P2P PROXY/CACHE

Ivan Klimek

Computer Networks Laboratory

Technical University Košice

Slovakia

Internet is a very inefficient messy stockpile of redundant data.

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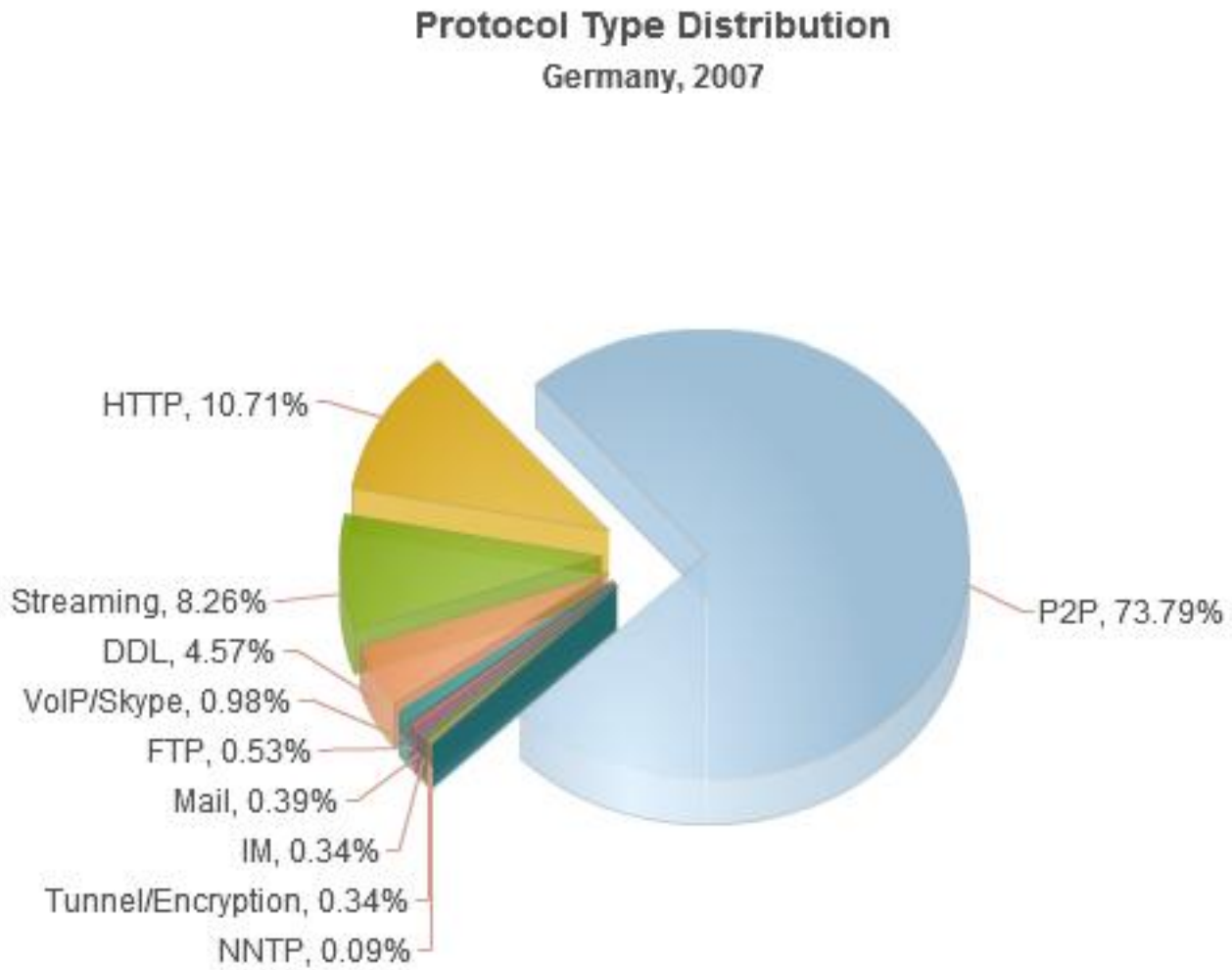
Proxy Cache



Source: www.ipoque.com

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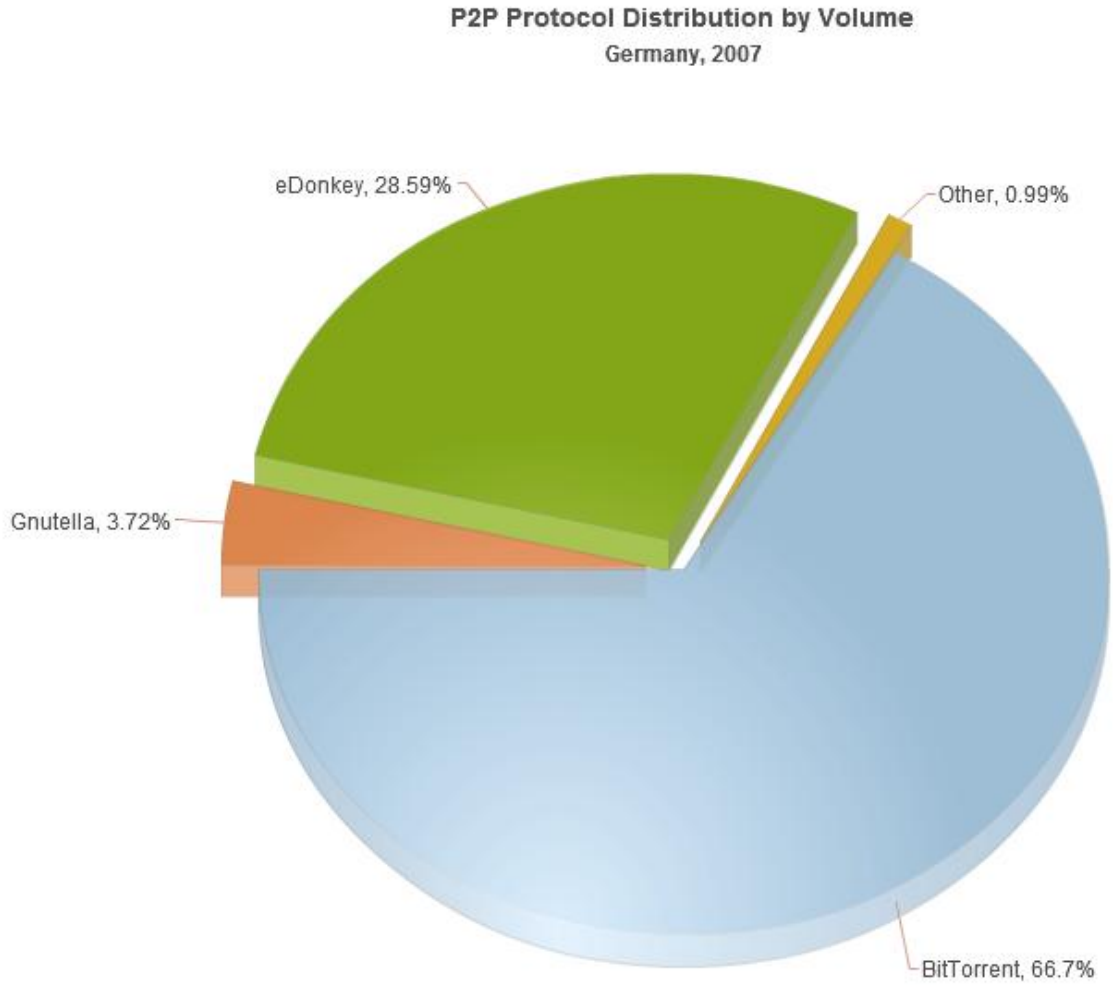
P4P

- Proactive network Provider Participation for P2P
- iTrackers coordinate peer downloads, route them to other local peers => save traffic
- Peers need to use special SW

- CAN WE DO IT BETTER ?

YES, WE CAN !

Proxy Cache



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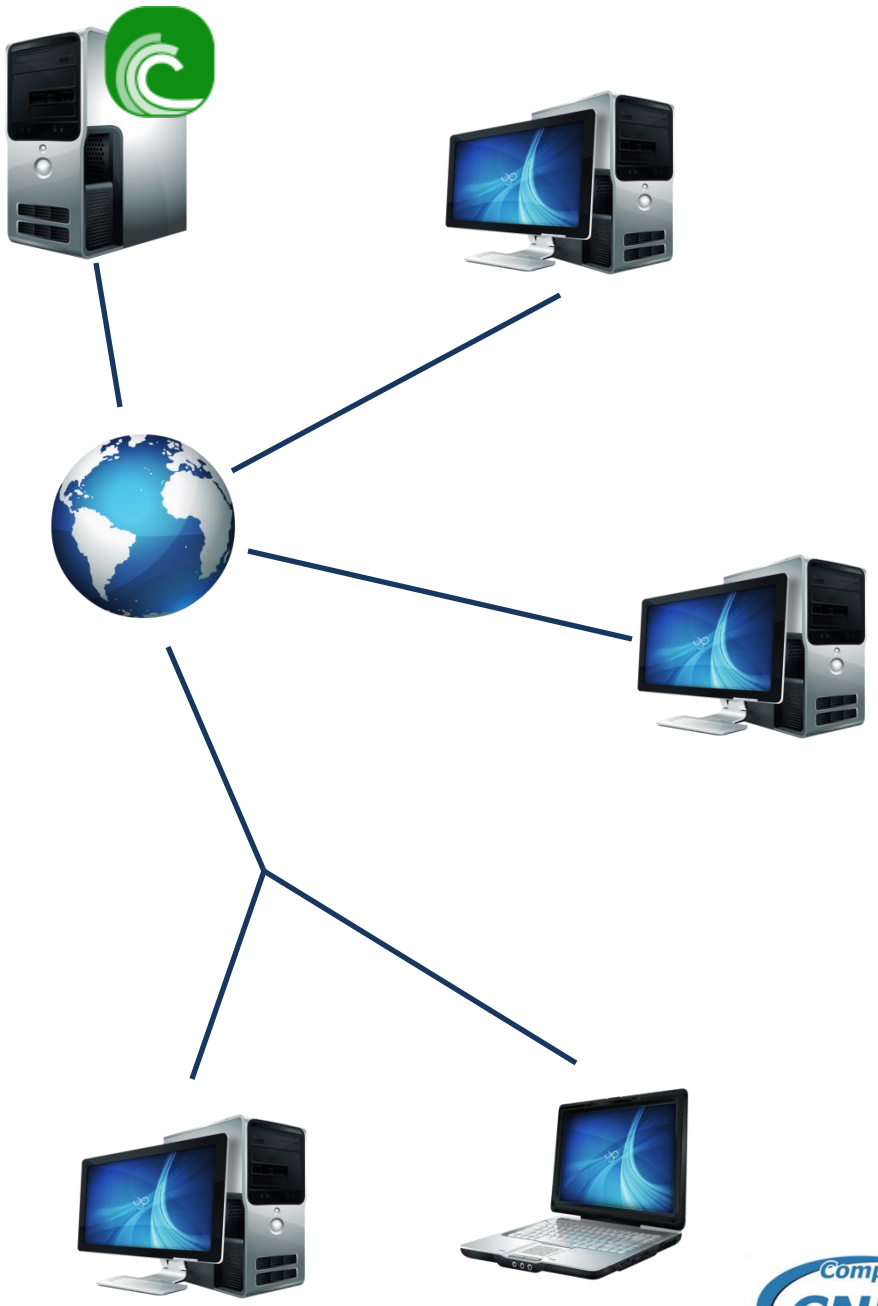
P2P
Proxy Cache



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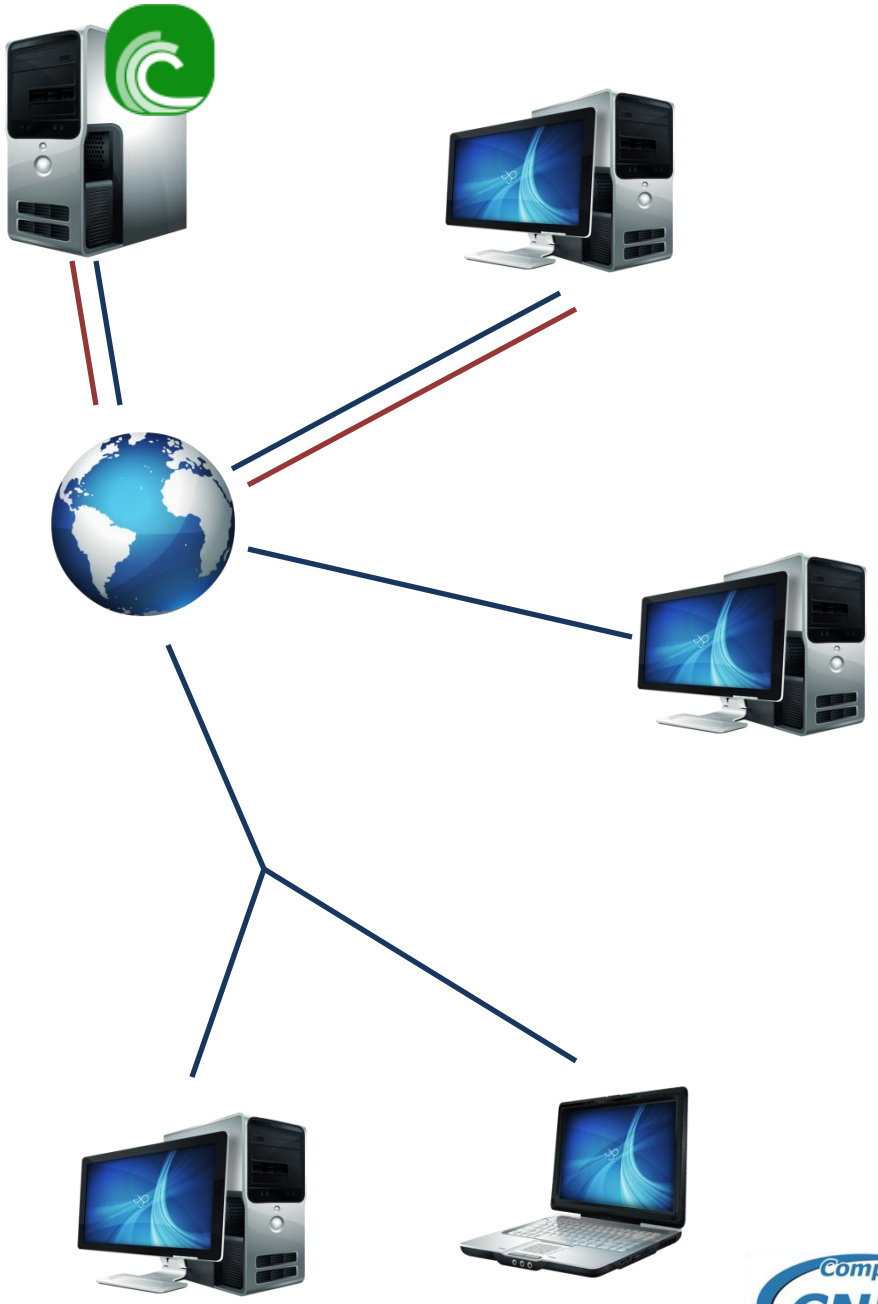
Proxy Cache




P2P
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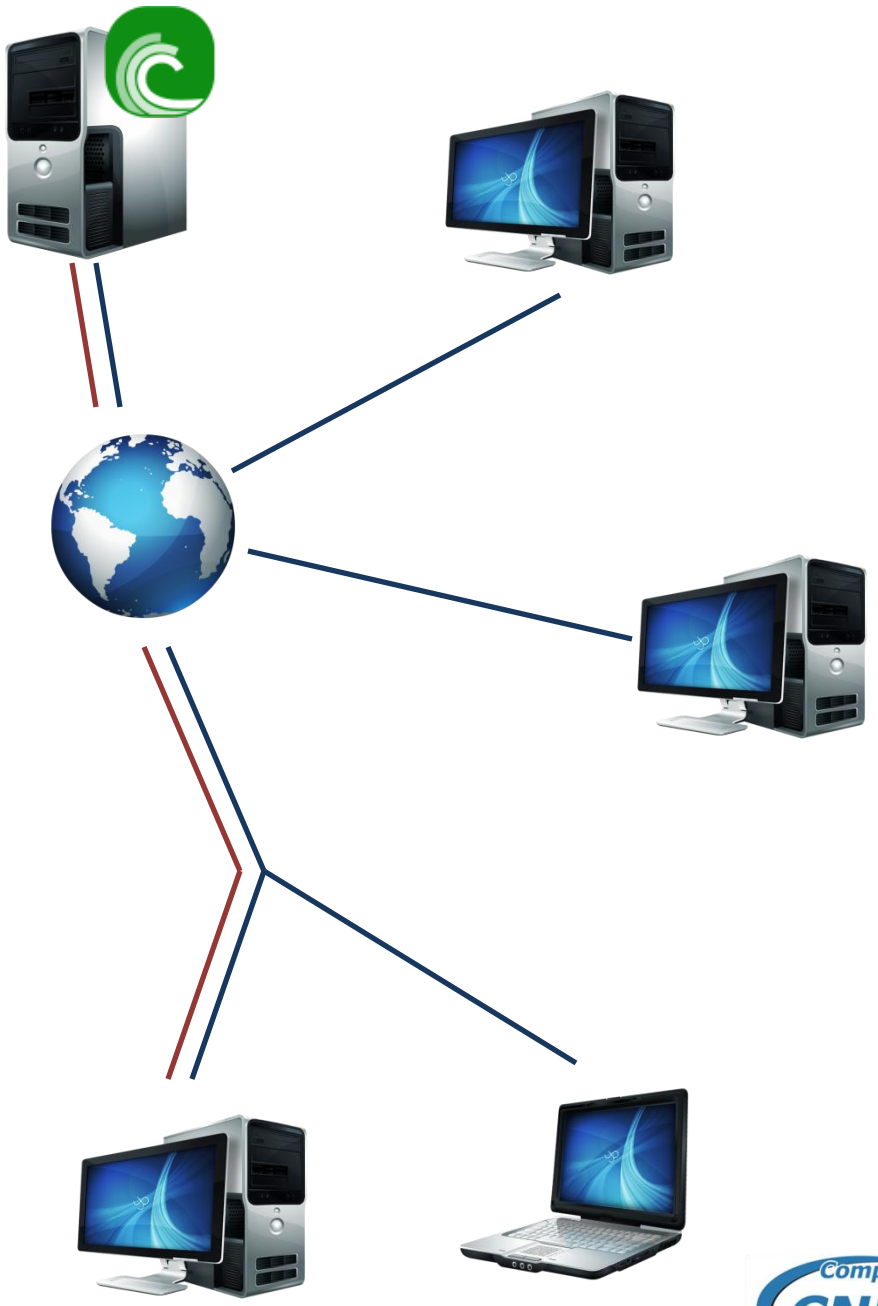

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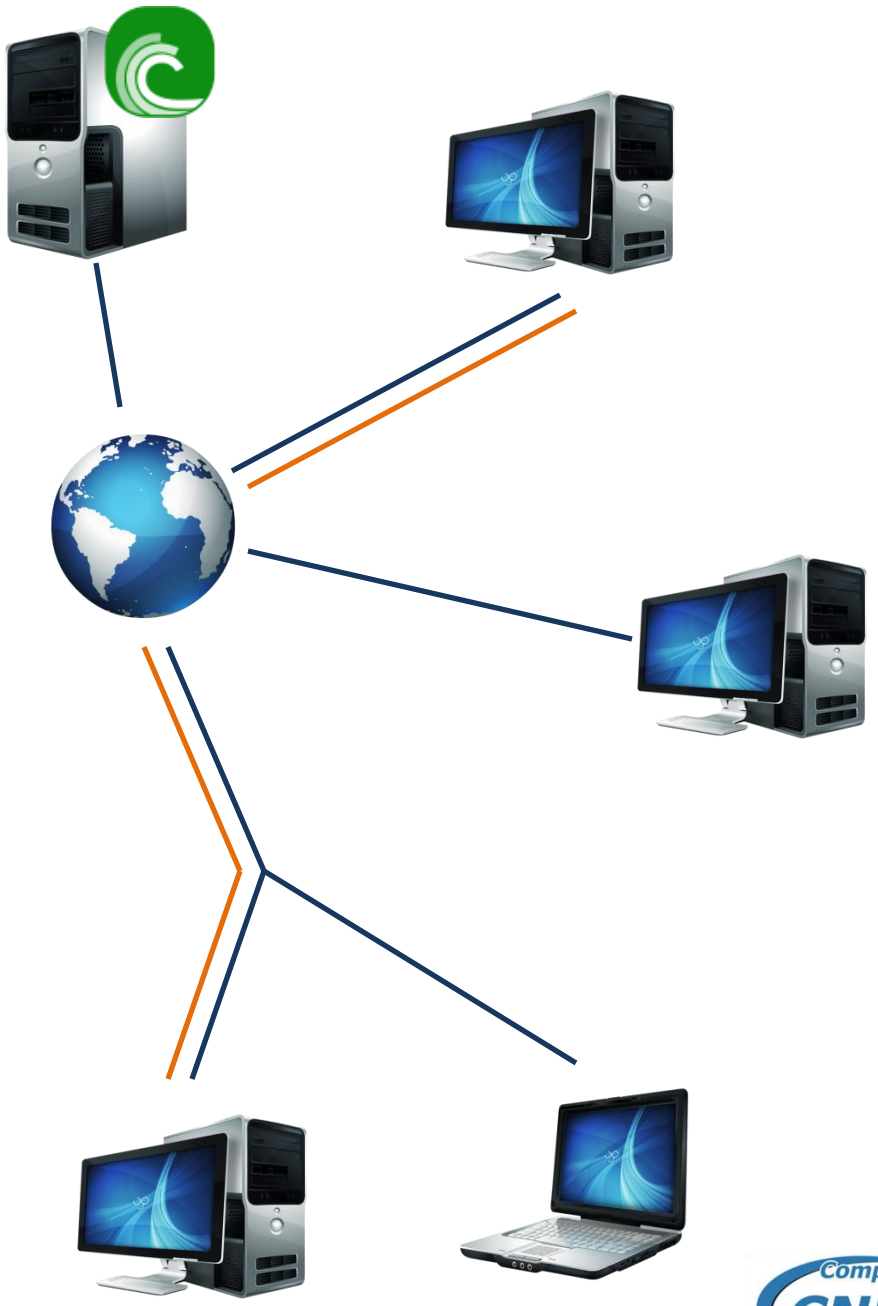
P2P
Proxy Cache



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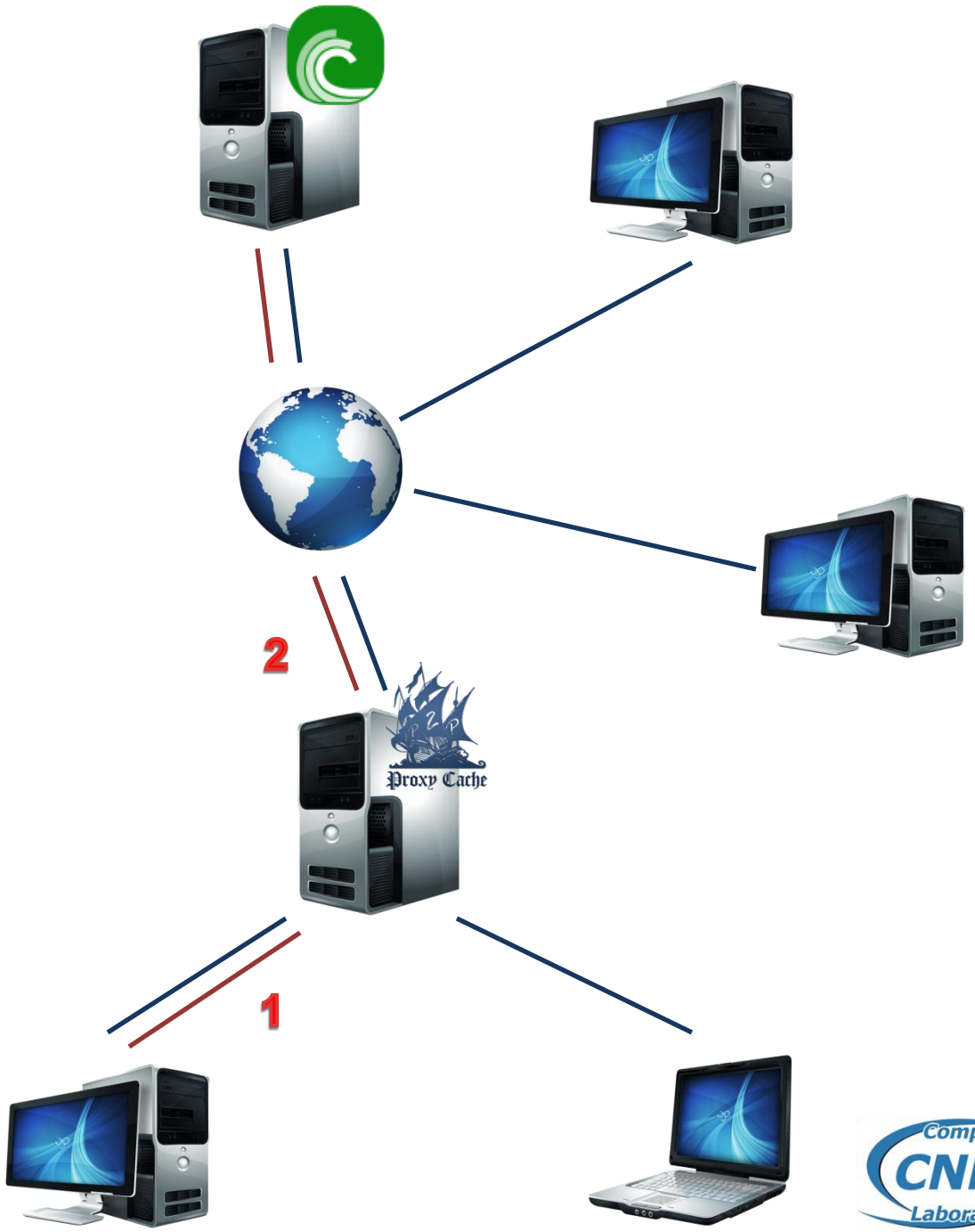
BitTorrent – other features

- Trackerless torrents
- PEX
- DHT
- Local peer discovery

Proxy Cache



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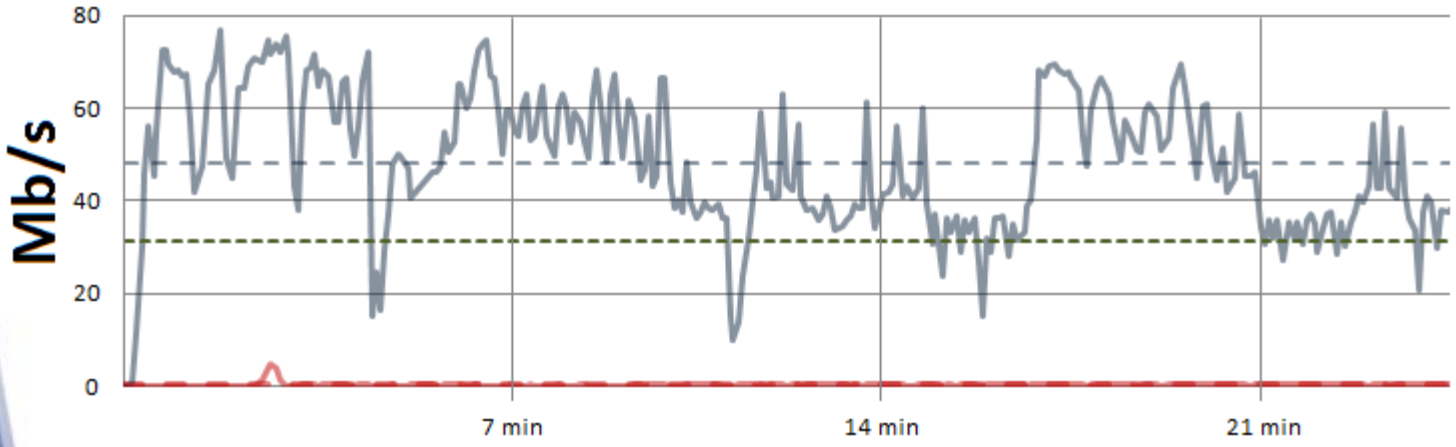
Proxy Cache vs uTorrent



Average	Upload [Peak]	Download [Peak]
Proxy Cache	0.25 [4.76] Mb/s	47.98 [76.84] Mb/s
uTorrent		31.2 Mb/s

- P/C Average Download Speed
- P/C Average Upload Speed
- P/C Download Speed
- P/C Upload Speed
- uTorrent Average Download Speed

Proxy Cache Downloader was 65% faster than uTorrent !!!

Quick summary

- Eliminates all P2P redundancy
- Completely transparent
- Maximizes the client download speeds
- Eliminates last mile uplink
- A known working concept
- No more blocking/shaping of P2P required

Performance analysis

- Download speeds
- Upload/seeding speeds
- Interceptor system load

- HW: QC 2.4Ghz, 4GB RAM, 250GB 7200rpm HDD

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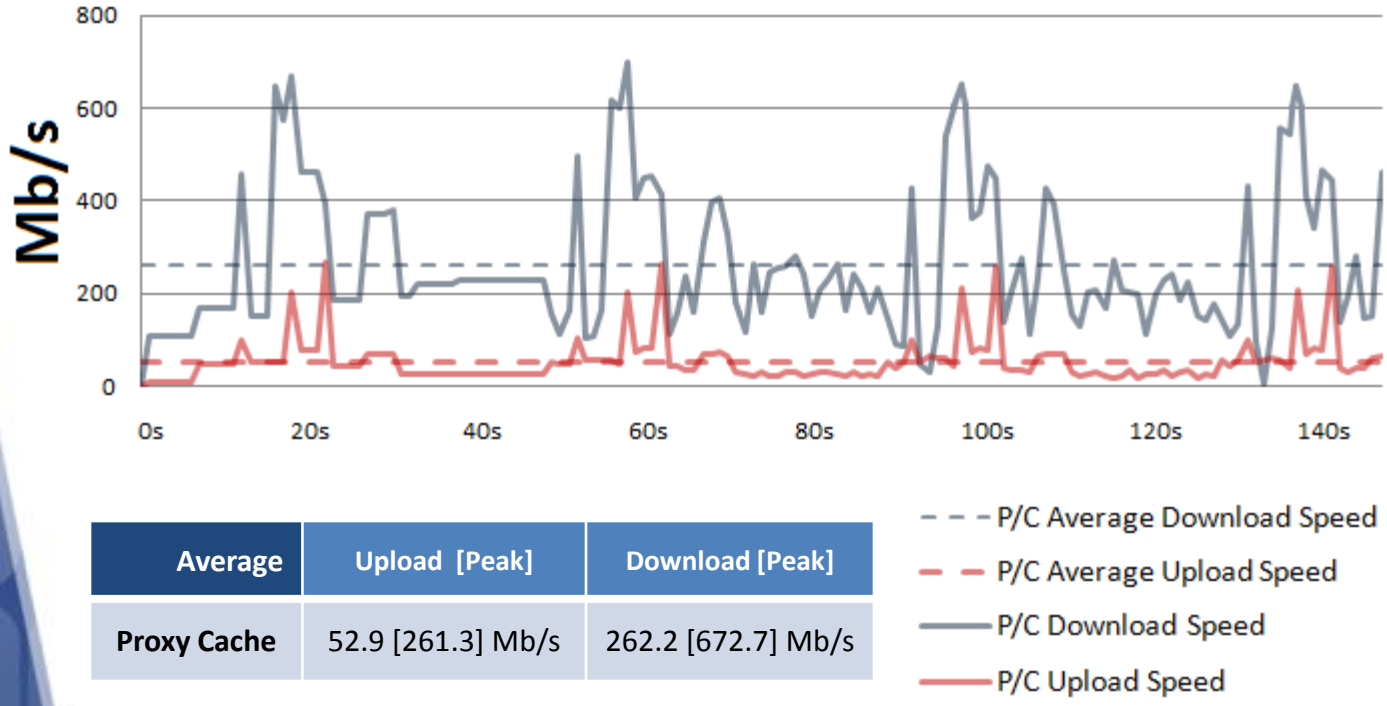
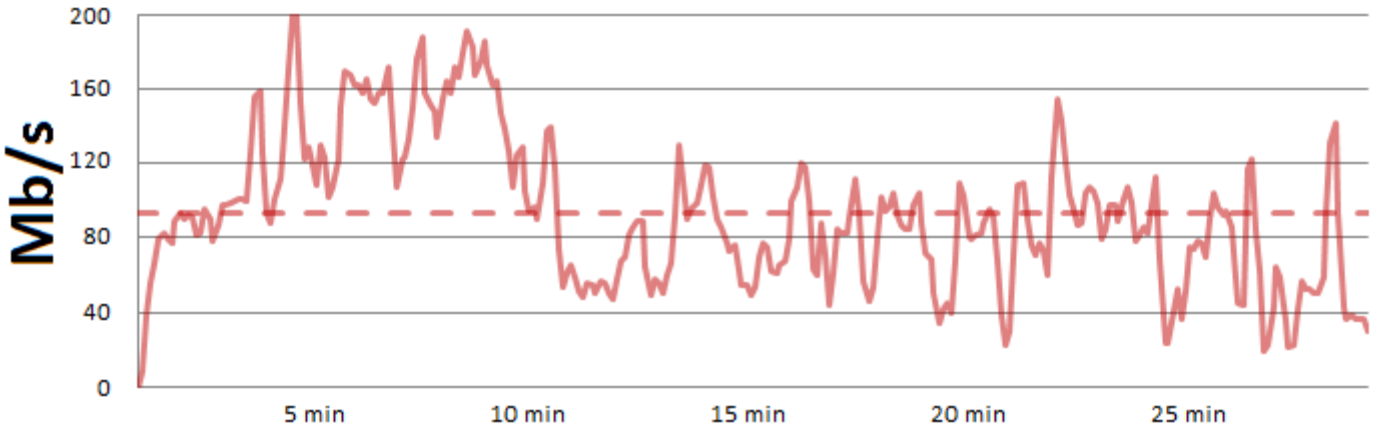
1 Gbit download experiment



Average	Upload [Peak]	Download [Peak]
Proxy Cache	52.9 [261.3] Mb/s	262.2 [672.7] Mb/s

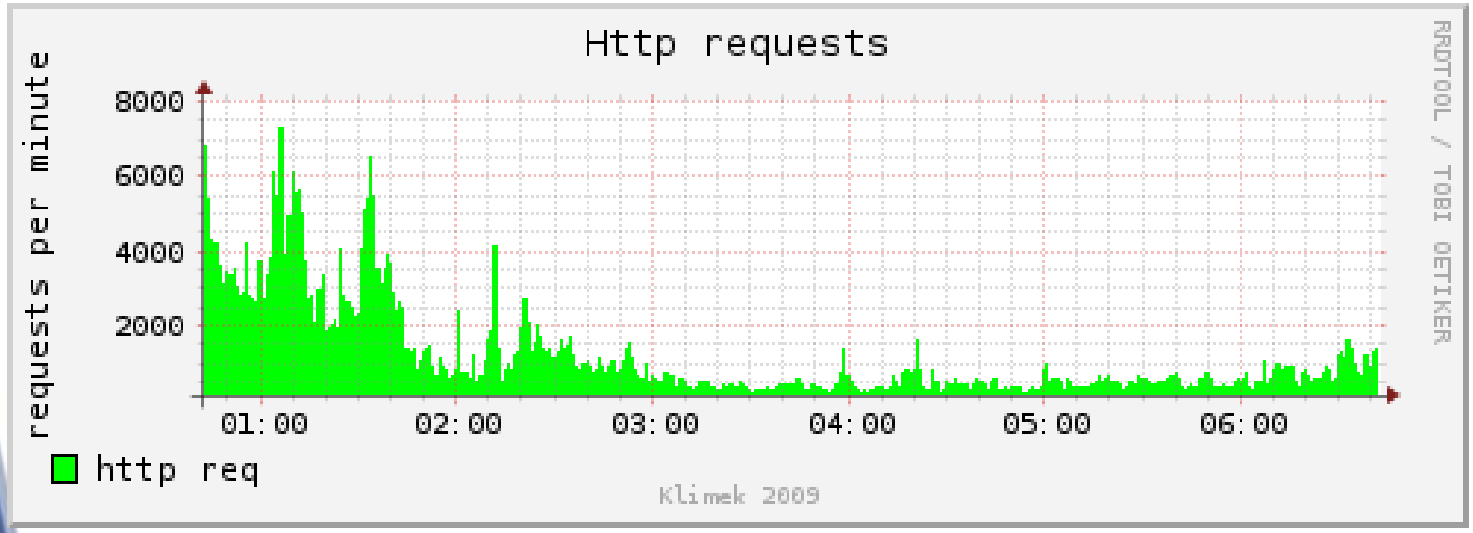
Seeding to local network



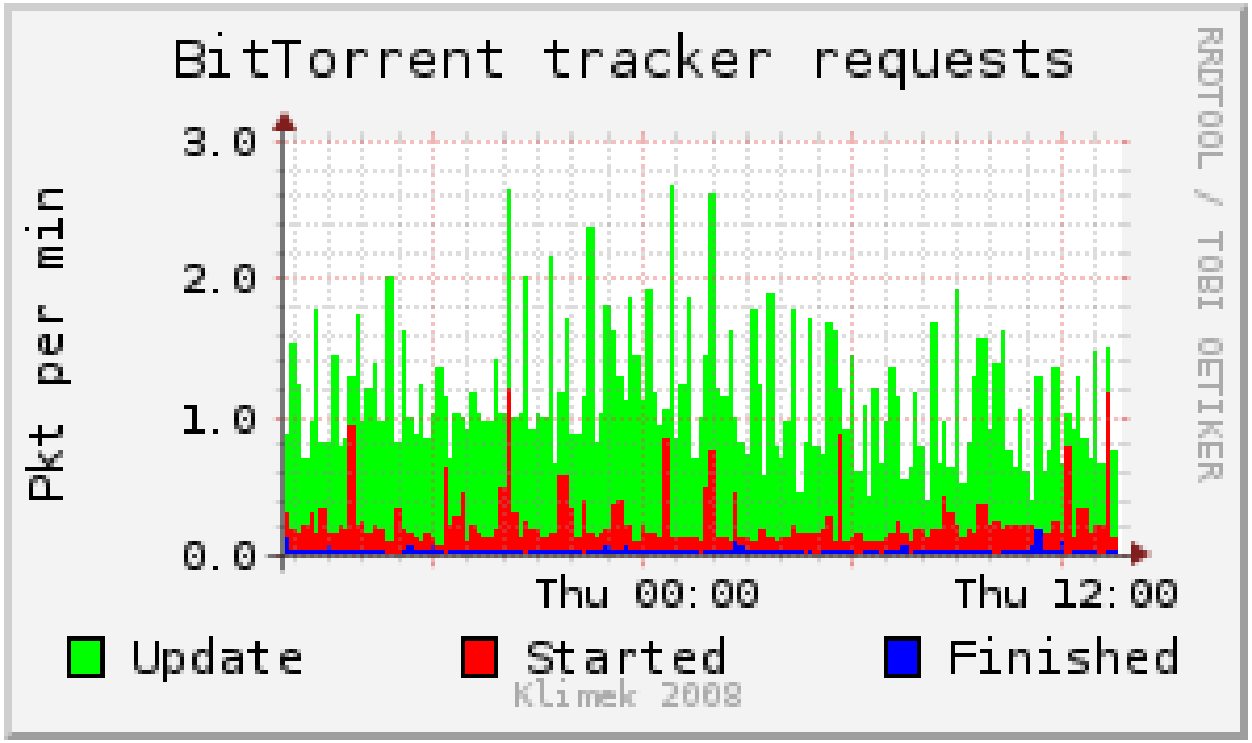
Average	Upload [Peak]
Proxy Cache	98.23 [201.6] Mb/s

15 active users, 31 active torrents each
=> 465 simultaneous torrent downloads

Interceptor



Interceptor



Test results summary

- P2P proxy/cache on a ordinary desktop PC:
  - Tens to hundreds of active users
  - Uplink up to 1Gbps (uplink == internet connection)

Optimization

- Only HTTP (GET) requests intercepted
- Kernel packet capturing
- ZFS file system
- Distributed load (if necessary)

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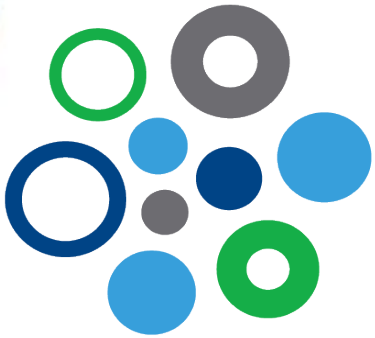

opensolaris™

http://www.opensolaris.org/os/

http://opensolaris.org/os/project/wosug/

What's next?

- New HW (32GB RAM, 15k rpm HDDs in RAID 0 ...)
- Hopefully attacking 10Gbps
- Should scale up to a few thousands of active users

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What's next?
Popularity distribution

- How much disk space is really required ?

What's next ?
Generic HTTP caching

- Streaming is taking over P2P users for video content
- Uploading services ?

- Is it possible to create a Generic but still Inteligent proxy/cache ?

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YES, WE CAN !

What's next?
Generic HTTP Caching

- Use HTTP streaming
- URL is not universal anymore

Solution:

- compare first bytes of the Data section !

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What's next?
Live stream proxying

- What about live unicast streams ?
- Detect simultaneus streams of the same content
- Keep only one data connection and MULTIPLY the data to the clients in the network

P2P Flash

- Flash 10 adds P2P support
- 99 percent of Internet enabled devices have flash player
- Can become the largest CDN ever

- Can be cached transparently too ☺

Summary

- This is a live project
- Can have a massive IMPACT

THANK YOU !

http://p2p.cnl.sk

klimek@cnl.sk

Computer Networks Laboratory

Technical University Košice

Slovakia