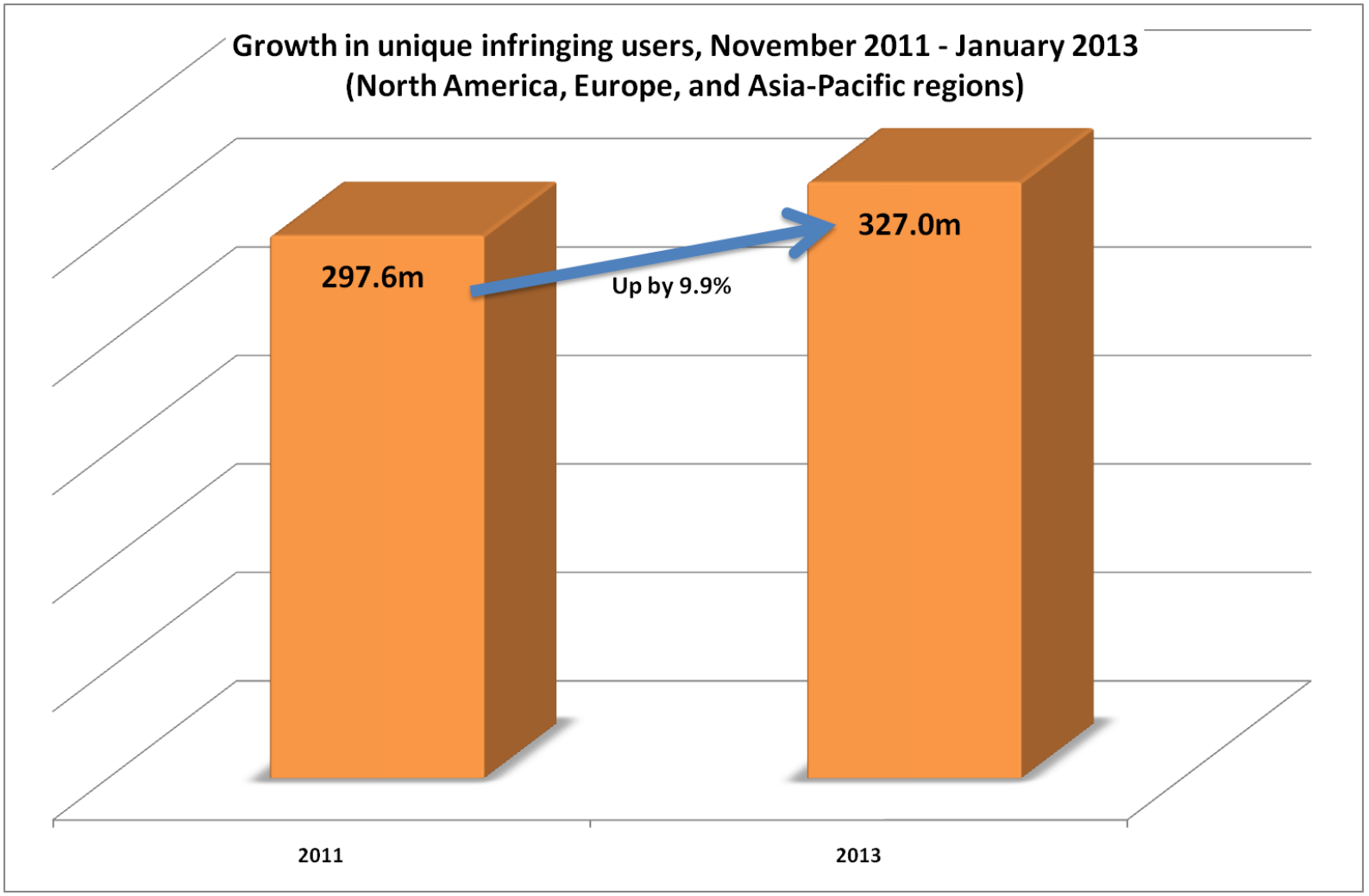
Sizing the piracy universe

Main findings: total infringing users



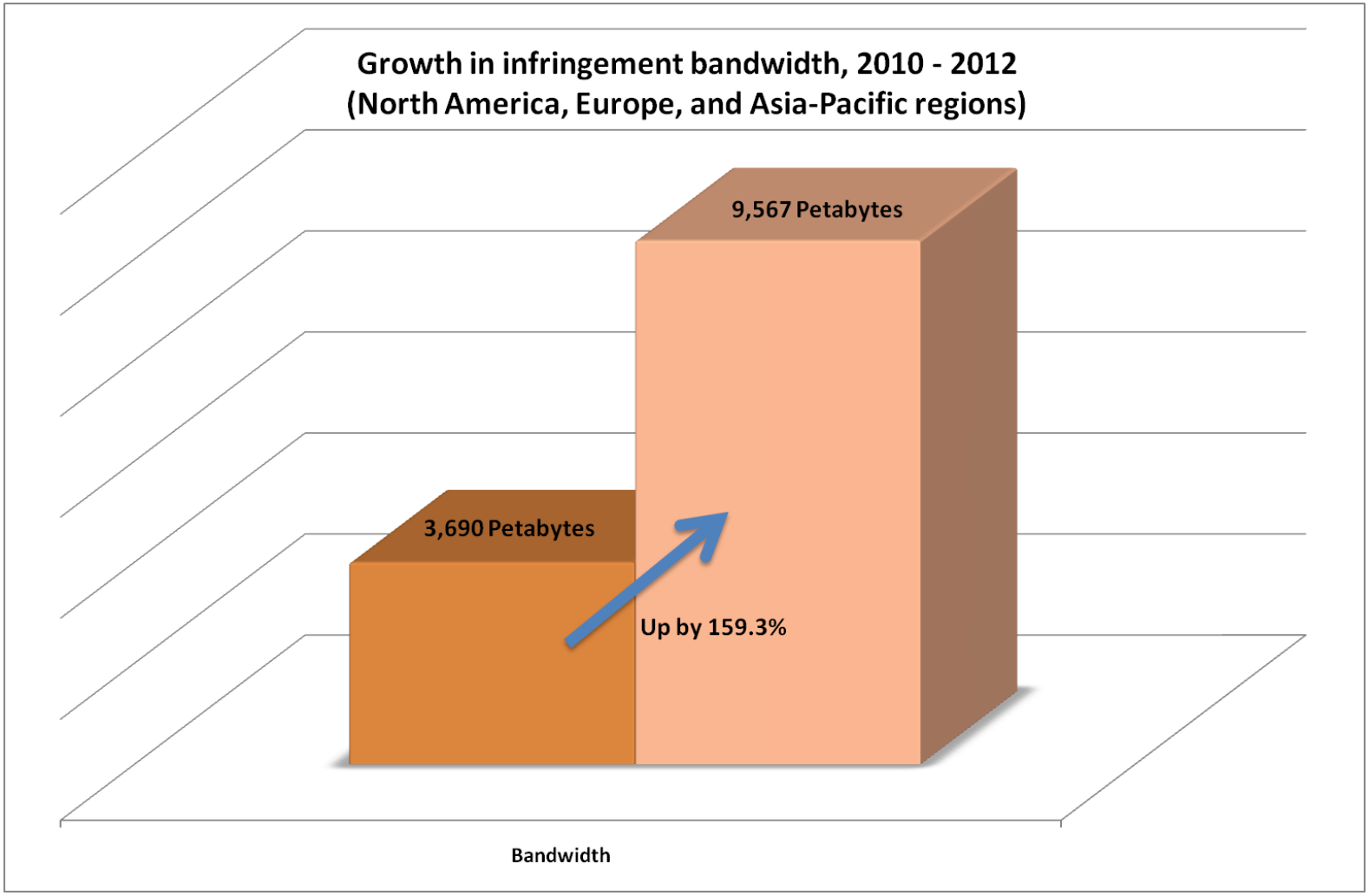
Sizing the piracy universe

Main findings: North America, Europe, and Asia-Pacific



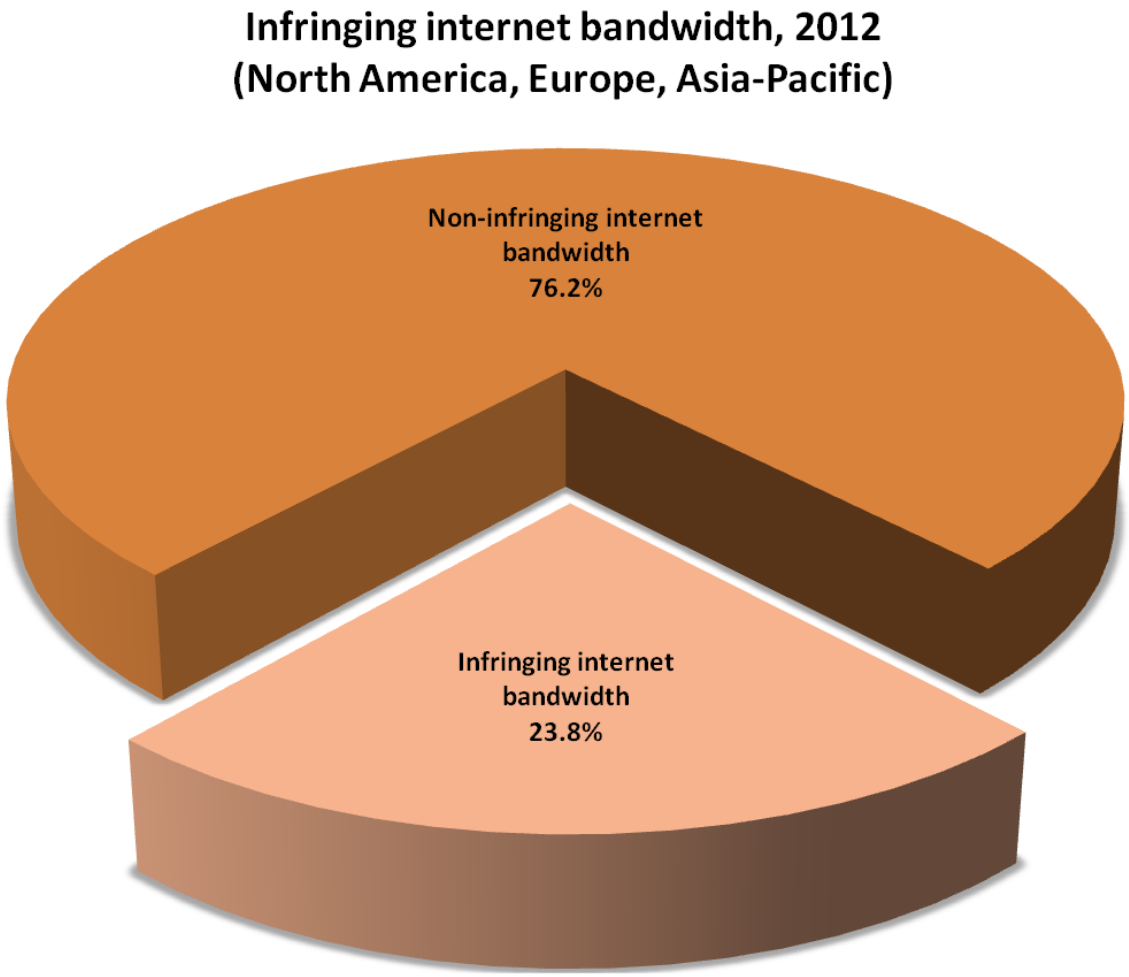
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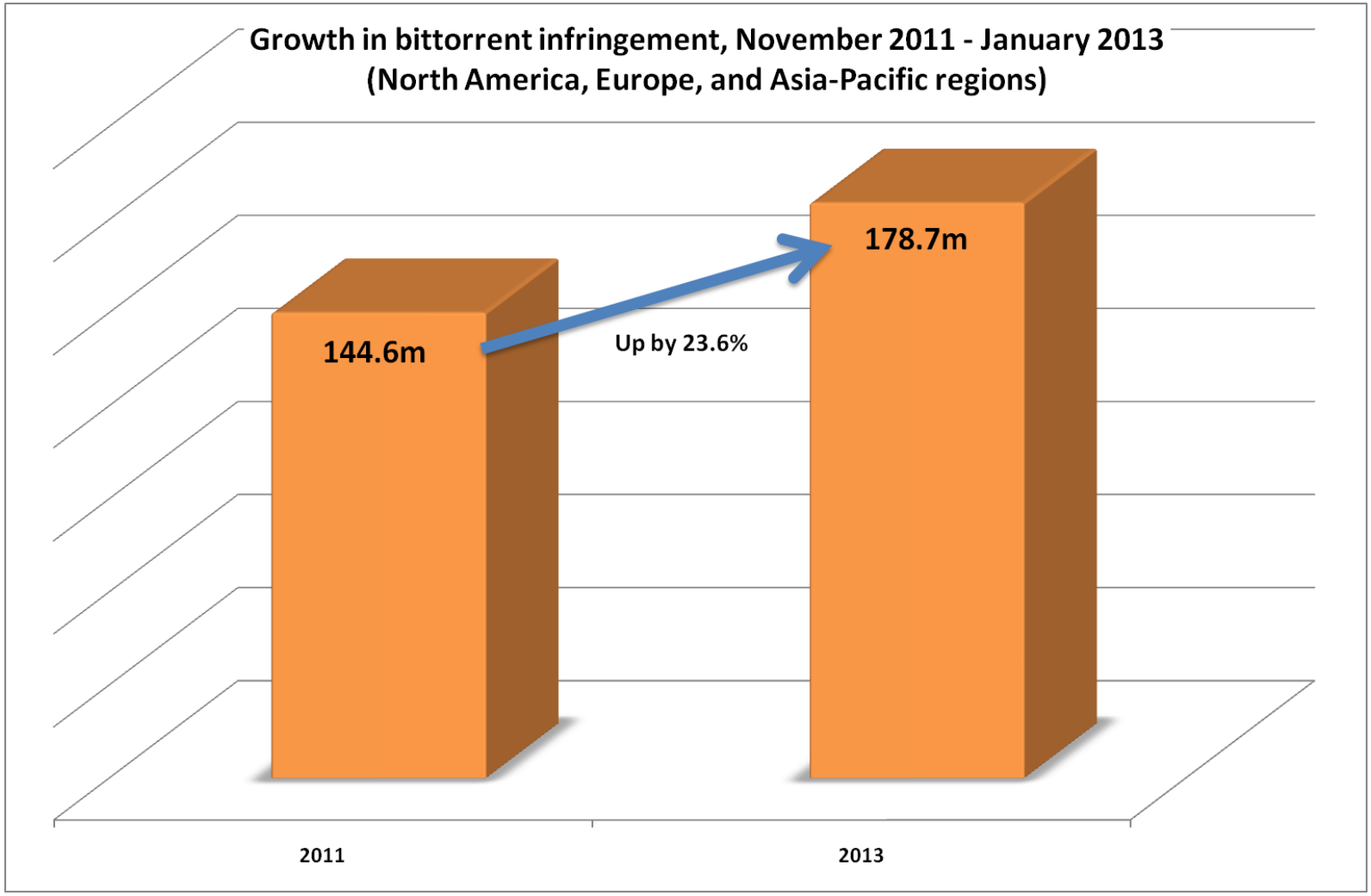
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Infringing bandwidth use



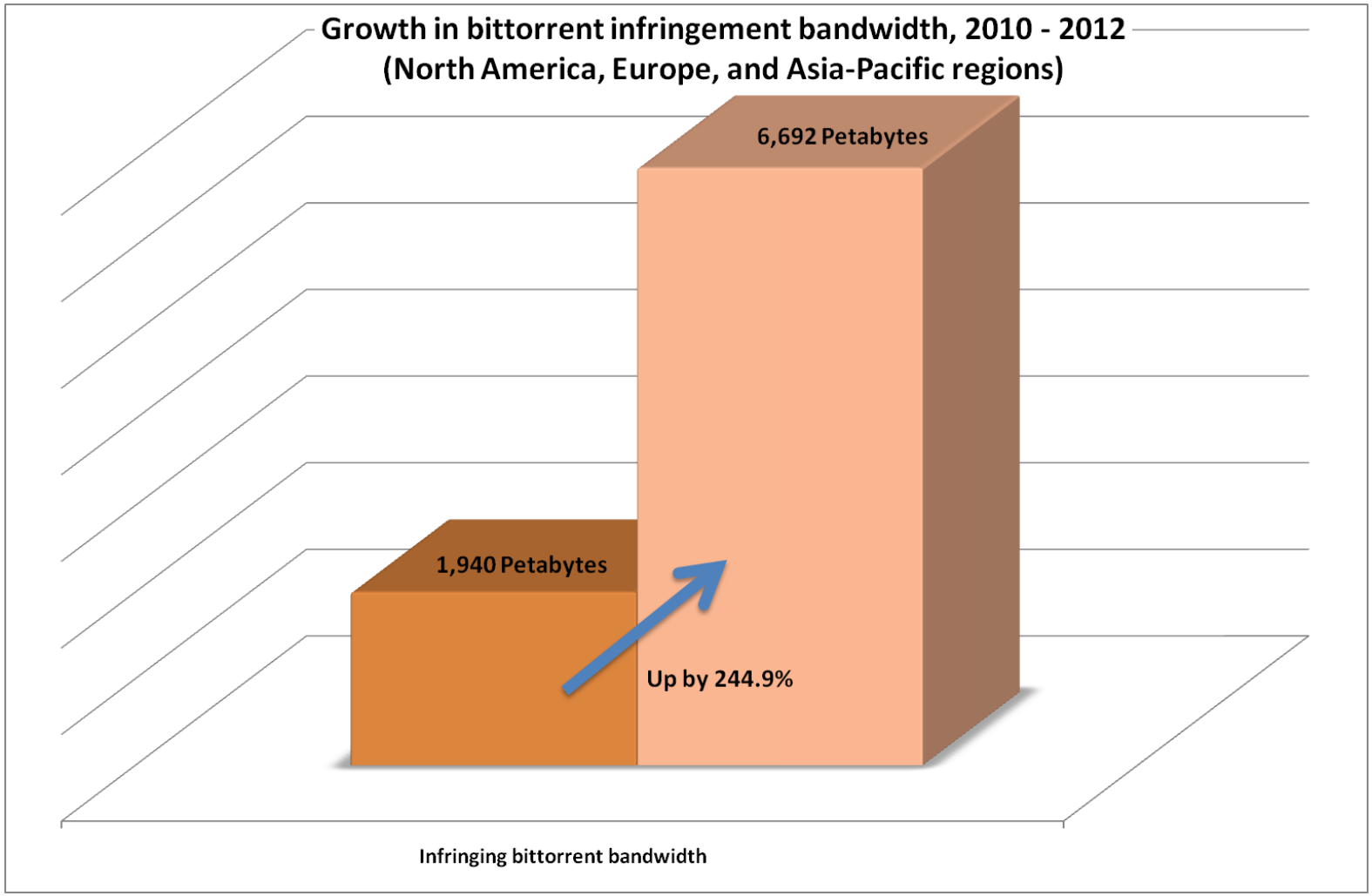
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Main findings: BitTorrent



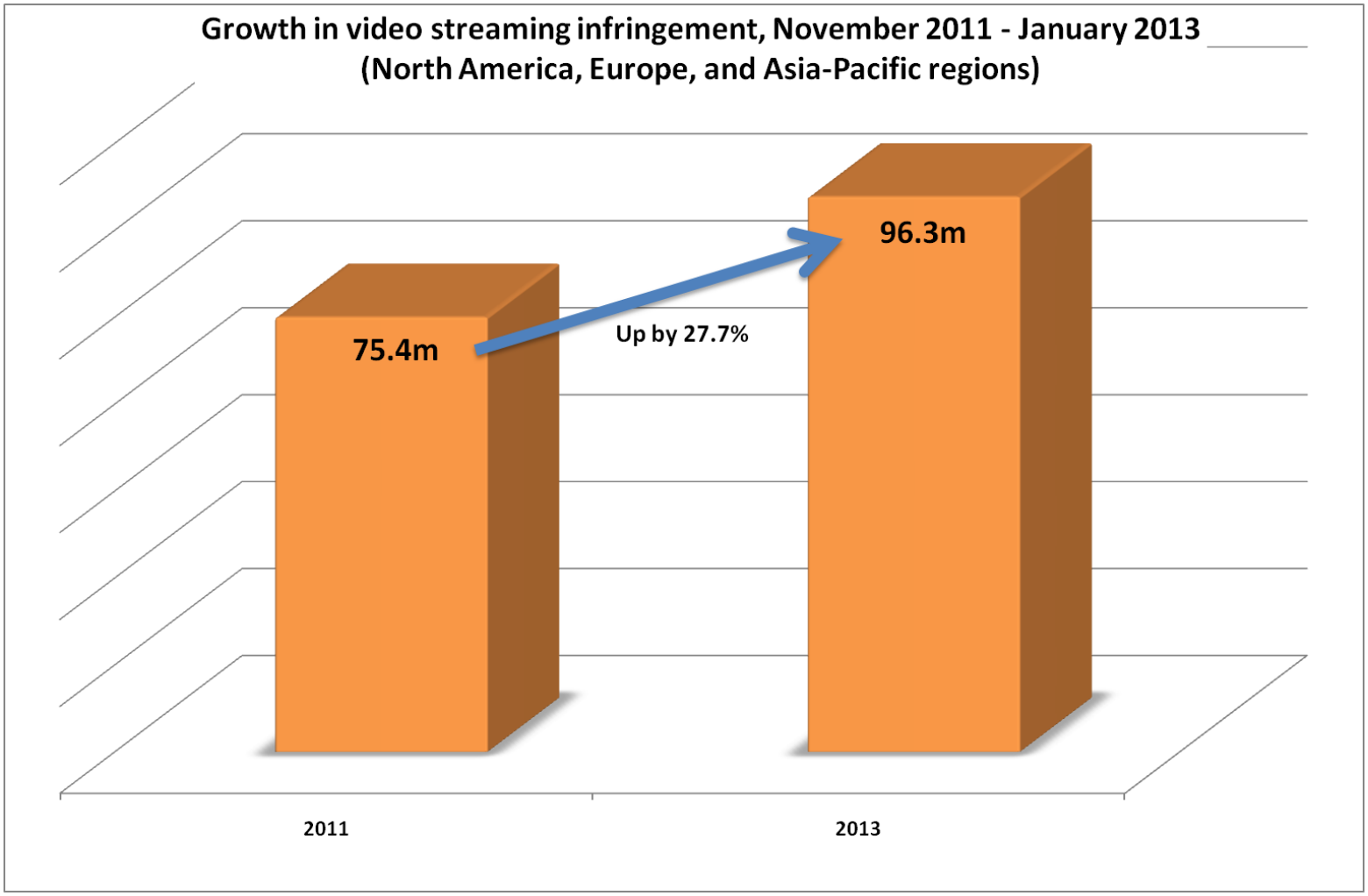
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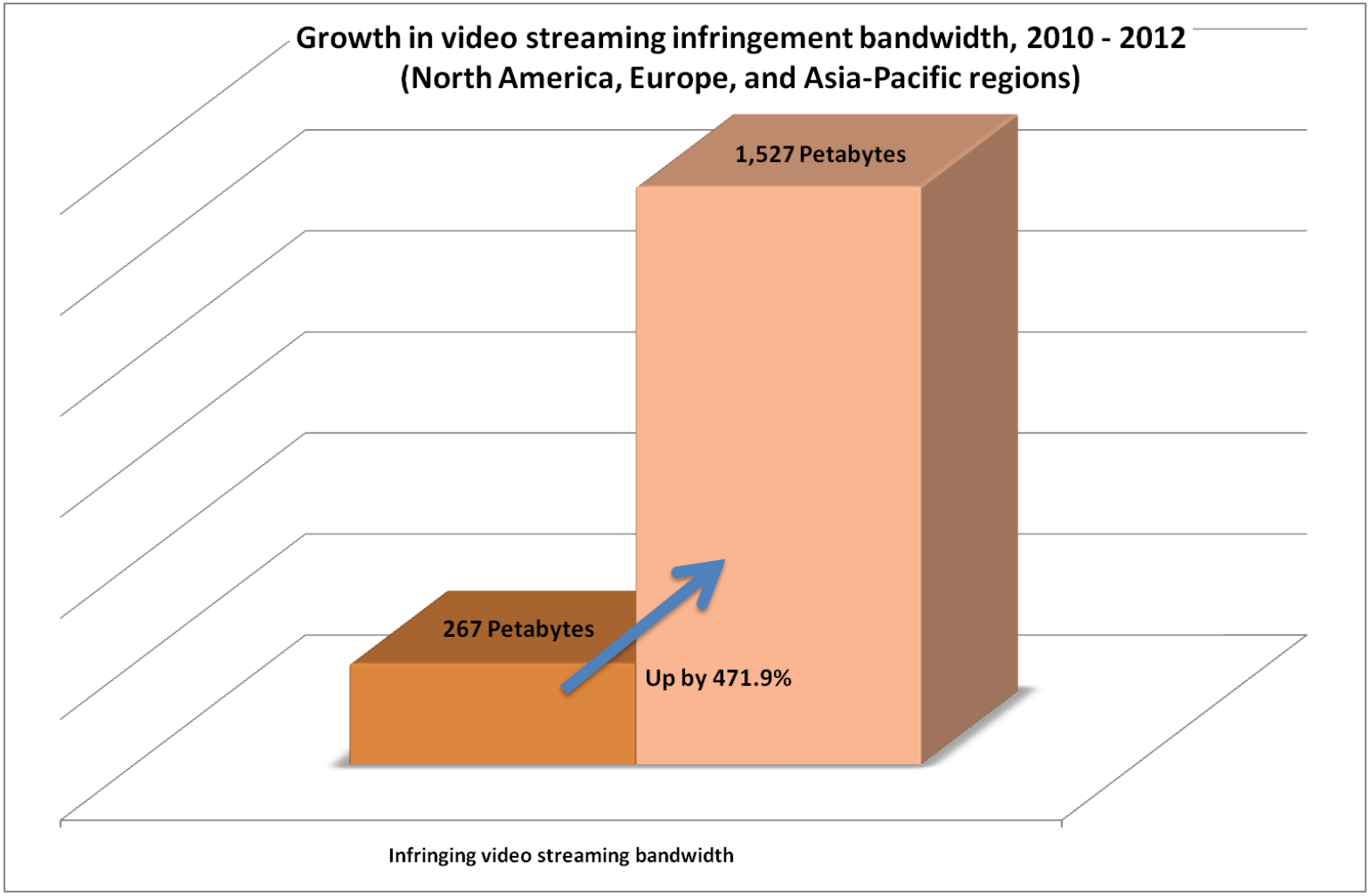
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Main findings: Video streaming



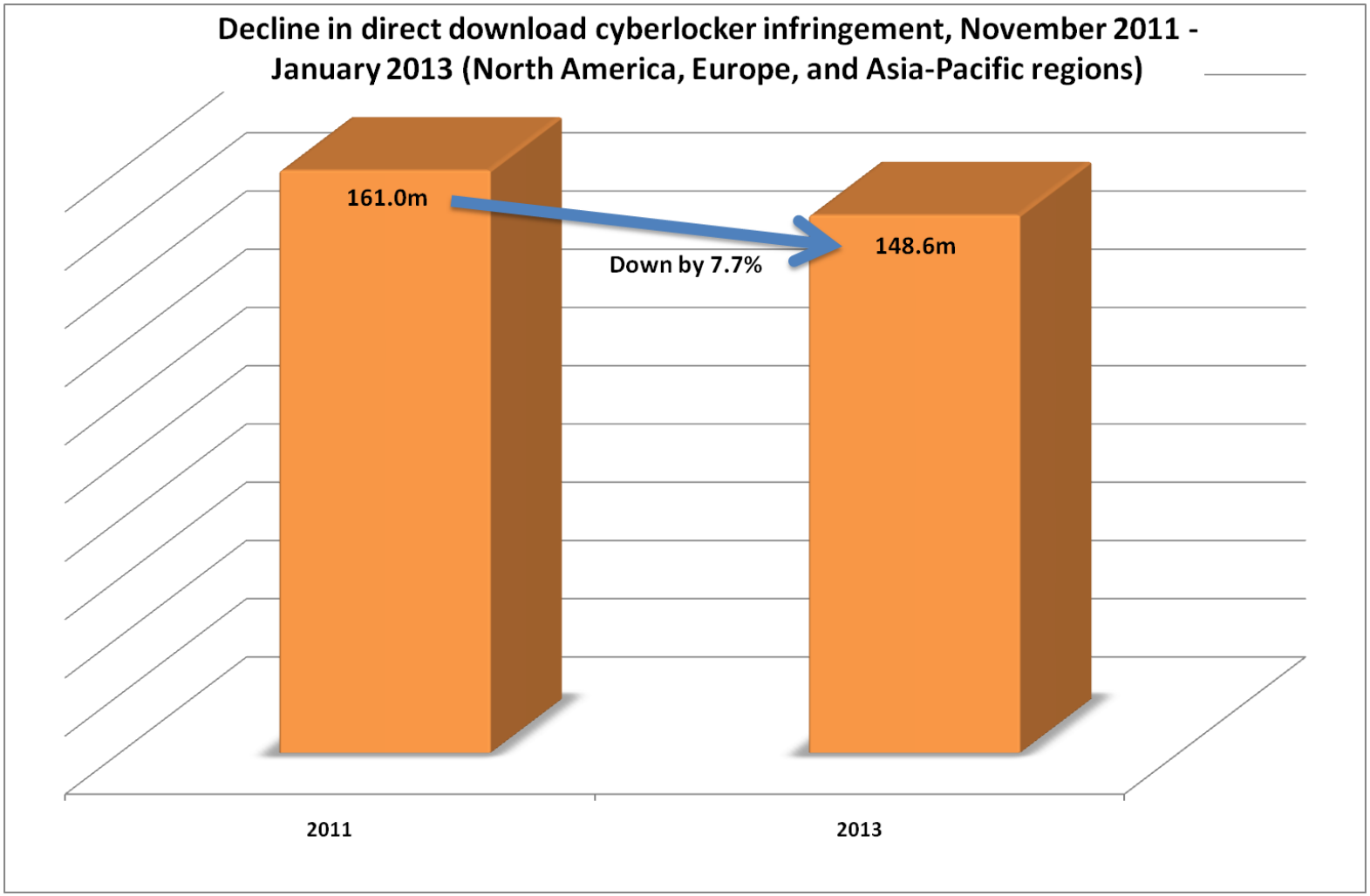
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Main findings: Video streaming



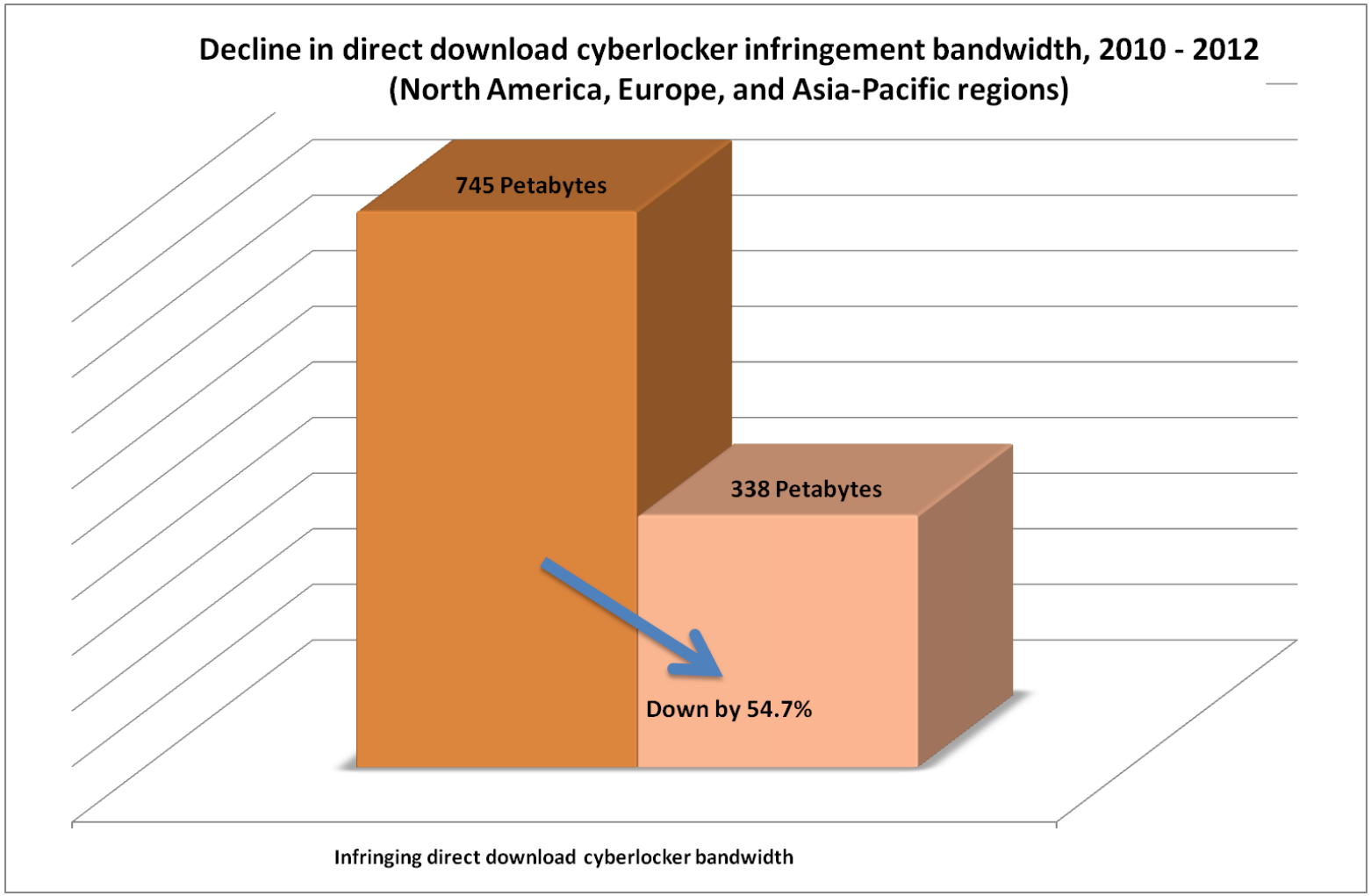
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Main findings: Direct download cyberlockers



Sizing the piracy universe

Main findings: Direct download cyberlockers



Sizing the piracy universe

Sources of data

- **NetNames**' own knowledge and expertise of piracy ecosystems
  - Continually updated database of sites offering infringing content
  - Research to determine levels of infringement and non-infringement in each ecosystem

- Web site visitor data from **comScore**
  - *Unduplicated* data – does not double-count users

- Bandwidth consumption data from:
  - **Sandvine** (bandwidth use across regions)
  - **Cisco** (bandwidth growth worldwide and across regions)

Sizing the piracy universe

Three stage process: infringing internet users

Determine unique, unduplicated visitors to piracy sites / client users

i. NetNames' knowledge of venues, portals, clients

ii. comScore data – worldwide and regional

Determine levels of infringement in each piracy ecosystem

NetNames' own research methodologies

Calculate *infringing* visitors / client users

Combine visitor data with data on infringing use

Sizing the piracy universe

Case study: BitTorrent – infringing users

- **January 2013**
  - 182 bittorrent sites qualified for inclusion
    - Sites focused on offering bittorrent content, the majority of which was infringing
    - Each site had more than 50,000 unique worldwide visitors

  - Total aggregate users: 555.0m
  - **Total unduplicated users: 212.8m (+26.2% compared to Nov 2011)**

Sizing the piracy universe

Three stage process: infringing internet users

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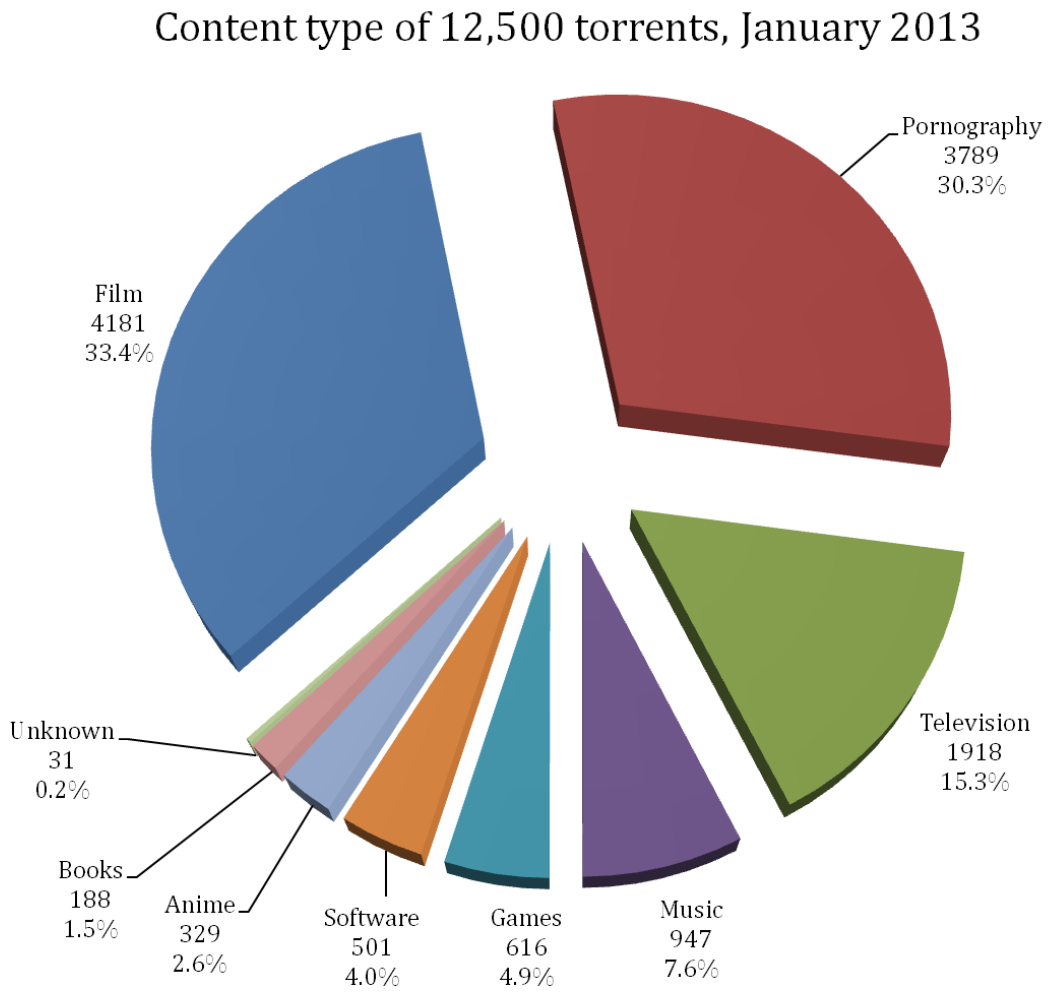
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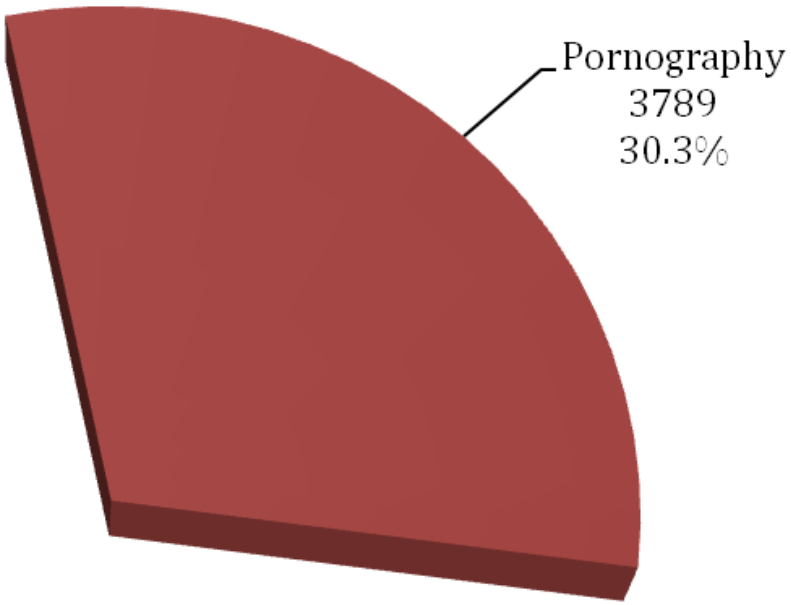
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Case study: BitTorrent – Content Analysis



Sizing the piracy universe

That's a lot of pornography



- Any mention of infringing use does ***not*** include infringing use of pornography
- Any mention of non-infringing use includes consumption of infringing pornography

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Case study: BitTorrent – infringing users

- Definition of an infringing user:

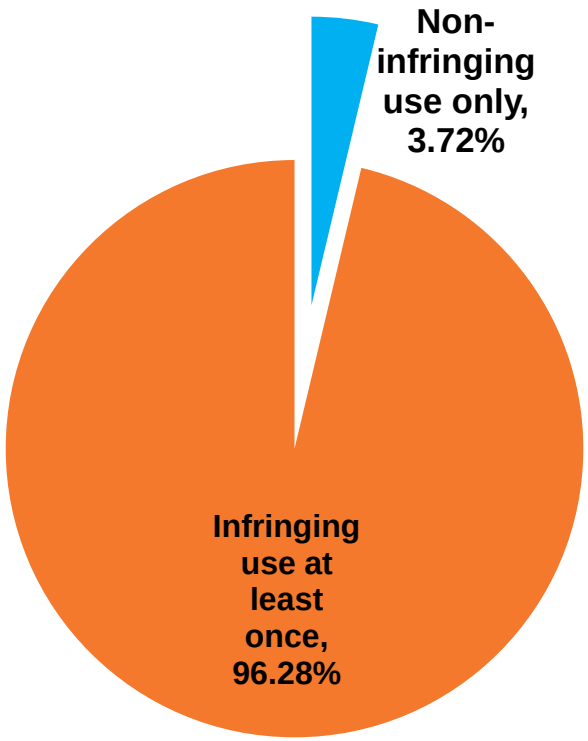
  Infringing user (n): **a user of the internet who obtains infringing content at least once during a given month**

- Therefore: we must rule out all visitors who *only* download non-infringing content
- Probability theory used to calculate likelihood of a person *only* accessing non-infringing content
  - Based on data for proportion of non-infringing content on bittorrent (30.33%)
  - Average number of visits to each bittorrent site in January 2013 (3.68 per user)
  - $p = n \wedge v$ $p = 0.3033 \wedge 3.68$ $p = 0.0372$

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Case study: BitTorrent – infringing users

- During January 2013:
  - 3.72% of visitors to bittorrent portals *only* accessed non-infringing content.
  - 96.28% of visitors to bittorrent portals accessed infringing content *at least* once

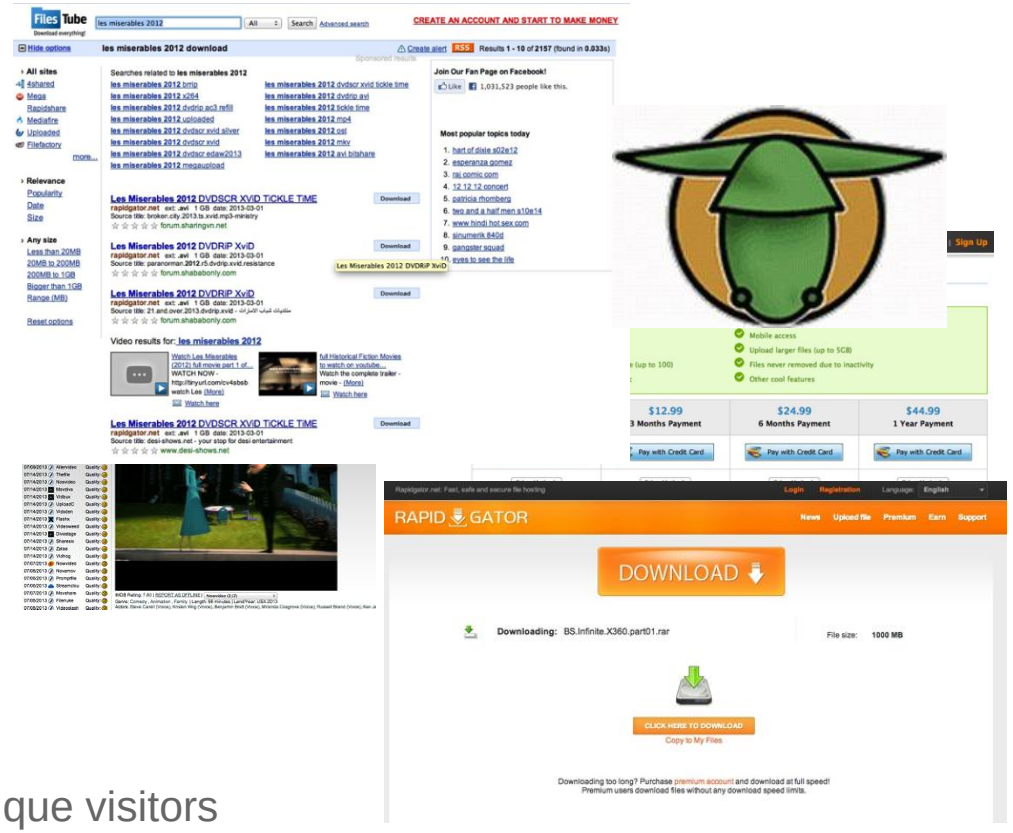


- **Total unduplicated users: 212.8m**
- **Total unduplicated users accessing infringing content: 204.9m**

Sizing the piracy universe

Piracy ecosystems

- Other piracy ecosystems:
  - Video streaming
  - Direct download cyberlockers
  - Other file sharing networks



- Same methodology as for bittorrent:
  - Select sites with at least 50,000 unique visitors
  - Unduplicated visitor data
  - Assess amount of infringing content within that ecosystem
  - Use probability theory to remove non-infringing users

Sizing the piracy universe

Three stage process: determining infringing bandwidth

Determine bandwidth used by piracy ecosystems

i. NetNames' knowledge of ecosystems

ii. Sandvine data for three major regions (NA / EU / AP)

Determine levels of infringement in each piracy ecosystem

NetNames' own research methodologies

Calculate *infringing* bandwidth use

Combine bandwidth data with proportion of ecosystem use that is infringing

Sizing the piracy universe

Three stage process: determining infringing bandwidth

Category	Infringing bandwidth percent, 2012 (Sandvine / NetNames)		
	North America	Europe	Asia-Pacific
BitTorrent	8.70%	15.10%	25.90%
Video streaming	1.80%	2.87%	6.55%
Cyberlockers	0.26%	1.27%	1.08%
eDonkey	0.28%	7.17%	0.35%
Gnutella	0.01%	0.01%	0.01%
Usenet	0.30%	0.34%	0.07%
Total	**11.35%**	**26.76%**	**34.96%**

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Three stage process: determining infringing bandwidth

	Change in infringing bandwidth use, 2010-2012					
	North America		Europe		Asia-Pacific	
	Absolute	Per user	Absolute	Per user	Absolute	Per user
Total	**+ 48.2%**	**+ 44.9%**	**+ 165.4%**	**+ 143.7%**	**+ 239.3%**	**+ 193.8%**

Sizing the piracy universe

Summary

- The practise of infringement is **tenacious** and **persistent**.

- Content availability on piracy ecosystems is responsible for actions that drive:
  - the popularity of hundreds of web sites
  - the actions of hundreds of millions of internet users worldwide
  - the consumption of thousands of petabytes of internet bandwidth.

- The number of internet users who regularly obtain infringing content and the amount of bandwidth consumed by infringing uses of content all increased significantly between 2010 and 2013.

Sizing the piracy universe

Public report

- http://bit.ly/piracy-universe

  or

- http://netnames.com/sizing_the_piracy_universe
  - Executive summary
  - Full 100 page report
- **david.price@netnames.com**



