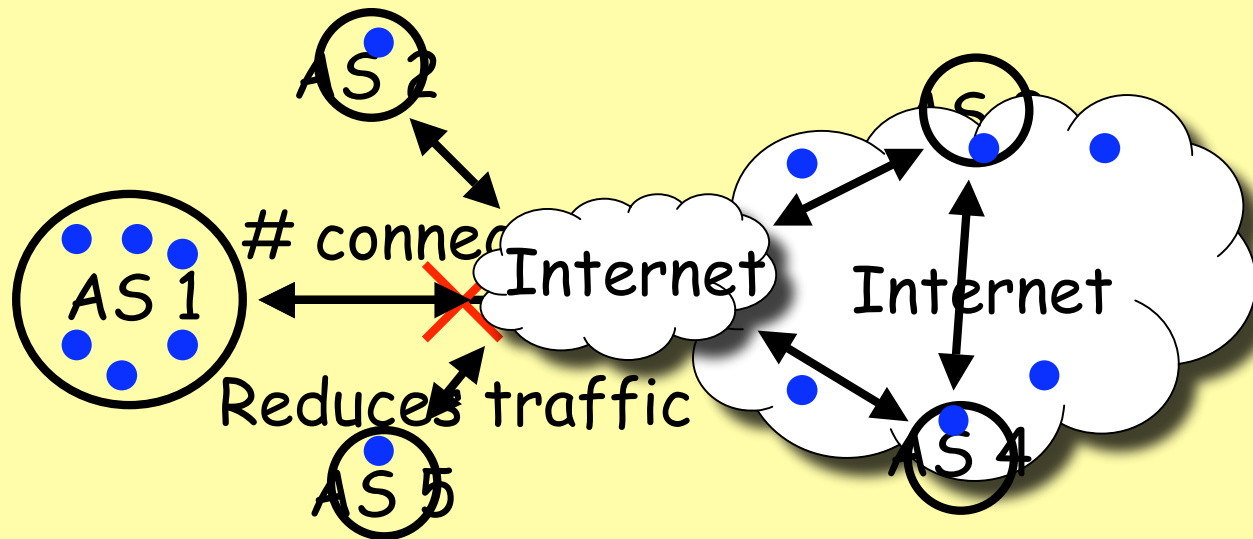


Reducing BitTorrent Traffic at the Internet Scale

Stevens Le Blond, Arnaud Legout, Walid Dabbous 1

Two open questions about BitTorrent locality



- 📁 How far can we push BitTorrent locality?
- 📁 How much inter-AS traffic reduction?
- 📁 How much performance penalty?
- 📄 How much savings at the Internet scale?
- 📁 Do we gain significantly for big torrents?
- 📁 Do small torrents (with no locality gain) dominate?

Roadmap

- ❑ **Methodology**

- ❑ *How far can we push BitTorrent locality?*

- ❑ *How much savings at the Internet Scale?*

Methodology

Experimental setup

- ❑ Real BitTorrent clients
 - Partition Merging (PM)
- ❑ Tracker
 - assigns clients to virtual ASes and control number of inter-AS connections
- ❑ Up to 10,000 peers
- ❑ 20kB/s upload, 100MB file, 256kB pieces

Methodology

Parameters

- Homogeneous torrents
- Heterogeneous torrents
 - Real AS distribution

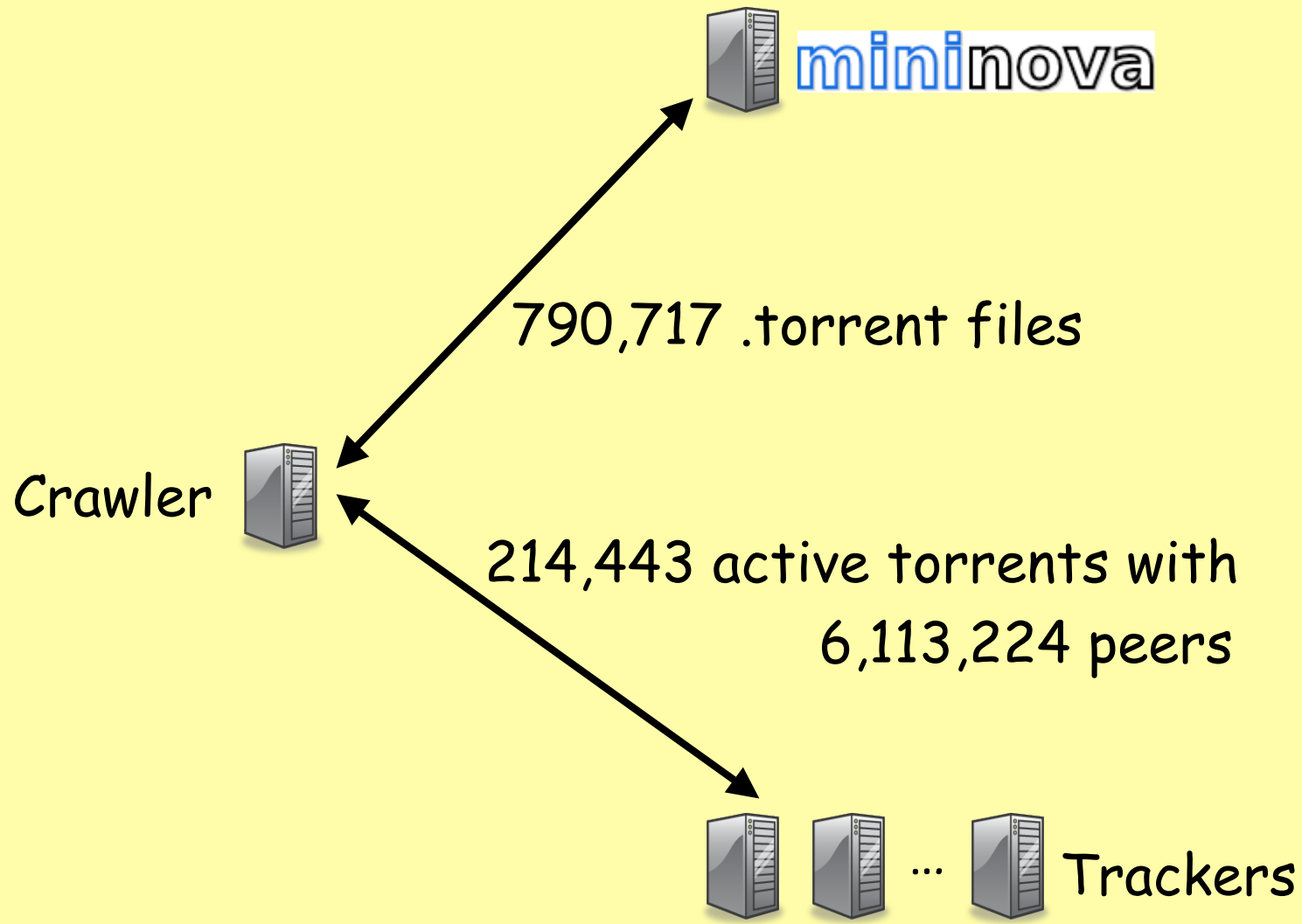
Metrics

- Overhead
- Slowdown
- 95-th percentile

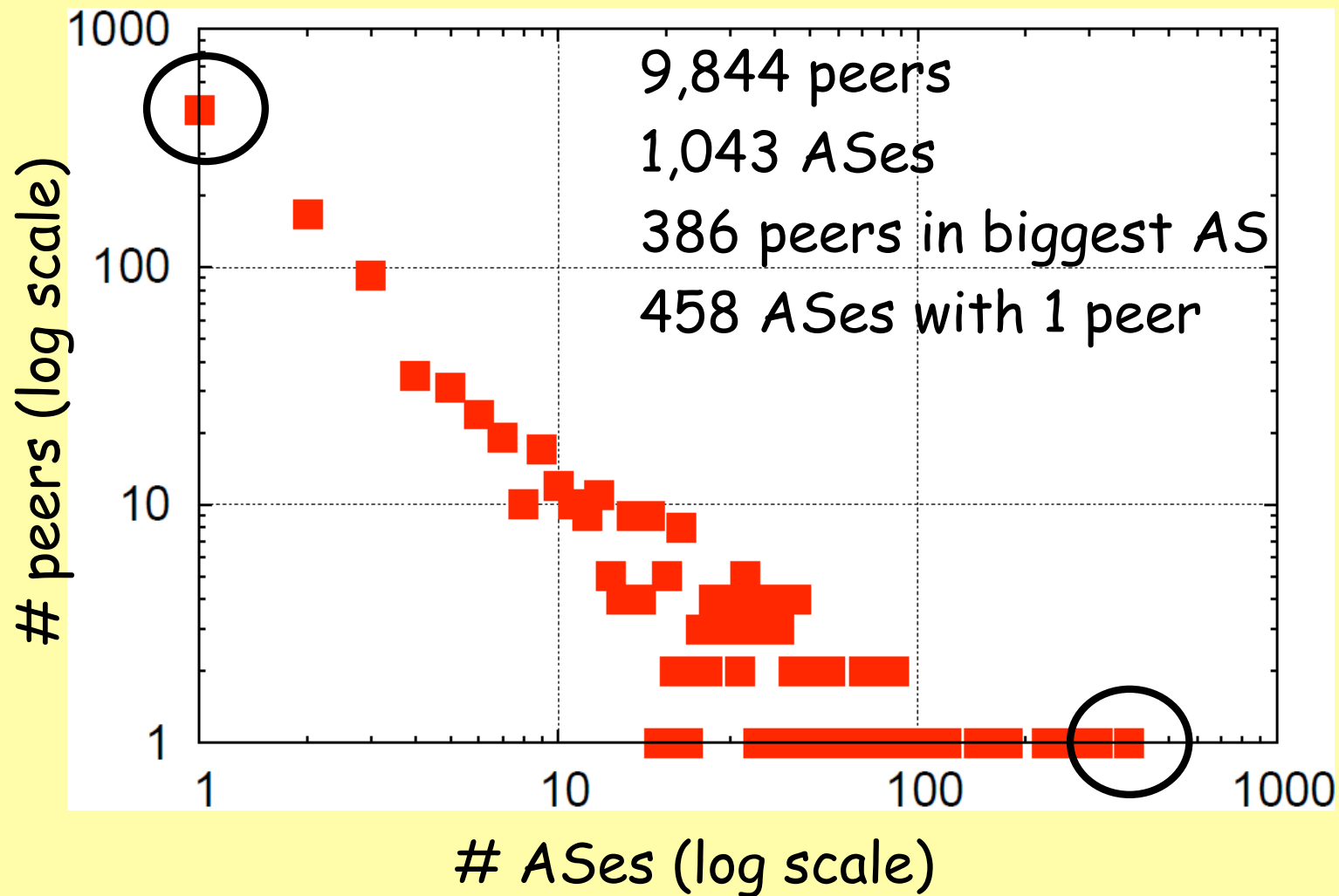
Roadmap

- Methodology*
- How far can we push BitTorrent locality?**
- How much savings at the Internet scale?*

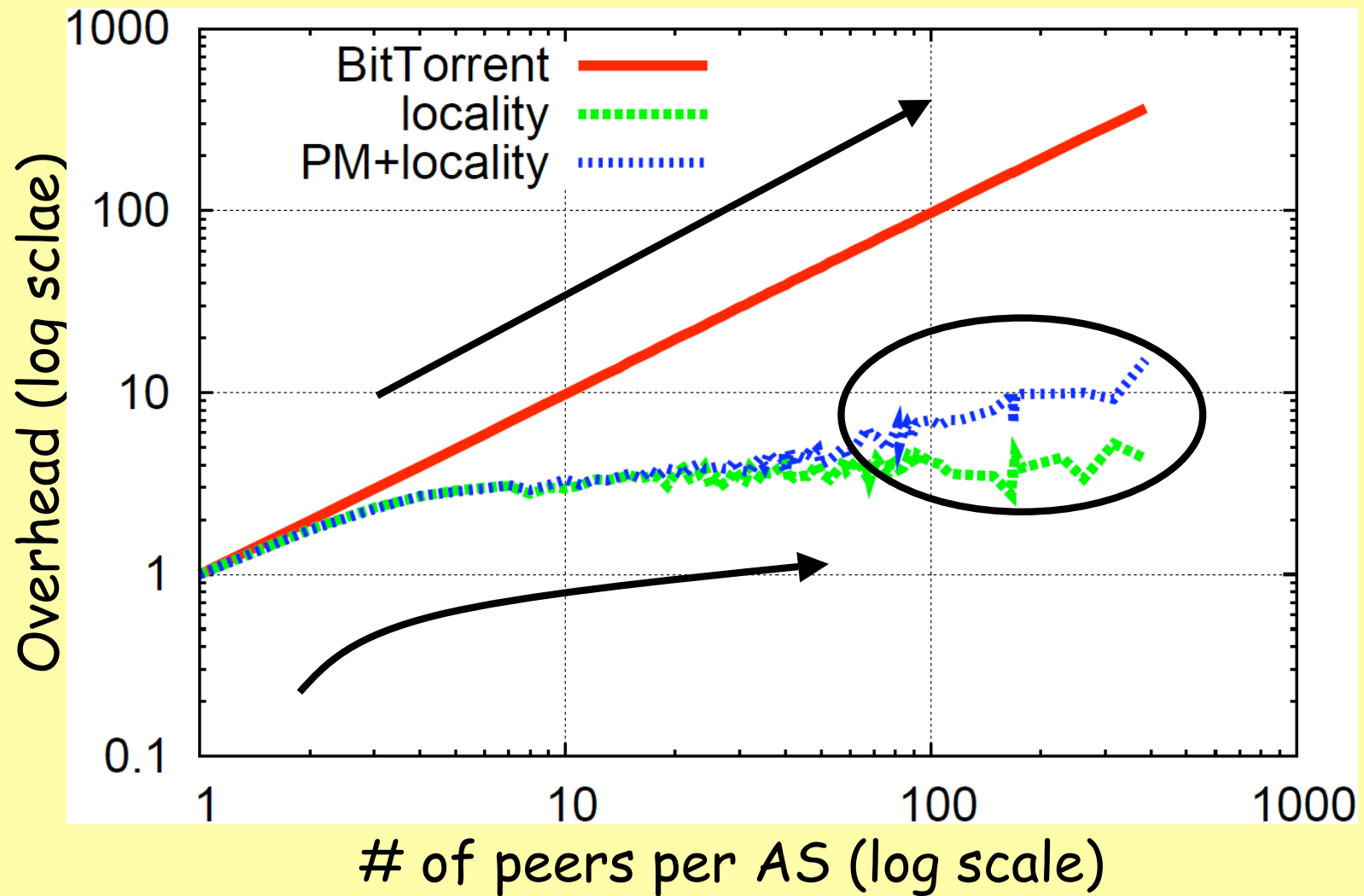
Real distribution of peers per AS



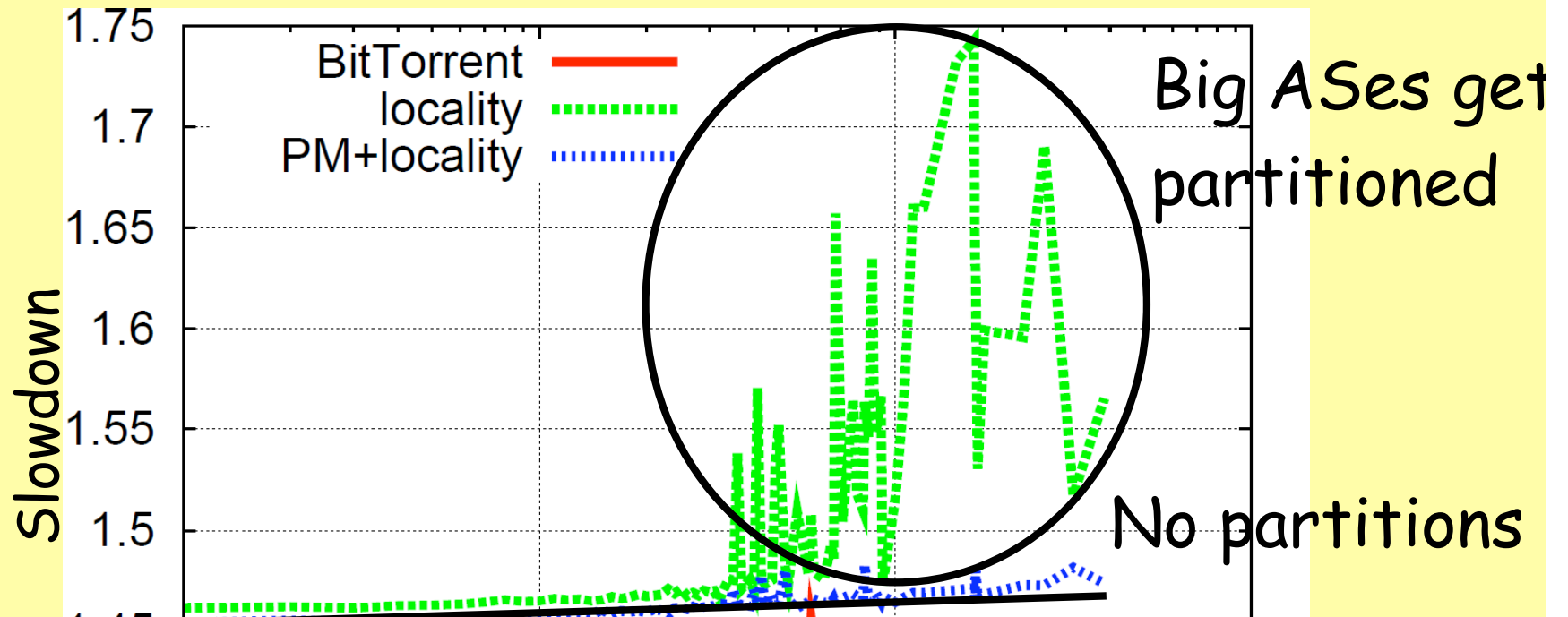
Distribution of peers in the reference torrent



Impact of real distributions of peers per AS on overhead



Impact of real distributions of peers per AS on slowdown



Orders of magnitude less overhead
without performance penalty

Roadmap

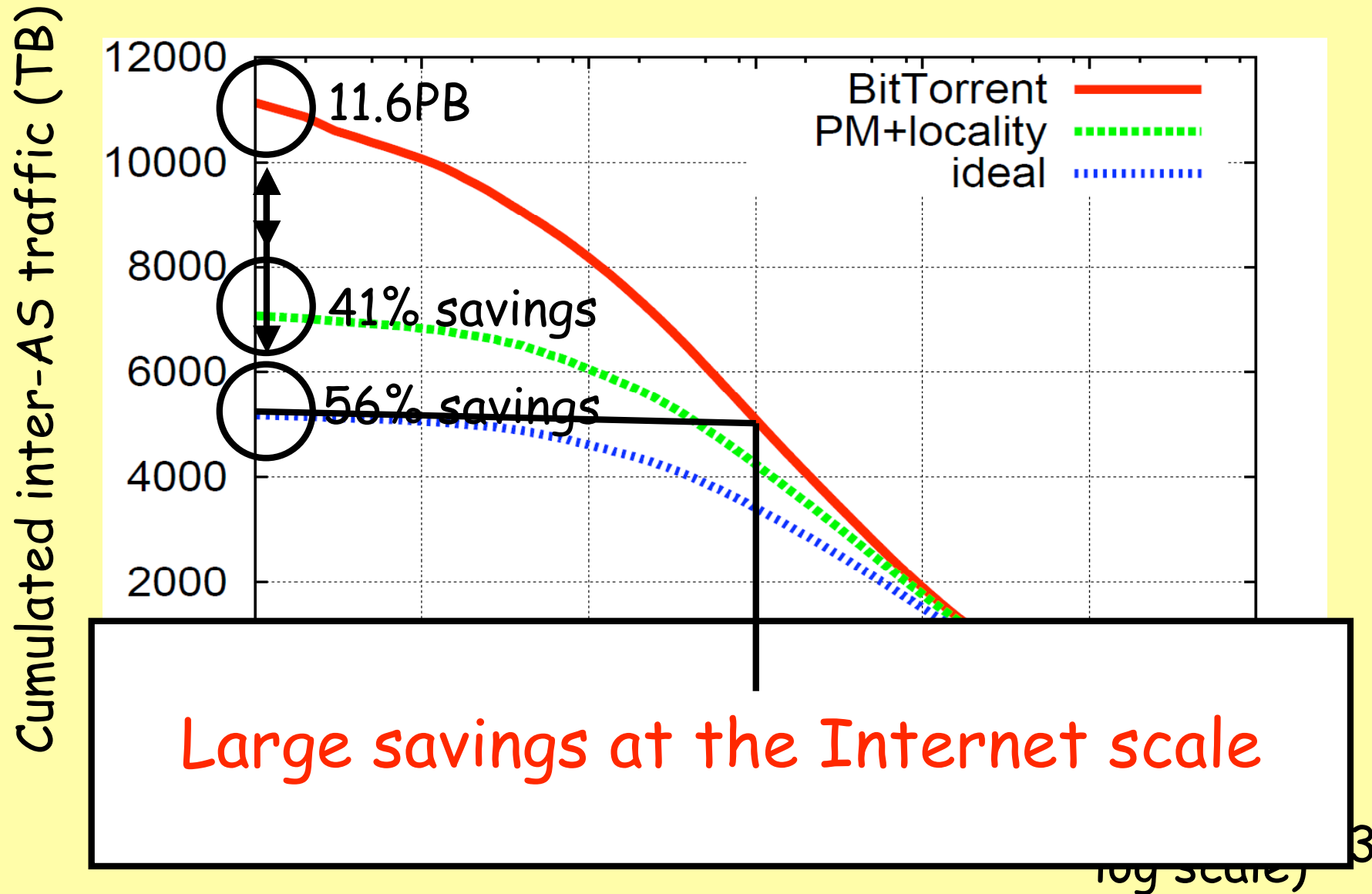
- Methodology
- How far can we push BitTorrent locality?
- How much savings at the Internet scale?

How to find overhead savings for all torrents?

- Experiment with multiple reference torrents
 - English-language Movie
 - Italian-language Movie
 - Games and small torrents
- Overhead **mainly** depends on # of peers per AS

- Compute overhead for all 214,443 torrents

Inter-AS traffic at the Internet scale



Take home messages

📁 Orders of magnitude less overhead for ISPs
without performance penalty for end-users

2) Large savings at the Internet scale, i.e.,
41% savings on 11.6 petabytes of inter-AS traffic