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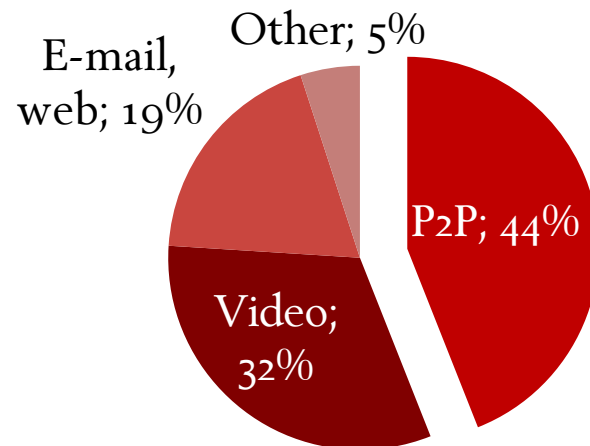
P2P 2.0 and it's impact on the Internet

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The Outstanding Success of P2P 1.0

- 44% of all Global Internet traffic – in some countries up to 80%
- Used for file sharing (Bittorrent), VoIP (Skype) and lookup services
- Mostly focused on the need of the end users

Global Internet Traffic 2008



The Problems of P2P 1.0

- **Random** or unstructured traffic patterns – plaguing ISPs and lowering overall performance
- Low or **no QoS**
- Poor peer resource efficiency

Guiding P2P 2.0 Design Principles

How can we address these issues with P2P 2.0?

- **Care about the whole business ecosystem**: distributor/sharers, ISPs and end users
- **Network Topology Aware** – keep traffic local!
- **Efficient Peer Resource Management** – semi global or global optimizations vs old heuristic rules
- Predictable **QoS**

P2P 2.0 enables efficient high bandwidth services such as Video Streaming, Storage/backup and Cloud like services

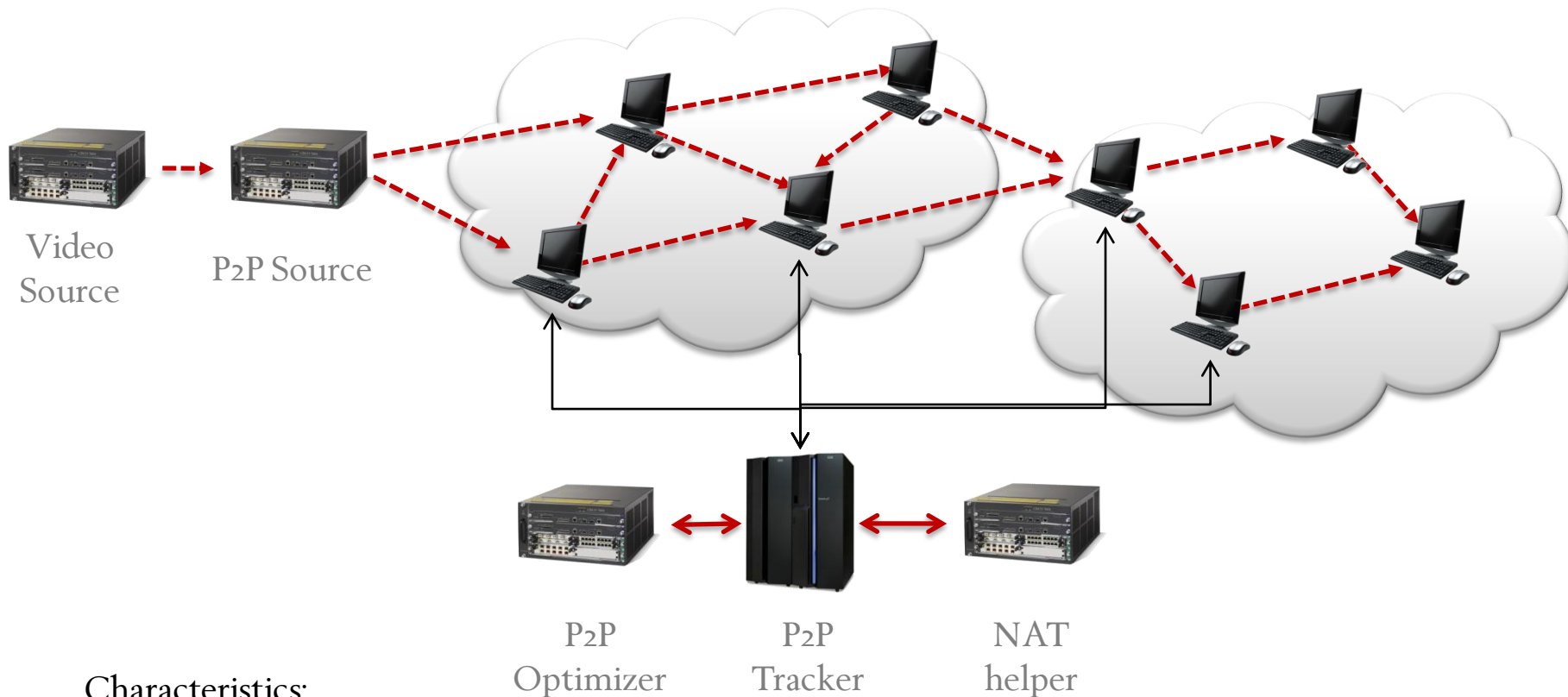


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P2P 2.0 example 1:

Video Streaming

P2P Live Video Streaming



Characteristics:

- Consumes **very little bandwidth** (80-98% less)
- Network Topology Aware
- **Scales** almost **infinitely**



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P2P 2.0 example 2:

The New Pirate Bay

Pirate Bay's Tracker Today

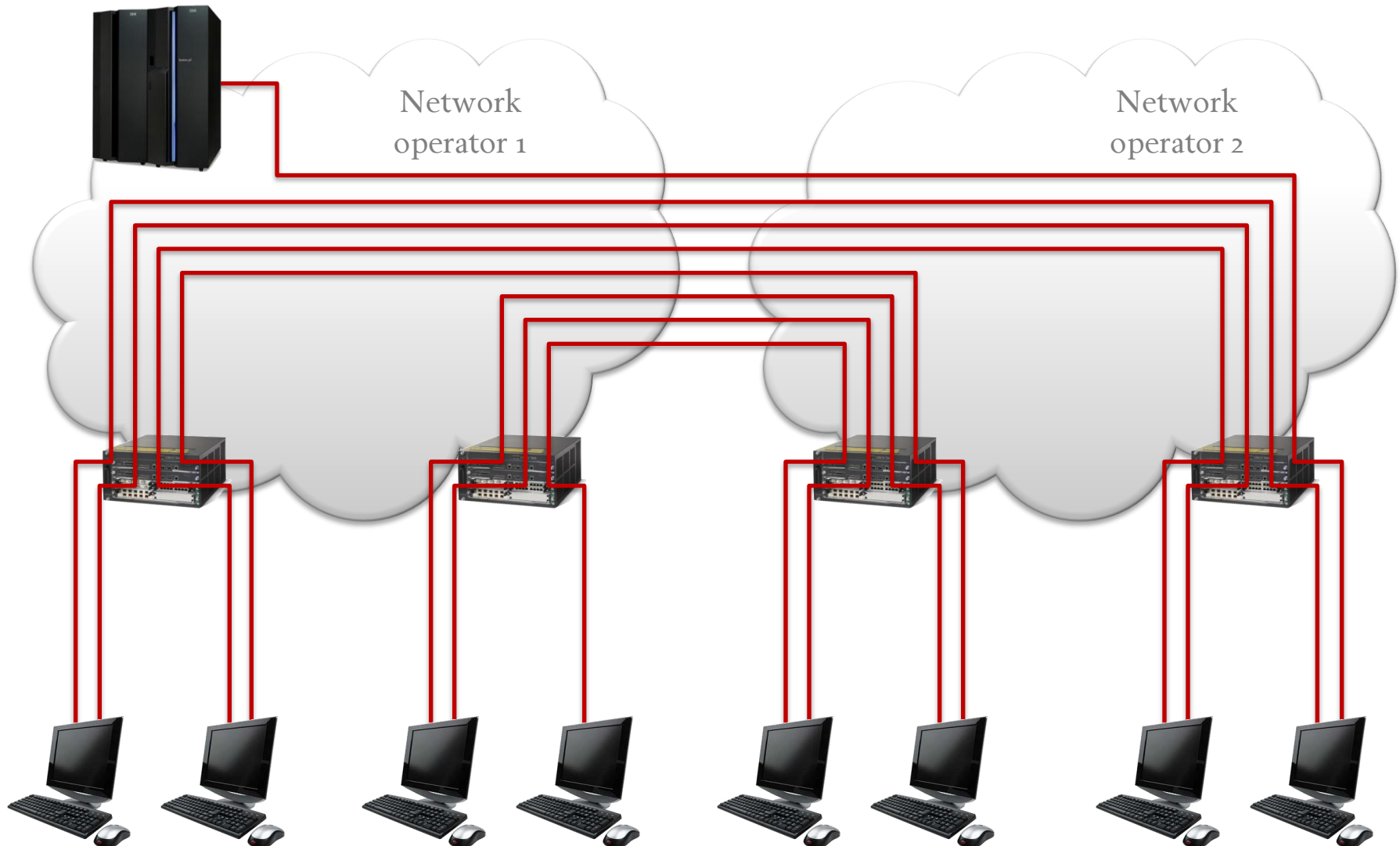
- TPB's *Open Tracker vi.0* manages **~15% of global Internet traffic**
- Is written by Dirk Engling and uses Bram Cohen's **vanilla Bittorrent** protocol
- Tracks around **2 million torrents and 25 millions users at any given time**
- Creates **huge amounts of redundant traffic** due to random peer pairing

Open Tracker 2.0

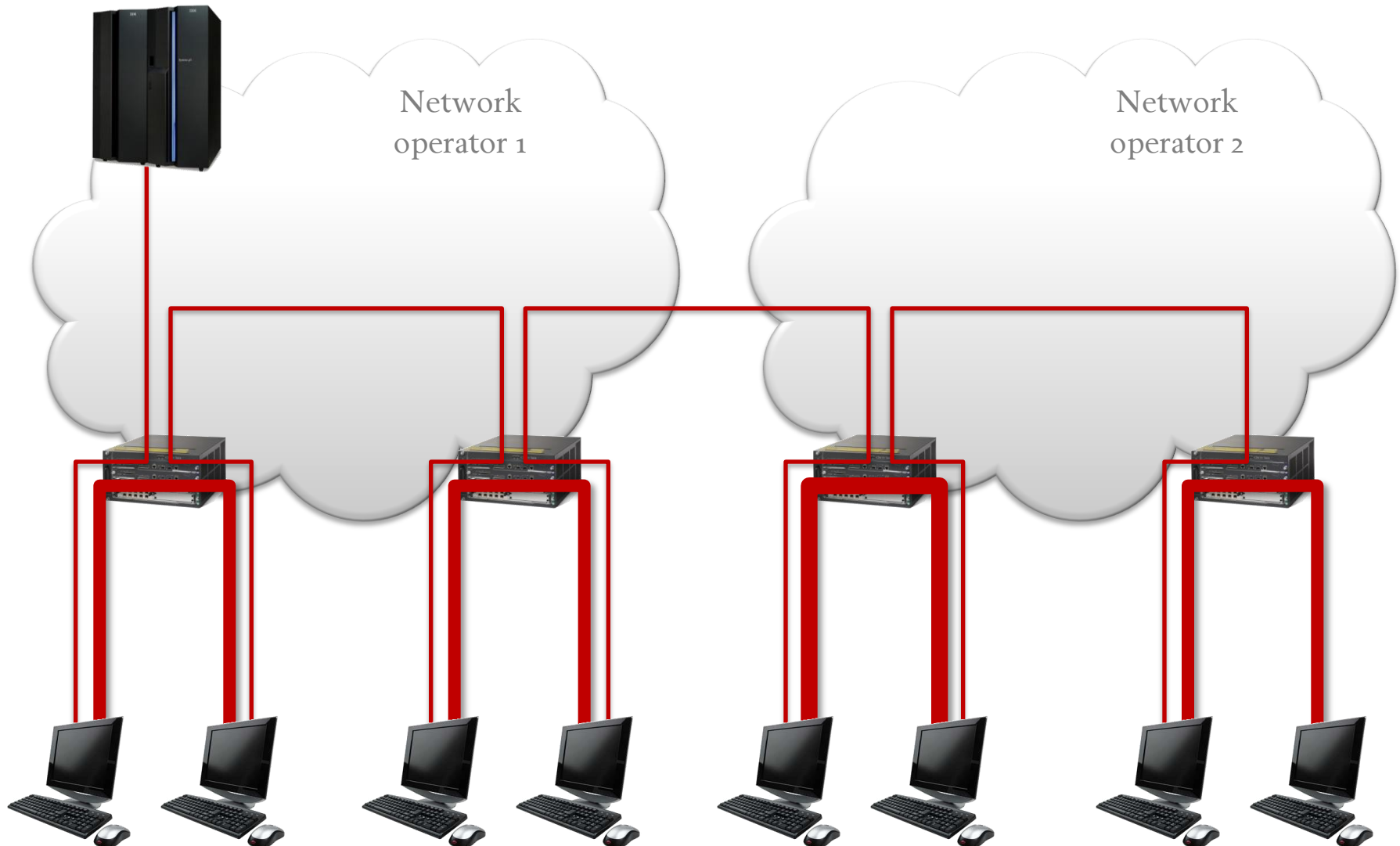
- We improve *Open Tracker* by adding network awareness
- We use a global network map to keep traffic local
- We allow ISPs to put costs on each link and we optimize accordingly
- We see 20-50% less traffic loads and 30-150% higher download speeds
- Requires no Bittorrent client changes
- Will be launched as free open source in September

P2P 1.0: Topology oblivious P2P

(standard Bittorrent etc)

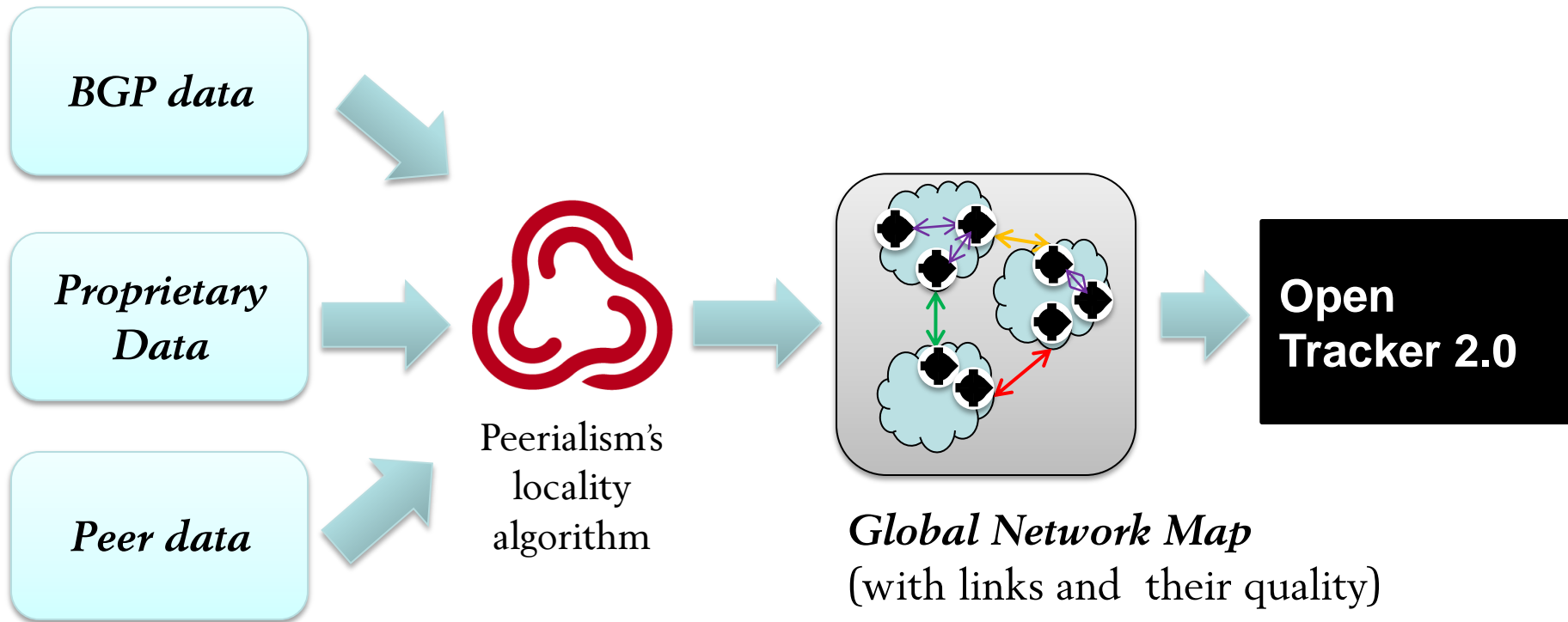


P2P 2.0: Locality aware P2P



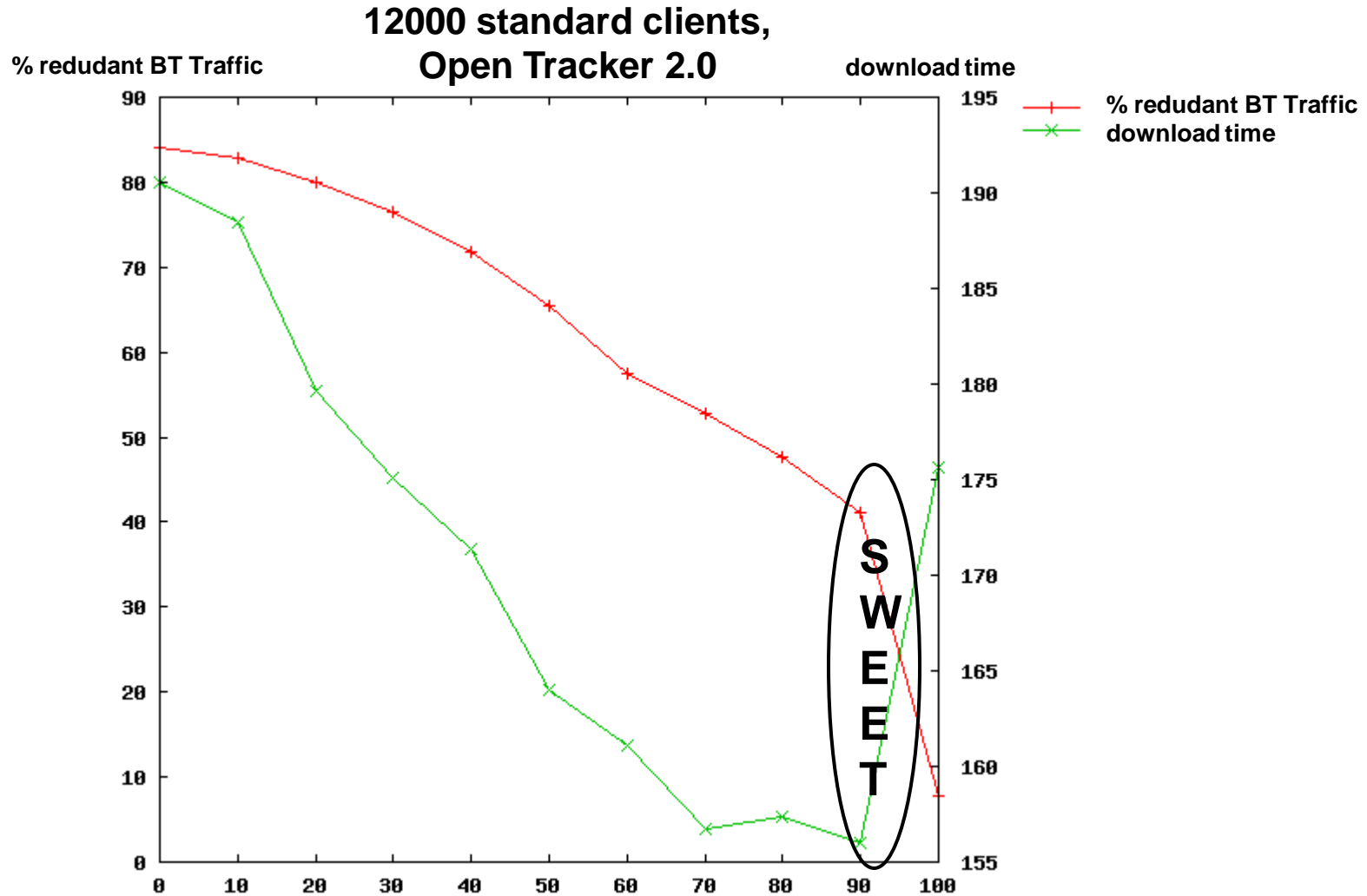
Locality, locality, locality

- Get the data from your neighbor, not from the other side of the globe



Test Results

Finding the sweet spot



Conclusions

- P2P has matured into 2.0 and is ready to delivery efficient services with QoS guarantees
- P2P 2.0 cares about the whole business ecosystem
- Huge traffic and performance improvements can be achieved compared to P2P 1.0



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