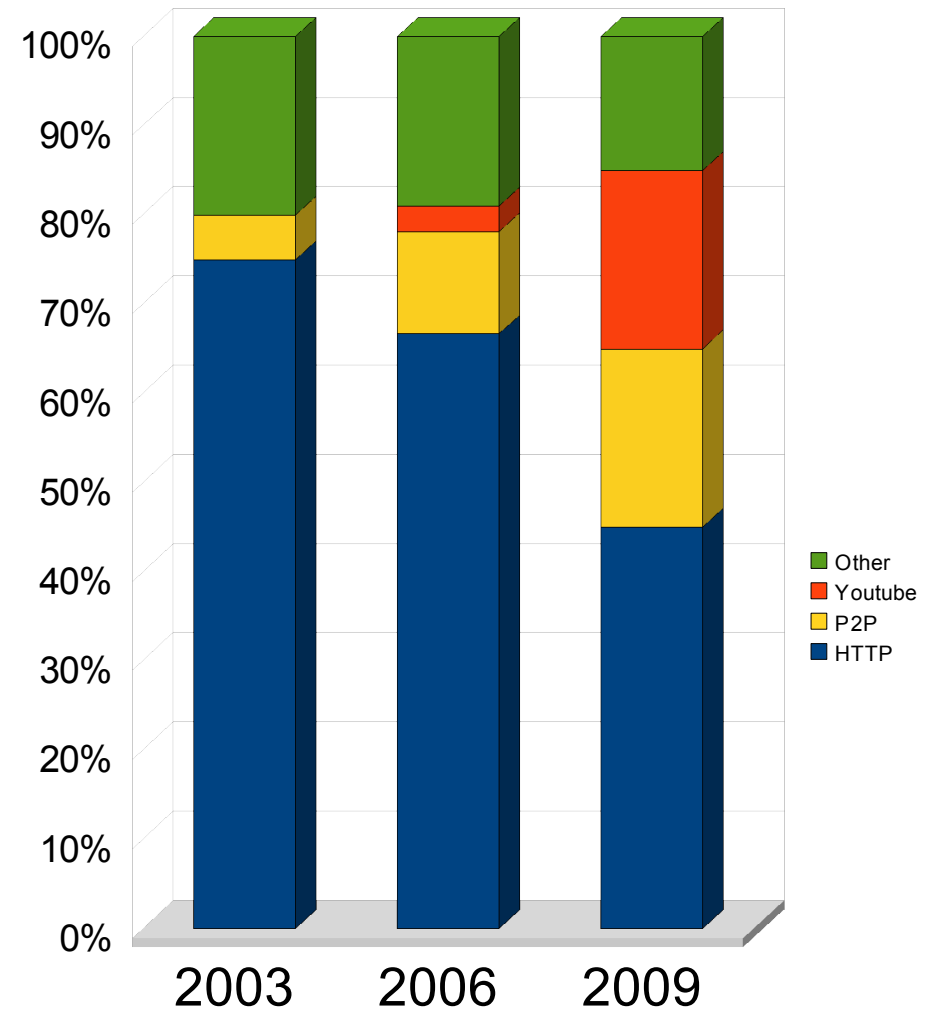


Experiences in Peer2PeerCaching

*Presented by: Mishary Al-Faris
Enterprise Solutions Manager
Qualitynet - Kuwait*

Shift in User Behavior

- Internet users shifted towards Video from the net and away from TV
- Downloading TV shows, movies and music through P2P protocols
- Video Streaming booms with Youtube, Google Video and Metacafe
- Existing Caching technology becoming obsolete



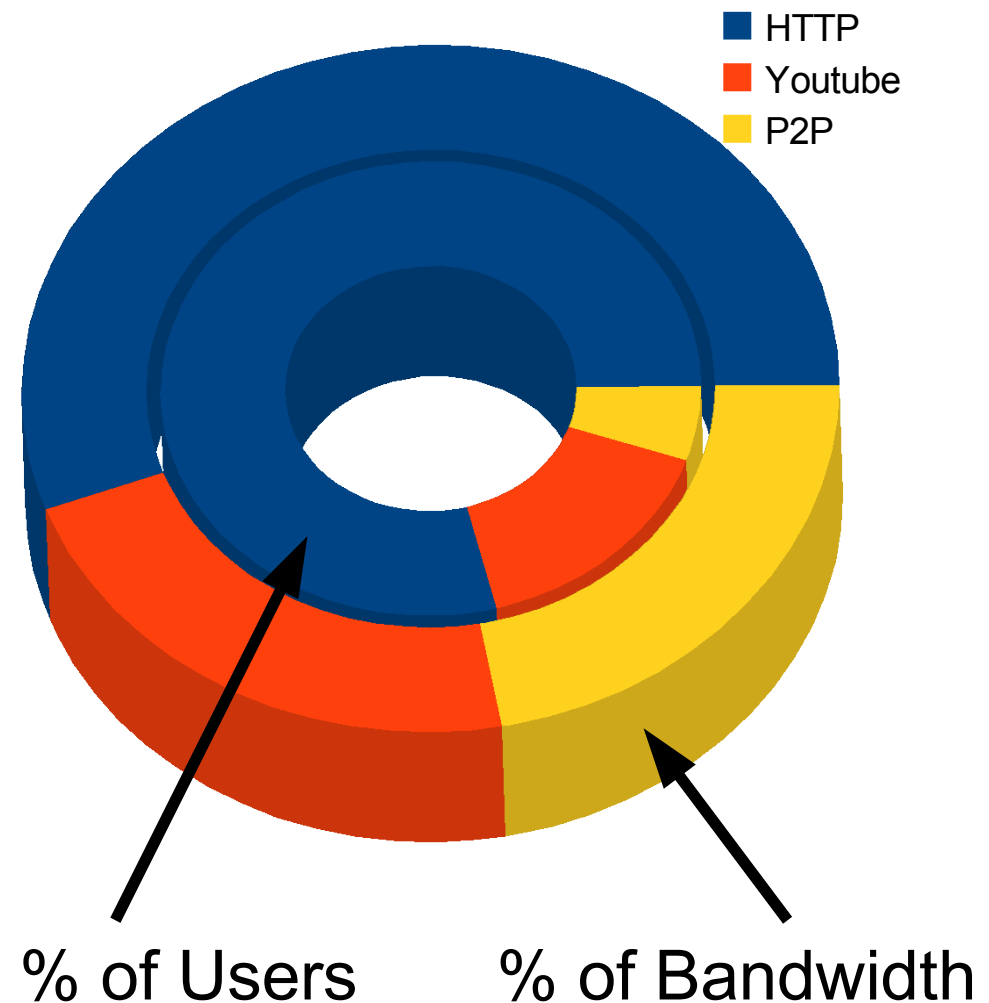
Block P2P or Shape it?

- Incentive to block/shape is high

- #Users impacted: **LOW**
- Bandwidth saving: **HIGH**
- Moral Highground: **HIGH**
 - P2P usually used for copyrighted material
- Word of Mouth Marketing: **BAD**

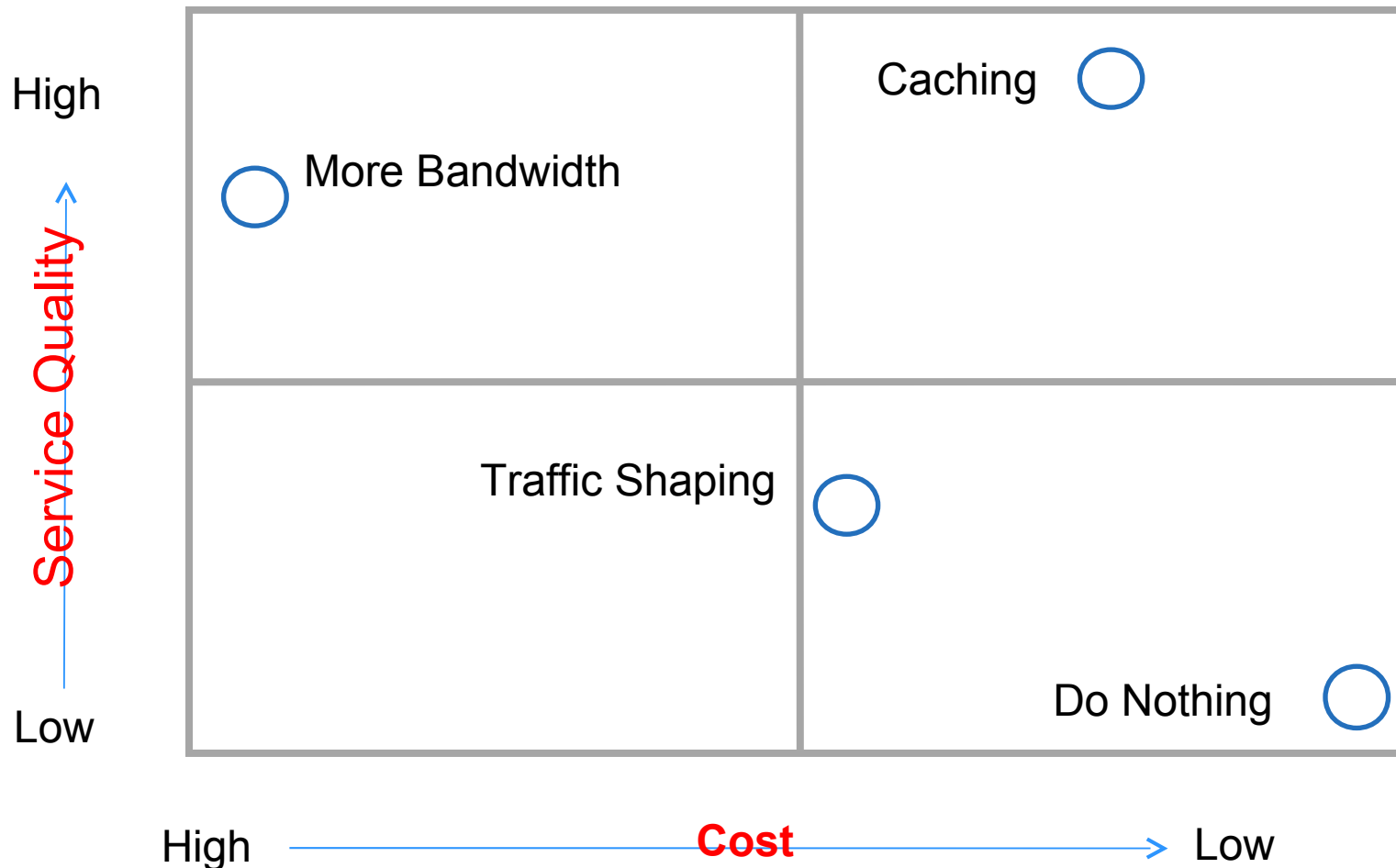
http://azureuswiki.com/index.php/Bad_ISPs

Users will switch to competition



Is there a 3rd Option?

What do ISP's really care about?



DMCA sec.512b Compliance



DMCA Terms

The ISP is not the one who originally made the material available

Caching is automatic, intermediate and temporary storage of content in local servers

ISP did not modify the content

ISP complies with industry standards regarding the updating of the content

ISP does not interfere with content's access manners (such as passwords, etc.)

Provider must remove infringing files upon gaining actual knowledge of infringement

P2P Cache

100% Compliance

100% Compliance

100% Compliance

100% Compliance

100% Compliance

100% Compliance

Can You Cache P2P & Youtube?



- Shopping Around (2007 research):



Oversis: Redirection method URL based, Israeli company, not transparent to internet/user

Cachelogic: Doesn't scale to ISP grade traffic

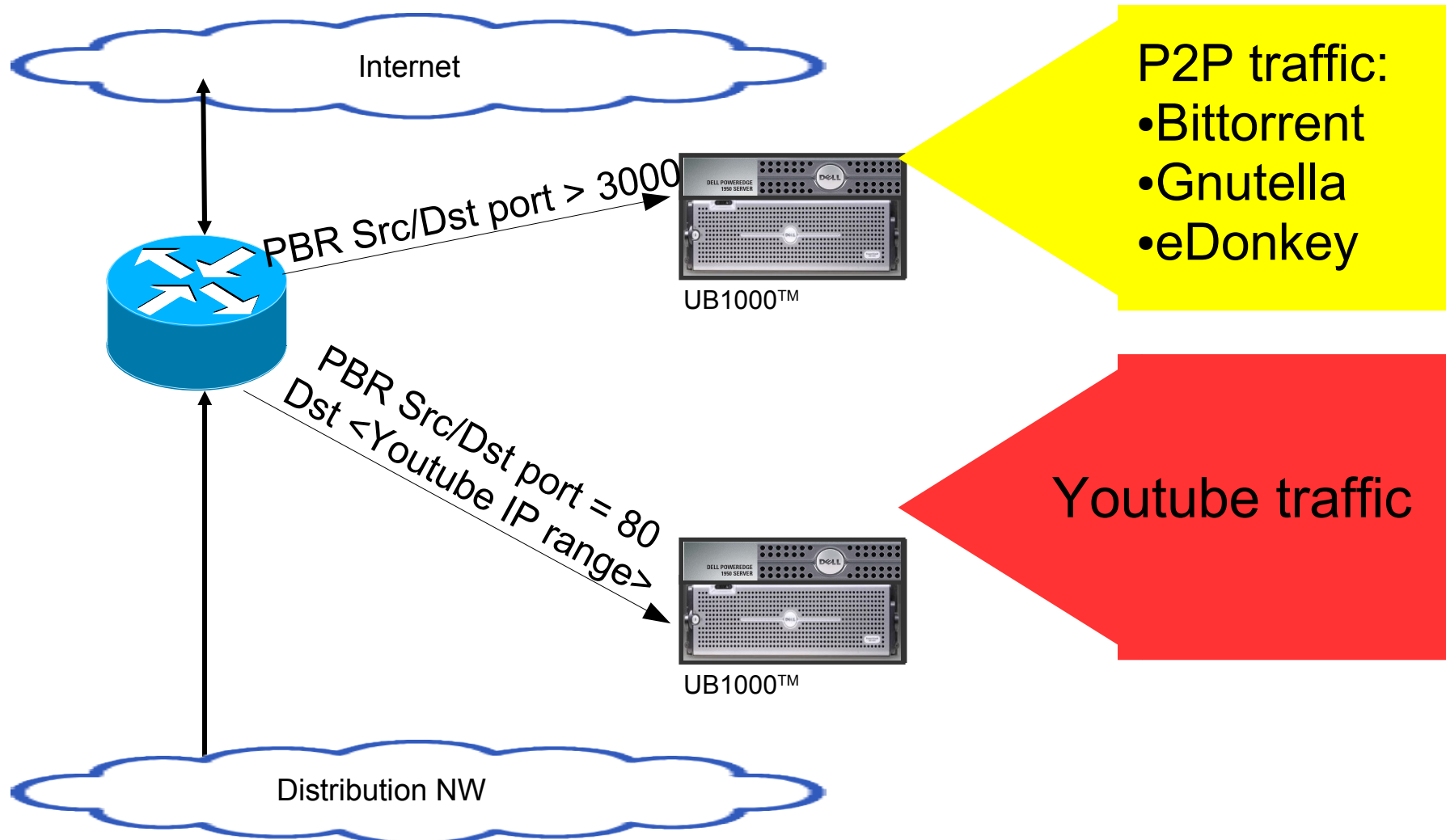


Velocix Accelerator

PeerApp: PBR redirection, fully transparent, Boston US based company, high traffic throughput (~450 Mbps per cache)

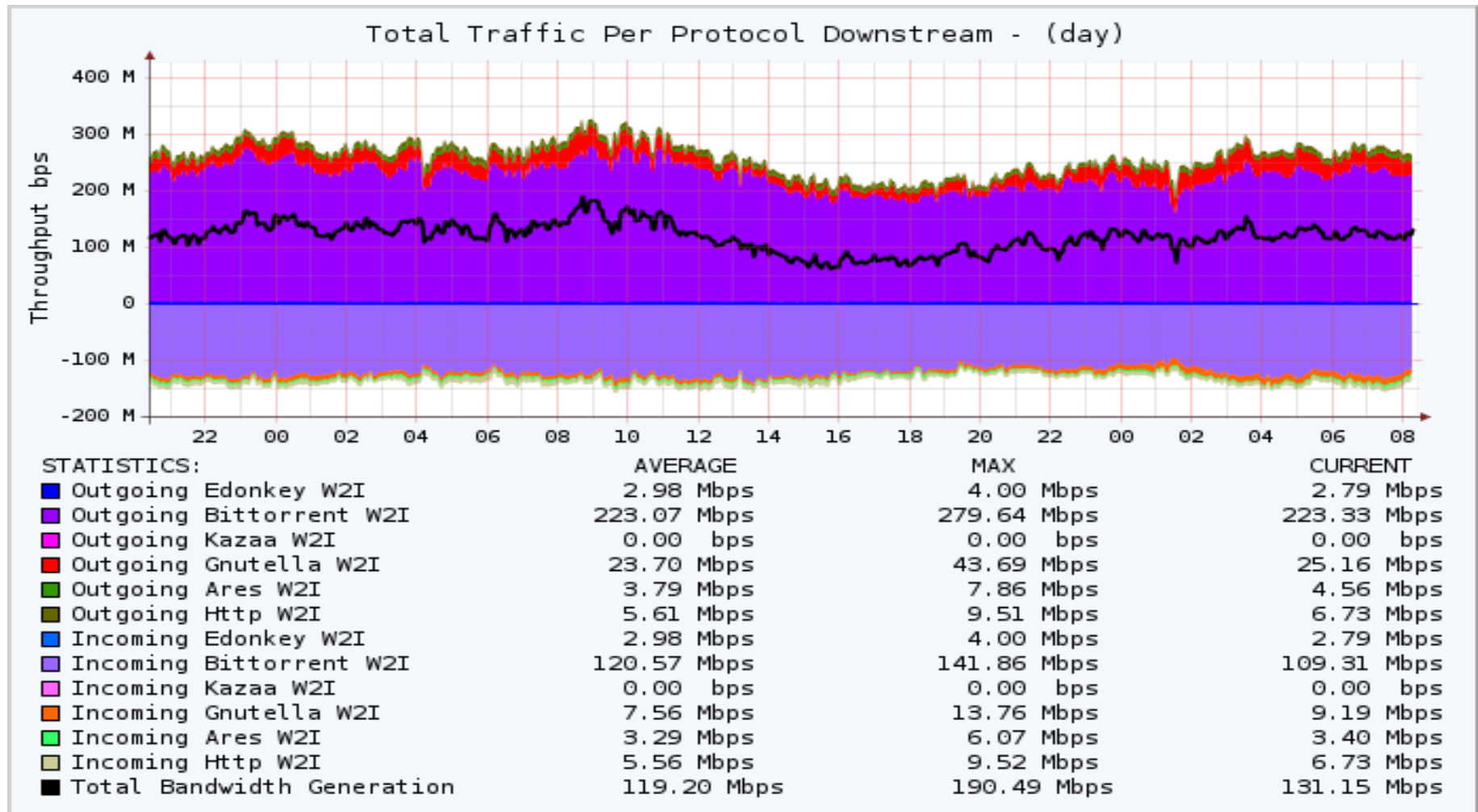


How We Deployed It



B/W Generation Results

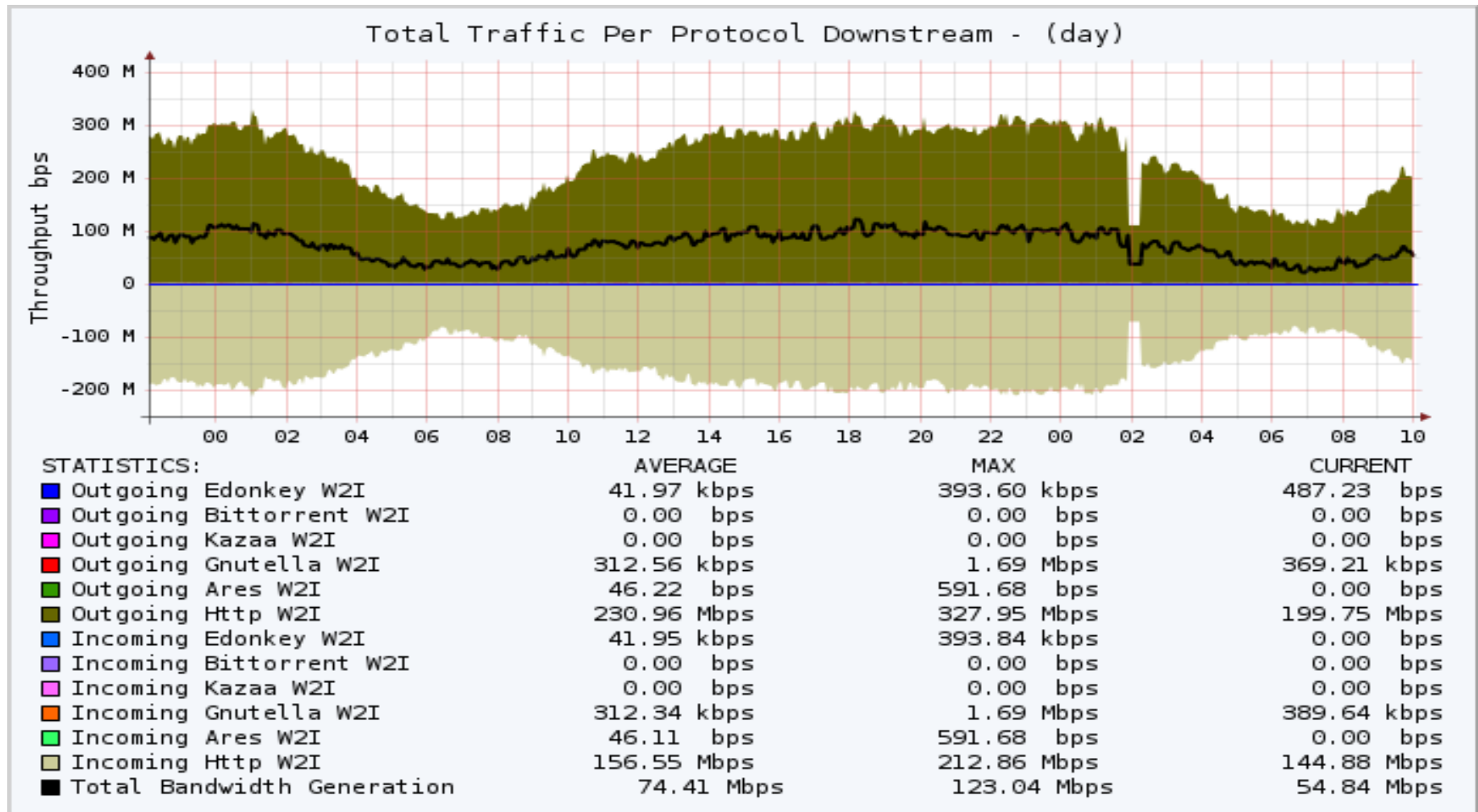
Peer2Peer Cache



B/W Generation Results

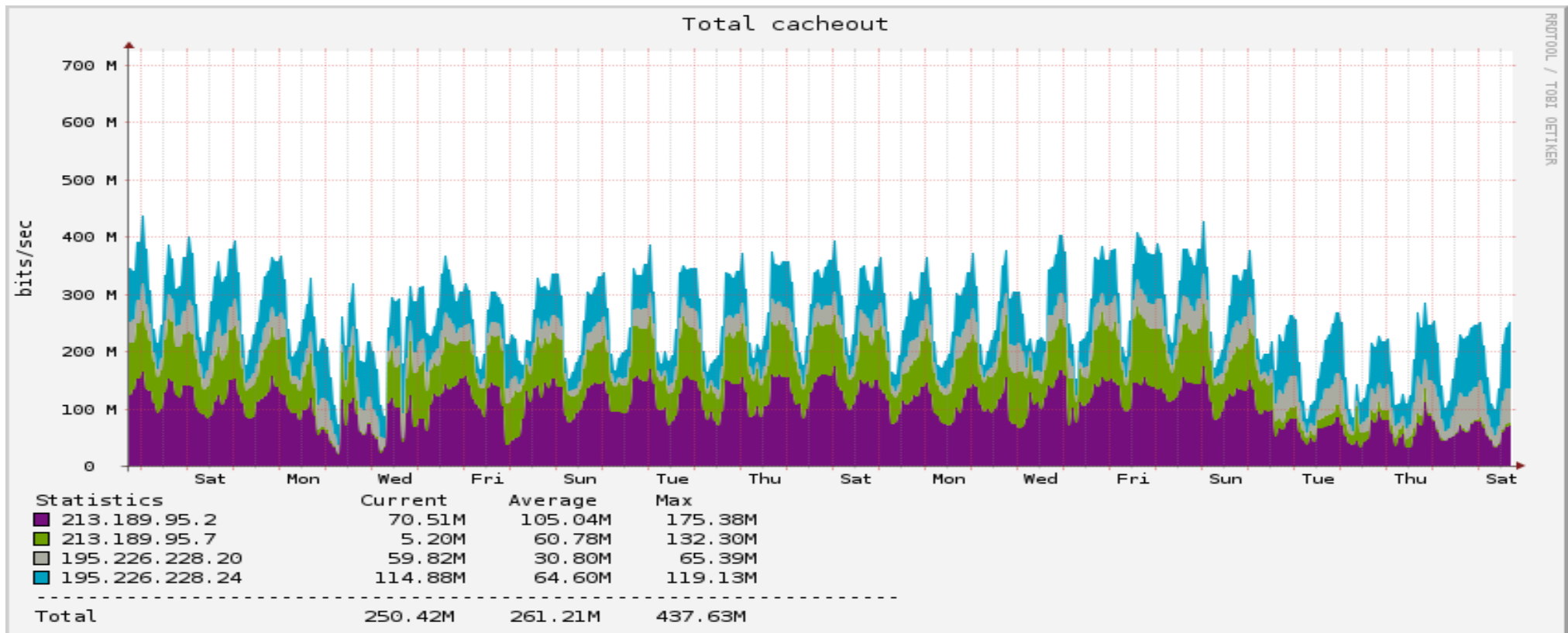


Youtube Cache



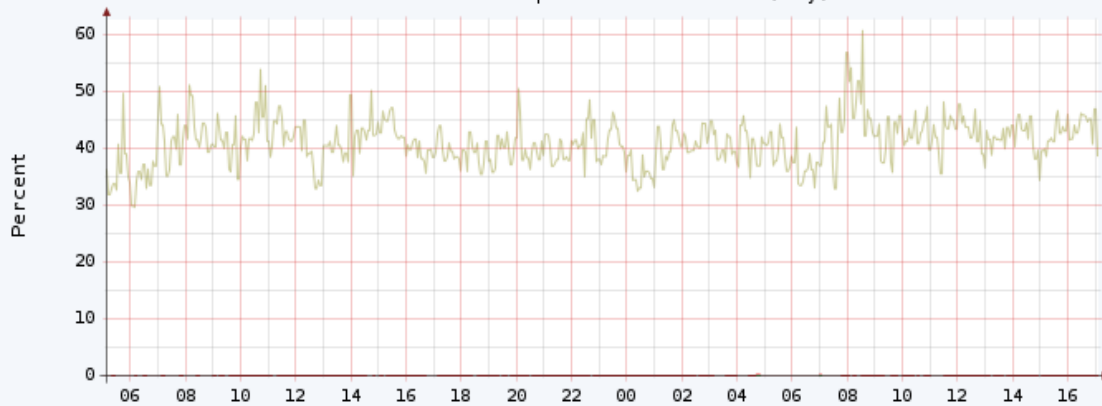
Total Cache-out

- Four caches currently in operation (500 Mbps license)
- Total Cache-out bandwidth 470 Mbps (2.0 Gbps non-transit, ~900 Mbps redirectable, P2P+Youtube only, not HTTP) **(470/900) ≈ 50% bandwidth gain!**



Hit/Miss Ratio

Current First Request Hit Ratio - (day)

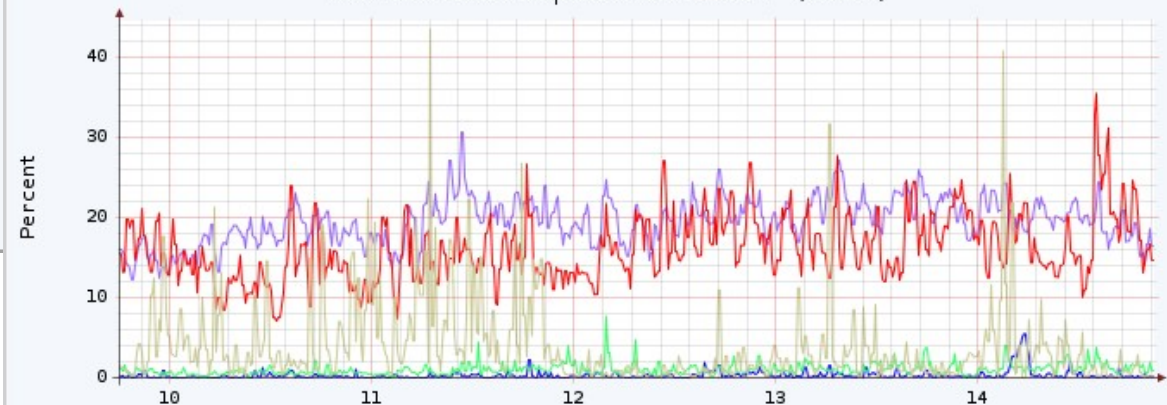


Youtube Hit Ratio
~ 41%

STATISTICS:

	AVERAGE	MAX	CURRENT
First request hit ratio Edonkey	0.00	0.00	
First request hit ratio Bittorrent	nan	nan	
First request hit ratio Kazaa	nan	nan	
First request hit ratio Gnutella	0.00	0.13	
First request hit ratio Ares	0.00	0.00	
First request hit ratio Http	41.03	60.75	

Current First Request Hit Ratio - (month)



STATISTICS:

	AVERAGE	MAX	CURRENT
First request hit ratio Edonkey	0.33	5.47	0.13
First request hit ratio Bittorrent	19.57	30.64	16.39
First request hit ratio Kazaa	nan	nan	nan
First request hit ratio Gnutella	16.15	35.50	14.67
First request hit ratio Ares	1.04	7.67	0.90
First request hit ratio Http	3.75	43.53	0.11

Bittorrent Hit Ratio
~ 20%

Operational Evaluation



- One full year since April 2008
- Uptime/Reliability very high (>99.8)
- In case of failure, interfaces are disabled causing PBR to pass traffic to internet
- Smartfilter added on our request and currently being tested. If successful Qualitynet will upgrade to full HTTP+P2P caching on PeerApp using GRID system (6+ caches using shared storage)