

MSO Success Story

Reducing the impact of file-sharing traffic with Sandvine P2P Policy Management

Escalating bandwidth suction

The exploding popularity of peer-to-peer (P2P) file sharing has dramatically increased the amount of data transferred between broadband subscribers. In fact, P2P is now the single largest consumer of residential bandwidth, accounting for up to 70% of the IP traffic on any given MSO network.

Executive Summary

Background

Our customer, a major-brand cable MSO, faced massive bandwidth depletions and clogging of its upstream channel due to surging P2P traffic.

Though the cost and QoS impact of this traffic was considerable, the available solutions were not attractive. Competitive threats made bandwidth pricing tiers a risky proposition. Node-splitting the network would require a massive CAPEX investment and OPEX expenditure.

The Challenge

Dramatically reduce upload traffic on the network -- without the forklift upgrade of backbone infrastructure node splitting would require, or the risk of aggravating churn by penalizing P2P users with additional fees.

The solution

Sandvine deployed its Peer-To-Peer Element (PPE 8200) on the provider's network, a solution that allowed the MSO to impose administrative controls on P2P traffic and re-direct it down the least-cost network path.

Results

Bandwidth savings from the PPE's intelligent routing capability are saving this operator close to \$5 million per annum in deferred CAPEX and reduced Internet transit fees.

That means a portion of the broadband user base is consuming a disproportionate share of bandwidth - much more than the per-user amounts provisioned by service providers.

While asymmetric bandwidth consumption is a legitimate concern on its own, the ad-hoc nature of P2P communication also means that large amounts of data traffic get pushed off-network (P2P clients don't care where other P2P clients are located). This is driving up Internet transit fees.



No one could sensibly argue that service providers continue to offer up expensive network capacity for free, or allow low-bandwidth subscribers to forever subsidize heavy P2P users. But the fact remains that subscribers in-general place strong value on the ability to utilize file-sharing technology. Subscriber-friendly ways to manage P2P's impact have to be found.

Clogging the upstream pipe

The impact of P2P on bandwidth utilization and traffic flows has taken a special toll on Cable MSOs. While all service providers are attempting to manage the negative effects of P2P activity, many MSOs also have to deal with an acute threat specific to cable broadband networks: QoS degradation on the upstream channel.

Cable networks weren't built to accommodate a flood of file uploads. This was certainly true for our customer, an MSO with several million homes passed in one of the world's largest and most technologically sophisticated urban markets.

This operator had built its network based on an average bitrate of 10kbps per sub (peak utilization). While this was more than sufficient for normal Web and Internet traffic, the sudden growth of peer-to-peer had driven up average bitrate by more than 30%, and was threatening to push beyond.

In order to preserve QoS and reduce the cost of surging P2P traffic, the choice of responses available to the MSO seemed limited to two.

The first was to implement an expansive node-splitting build out across a significant, and geographically dispersed, portion of the network, which would mean a sharp spike in OPEX from truck rolls and new CAPEX totaling in the millions.

The second was to move from a flat-rate to a tiered pricing structure based on monthly bandwidth consumption - a fair-but-risky approach that raised serious concerns about churn and fears of a mass customer defection.

A different kind of plumber

Sandvine's suggestion was to set both of these options aside and consider a third way that eliminated the need for a forklift upgrade of network infrastructure and also avoided penalizing the 30-35% of the subscriber base using P2P technology on a regular basis.

Sandvine recommended Peer-To-Peer Policy Management, a network hardware & software bundle that allowed the MSO to impose policies on file-sharing traffic, controlling which portions of the network it was directed to - and through - based on the service provider's unique definition of least-cost network path.

It is enabled by the Sandvine Peer-To-Peer Policy Element (PPE 8200), a carrier-grade 1RU that reduces the cost of file sharing using three distinct strategies: the logical reorganization of network topology, the redirection of search queries and the reduction of P2P protocol "chatter." Sandvine's patented technology allows the PPE to statefully inspect and redirect. Subscribers experience zero degradation of their online experience. Service providers experience a sharp improvement in bandwidth utilization and associated costs.

Deploying in-line on the MSO's network edge, Sandvine began with a limited installation, placing three PPE units to manage file sharing traffic for six Cisco Universal Broadband Routers (uBRs). The results were immediate, and notable.

For example: just prior to flicking the switch, P2P upload traffic was consuming approximately 150 out of 160 MB of provisioned upload bandwidth - a full 94% of the MSO's available upstream capacity. Once Sandvine Peer-To-Peer Policy Management was enabled, bandwidth utilization by P2P traffic fell to less than eight per cent (8%) without impacting subscriber peer to peer sessions (see Fig.1)

The result?

Our customer estimates that Sandvine Peer-To-Peer Policy Management will deliver close to \$5 million in deferred CAPEX savings and annual bandwidth cost reductions. The PPE's statistical reporting functionality has also enhanced the operators ability to control network activity, allowing managers to monitor and measure P2P traffic in real time.

By deploying easily with current infrastructure and billing systems, Sandvine's P2P solution is proving to be an organic network extension that improves the performance and value of the MSO's existing backbone. This has been achieved without degrading the online experience for subscribers, or interfering with their freedom to utilize personal technology.

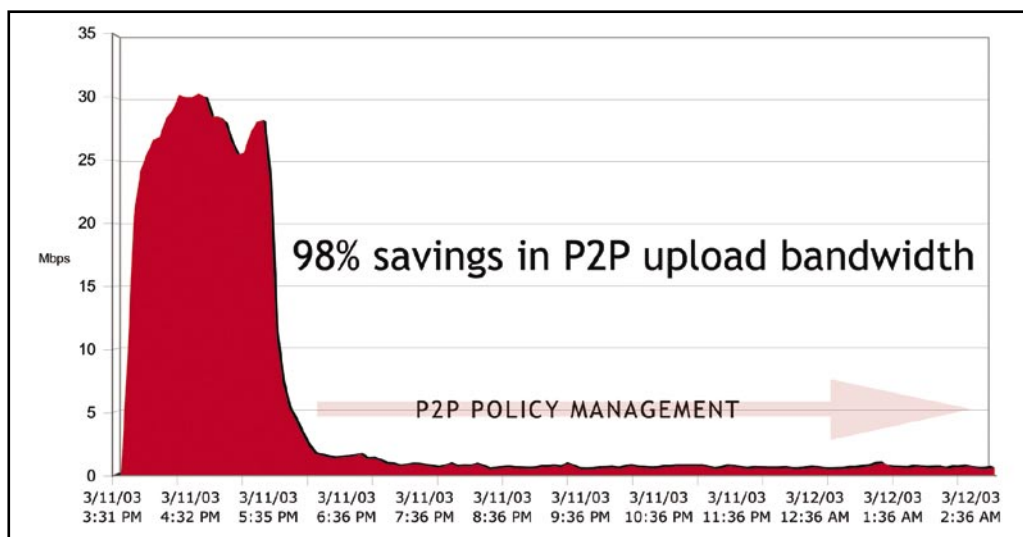


Figure 1: Improved bandwidth utilization with P2P Policy Management (1 uBR)

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