

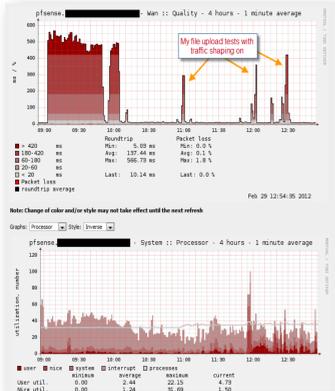


pSense Traffic Shaping: Clever phrase here.

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Introduction



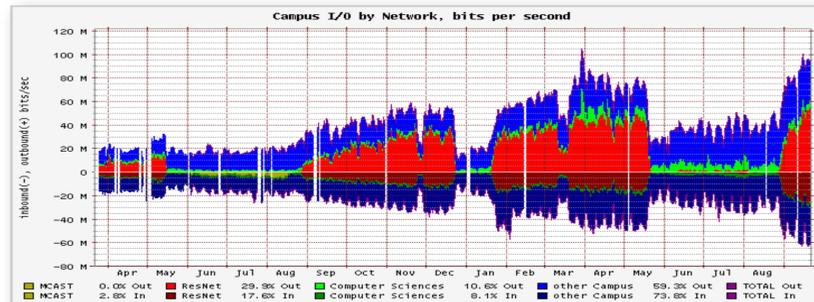
Implementing traffic shaping on your network is like taking all of the traffic in a traffic jam and slamming it to either side of the road so you have free reign to blaze a path at light speed. There are three major variations of traffic shaping.

In our implementation we used Hierarchical Fair Service Curve (HFSC).

Class Based Queuing

Class Based Queuing (CBQ) is a queuing algorithm that divides a network connection's bandwidth among multiple queues or classes. Each queue has traffic assigned to it based on source or destination address, port number, protocol, etc.

CBQ queues are arranged in a hierarchical form. At the top of the hierarchy is the root queue which defines the total bandwidth. Child queues are created under the root queue, each are assigned to part of the root queue's bandwidth.



Implementation

PenaltyBox specific settings

10.145.201.120

This allows you to just provide the IP address of the computer(s) to Penalize. NOTE: You can also use a Firewall Alias in this location.

10 % The limit you want to apply.

pSense Traffic Shaper Wizard

Enable: This will lower the priority of P2P traffic below all other traffic. Please check the items that you would like to prioritize lower than normal traffic. Lower priority of Peer-to-Peer traffic.

Next

p2p Catch All

p2pCatchAll: When enabled, all uncategorized traffic is fed to the p2p queue.

Bandwidth: 15 % The limit you want to apply.

VPN

PPTP: Higher priority Microsoft Point to Point tunneling protocol

IPSEC: Higher priority IPSEC VPN traffic

Multimedia/Streaming

StreamingMP3: Default priority Streaming Media

RTSP: Default priority RealTime streaming protocol

Web

HTTP: Higher priority HTTP and HTTPS aka Web Traffic

Mail

SMTP: Lower priority Mail Protocol

POP3: Lower priority POP3 Protocol

IMAP: Higher priority IMAP Protocol

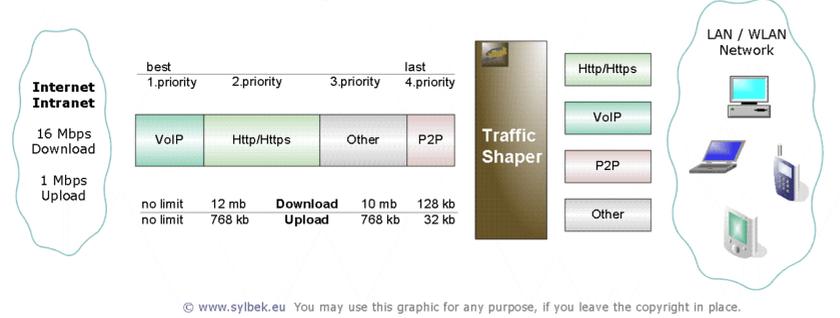
LotusNotes: Lower priority Lotus Notes

IP Penalty Box- Define bandwidth limits based on IP address.

P2P Catch All- Allocate bandwidth percentages for P2P traffic, or any unclassified traffic

Service Specific Shaping: Shape traffic to allow specific protocols (Such as DNS, HTTP, even games) in low, medium, or high queue.

Traffic Shaper using Firewall

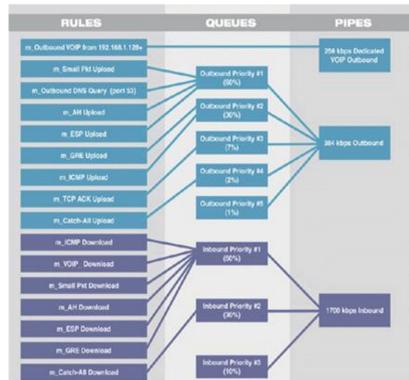


Hierarchical Fair Service Curve

Normal QoS gives traffic priority on a per session basis. HFSC Packet Shaping takes QoS to the next level by focusing on *guaranteed* real-time, adaptive best-effort, and hierarchical link-sharing service.

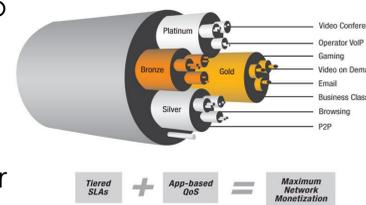
HFSC is based on an algorithm used mostly on Unix operating systems.

HFSC is the first QoS algorithm to support all three of real-time, adaptive best-effort, and link-sharing services.



Priority Queuing

PRIQ assigns multiple queues to a network interface with each queue being given a priority level. A queue with a higher priority is *always* processed ahead of a queue with a lower priority.

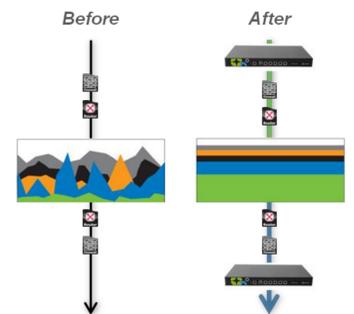


The queuing structure in PRIQ is flat -- you cannot define queues within queues. The root queue is defined, which sets the total amount of bandwidth that is available, and then sub queues are defined under that root.

Results and Outcome

Without traffic shaping, traffic is capped or carried on a priority basis, causing inconsistencies.

pfSense traffic shaping takes network traffic and reserves amounts of bandwidth for specified services; this makes throughput *much* smoother.



Sources Cited

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- "MT-IT." MT-IT, 11 June 2011. Web. 15 Mar. 2012. <<http://mtit.wordpress.com/2011/06/11/traffic-shaping-with-pfsense-2-0/>>.
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