



Limiting The Impact Of Top Talkers On A Budget

Employing restrictions of subscriber bandwidth usage without packet shaping.

By Bruce Bahlmann, CEO ■ *Birds-Eye Network Services*

There are three known ways to manage subscriber use of bandwidth. They are modifying subscriber demand (take rate, price, usage patterns, etc.), managing the access point (connection speed, burst, priority, etc.), and restricting the flow of subscriber traffic using packet shaping. While all these methods are certainly effective in restricting the bandwidth consumed by your top bandwidth users, cost ultimately dictates the best possible solution. As many of you manage smaller private cable systems, universities, and apartments, this article will help you more effectively use resources you already have to significantly reduce the impact of top talkers on your system.

One of the key recommendations in this article is for cable operators to bely the purchase of packet shaping hardware until they have exhausted other, more affordable, measures of restricting bandwidth usage. While this in no way means packet shaping is not effective or attractive, it does mean that employing packet shaping is the most expensive and intrusive means of limiting subscriber bandwidth. It also means that packet shaping is not equipped nor designed to address the source of the bandwidth issue: individual subscriber demand. For more information about

managing subscriber demand for bandwidth refer to "Impact of Content & Demand on Bandwidth Management" article in *Broadband Properties* July 2002 or go to Birds-Eye.Net's website to review an online copy of this article.

Managing Subscriber Demand

There are many different pricing models for Internet service. Some based on flat rate, some on bundling with other services, as well as a heightened interest in usage based models. While the primary goal of investigating such pricing models is to determine profitability, cost, and margins for services, an equally important goal should be to appropriately manage subscriber demand (expectation) of such a service.

In a one size-fits-all scenario, a single service attempts to cater to the needs of everyone from novice users to power users. Unfortunately every subscriber views the service in a different way. On one end of the spectrum you have novice users who view the service as being "extremely fast" and a convenience over dial-up service. On the other end of the spectrum you have power users who view the service as a "value" and likes the reliability of an always-on means of accessing the Internet. With such diversity in users, it is difficult to offer

one product that economically satisfies this range of users. Similarly to cable programming packages, every subscriber has different preferences, wants, needs, and price points so they are willing to accept less if it fits more within their budget.

Using tiered service offerings to manage top talkers is hands-down the most cost effective means of restricting bandwidth use because you regulate use at its very source (demand) by providing subscribers with a choice in price and performance. While higher priced services will still require more bandwidth to satisfy, they will also command higher price points to offset the expense of supporting them. A successful tiered offering of services should look like a bell curve in terms of subscribers it supports. On the extremes (max/min service speeds) you will see only small numbers of subscribers where as in the middle you will see a majority of your subscribers.

Managing Access Point

Creating an effective tiered service line-up will greatly depend on your ability to effectively manage the access point: the cable modem. The cable modem has several great features that when combined with a tiered service offering provides cable operators with

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tremendous flexibility (albeit largely unused for this purpose) to restrict top talkers. Among these features include the following:

Up/Down Stream Bandwidth Settings – Allows cable operator to set the effective upstream and downstream throughput on the cable modem. These settings are typically the extent of most service offerings.

Burst Traffic Settings – Allows cable operators to permit (or deny) subscribers to exceed their current bandwidth settings by some amount for short durations of time.

Priority – Allows cable operators to assign each cable modem with a traffic priority. The higher the priority, the more likely the subscriber using that cable modem will be able to leverage the full extent of their bandwidth settings. When every subscriber has the same priority they all compete equally for the opportunity to send/receive traffic. When priorities are mixed, those with a higher priority have precedence over those with lower priority.

Manipulating these three settings can significantly reduce top talker traffic demand. The two key settings here being burst and priority. When cable operators set burst at zero and then combine priority with their tiered offering the result will be significant gains in their progress towards limiting the impact of top talkers. It is recommended that cable operators tier their service in the following way. Rather than following the current practice where all subscribers are allocated bandwidth services with the

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highest priority (7), give higher bandwidth subscribers a much lower priority 1-3. Lower bandwidth services should be allocated higher priority (5-6) so as to prevent them from being squeezed out. Finally, middle tier services should be assigned a priority between 3 and 5. Regardless, no service should be given the highest priority level and the priority given for any service follows the practice that the higher the assigned bandwidth the lower the assigned priority – follow this practice within tiers.

The goal in manipulating bandwidth, burst, and priority is to enable each service some acceptable operational level without giving all the jewels away to the high bandwidth services – we all know what happens when we do this. When high bandwidth subscribers must compete with lower bandwidth subscribers (with higher priority) for the same bandwidth the higher bandwidth subscribers will get throttled. Effectively accomplishing the same results as packet shaping for a mere fraction of the cost. During high usage times

when nearly all your subscribers are online, the lower priority settings for higher bandwidth services will keep their extreme usage in check.

Experiment with priority until you find the point where priority parity among service tiers successfully limits your high bandwidth services. In addition, you may want to initially experiment with your top bandwidth users by giving them lower priority access and watch how this impacts their bandwidth consumption. Note, during this time you're still giving them the same bandwidth service as before, only you're giving them fewer opportunities to exploit it. You should see fairly immediate results.

In cases where there is not much contention for bandwidth on a top talker's network segment, limiting priority will have little, if any, impact. However, if this is the case, you have much bigger problems than top talkers – subscriber acquisition. ■

About the Author

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