NETEQUALIZER

# K-12 School Guide

## In working with network administrators at public and private K-12 schools over the years, we've repeatedly heard the same issues and challenges facing them.

### Here are just a few:

- We need an affordable, low maintenance bandwidth shaping solution.
- We need to better allocate bandwidth across students, administrators, and teachers, who are all sharing the same pipe.
- We need to handle student laptops (1:1) being rolled out across our school to all of our students, and prioritize online and cloud-based educational tools.
- We need to give priority to classroom videos.
- We need to support a wireless guest network.
- We need a solution that doesn't require "per-user" licensing.

### NetEqualizer Key Functions

- Fairness-based bandwidth shaping ("equalizing") looks at behavior
- Automatically prioritizes latency-sensitive applications such as email, web browsing, web applications, & VoIP
- Low-maintenance. No policy files to maintain.
- Controls both encrypted & unencrypted P2P
- *HEOA technology deterrent*.
- Reduces RIAA/MPAA requests
- CALEA compliant
- Shapes up to 5 Gbps
- License-upgradeable
- Affordably priced from $3,000 to $14,000. Read our *blog article on ROI*.


### Who's Using the NetEqualizer?

- Over 175 K-12 schools around the world.

**About APconnections, Inc.**

APconnections is an innovation-driven technology company that delivers best-in-class network traffic management solutions to give our customers better networks, with zero maintenance, at the best prices. We specialize in turnkey bandwidth shaping and intrusion prevention system (IPS) appliances. APconnections is based in Lafayette, Colorado, USA. We released our first commercial offering in July 2003, and since then thousands of customers all over the world have put our products into service. Today, our flexible and scalable solutions can be found in many types of public and private organizations of all sizes across the globe, including: Fortune 500 companies, major universities, K-12 schools, and Internet Providers on six (6) continents.

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## What customers are saying...

*I administer the network at The Gunnery – a 9-12 boarding school... NetEqualizer was incredibly easy to setup and worked as expected right out of the box – all I had to do was give it an IP address and tell it our bandwidth.*

*Users noticed the difference immediately. Within days, the kids had figured out that if they 'hog' the bandwidth, things will go slow for them – works like a charm. Unlike many gateway products we have tried, it doesn't interfere with other products or authentication. It has some very interesting advanced features, and the support people were great about explaining what they could do, but I am loath to adjust anything as our user experience has improved so much by just using the default settings.*

*Low cost, easy to use, very effective: one of my better purchases.*

**BJ Daniels**, Director of Technology, *The Gunnery*

*Most notable in our NetEqualizer experience is that the price was well within our range, and NetEqualizer requires no ongoing maintenance. The few initial questions we had were promptly answered by APconnections' Support Team.*

*Other vendors we had approached force multiple thousand-dollar support contracts in front of you before they'll even talk to you. The NetEqualizer is so easy to use, that it can literally be up and running within fifteen minutes."*

**Chris Rule,** Technology Director, *West Grand Public Schools*

## NetEqualizer has been used to solve these issues and challenges for many for many public and private K-12 schools around the world.

### We need an affordable, low maintenance bandwidth shaping solution.

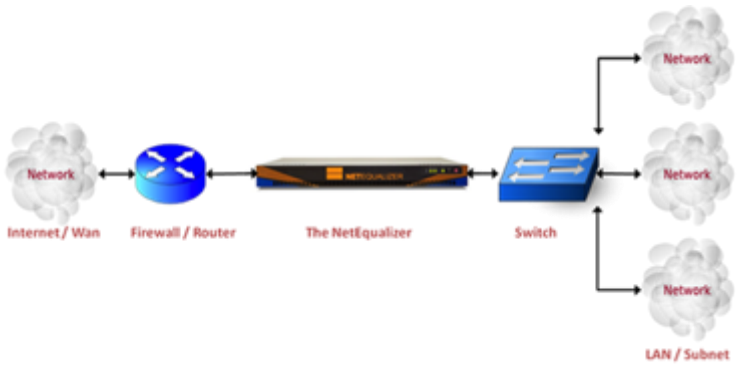
NetEqualizer is intended to be a “set it and forget it” type solution. Once you install and configure your NetEqualizer, it handles traffic shaping around the clock with little additional maintenance from your network administrator.

### Configuring Equalizing is as simple as three steps:

1) Define the size of your inbound & outbound Internet pipe,
2) Establish the level of total bandwidth usage at which you want equalizing to kick in (default is 85%), and
3) Make sure that equalizing is “on".

We believe that traffic shaping can be affordable. Our NetEqualizer units range from $3,000 to $14,000, licensed bi-directionally to shape 10Mbps to 5Gbps. Our yearly fees for access to software upgrades, support, and hardware warranties are under $1,500. In addition, under our Lifetime Buyer Protection Policy, we also protect your initial investment by offering a trade-in credit towards a new unit when it is time to retire a unit. We offer a compelling ROI, helping you to optimize your Internet resources.

The NetEqualizer is typically installed between your Router and your Switch, acting as a transparent bridge. As we do not perform deep packet inspection (DPI), we maintain Net Neutrality for traffic passing through the NetEqualizer.



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## We need to better allocate bandwidth across students, administrators, and teachers, who are all sharing the same pipe.

What is great about NetEqualizer bandwidth shaping (aka "equalizing") is that it is *fair*. Low-bandwidth users do not have to share the pain of a slow, congested network with the network hogging applications. Your students, faculty, and administrators *expect web applications, email, VoIP, and web surfing to be responsive, and with equalizing, they will be.*

For example, suppose you have 1000 students, 30 administrators, and 95 faculty using the network, as follows:

- 85% are web surfing
- 60% are also running web-based applications (e.g. online learning)
- 50% are running chat sessions
- 40% are also using email
- 30% are also watching YouTube

In this example, if your trunk were saturated, equalizing would kick in and would add latency to the YouTube streams watched by 30%, since they are the most bandwidth-intensive, leaving all the other streams alone. So instead of having your network crash completely, a few YouTube videos would break up for a few seconds, and when conditions abated, they would be allowed to run. The majority of the traffic on the network is well-behaved, short/bursty bandwidth uses, such as web surfing, web-based applications, chat sessions, and email and so will not be penalized.

*Notice that bandwidth allocations per user do not matter*. We do not try to hit fixed allocations, *we just put delay on the nastiest "hog" traffic until the bandwidth usage overall drops back below 85 percent* (or the setting you choose). The value is that you get the best possible usage of your bandwidth without having to micro-manage your network.

## We need to handle student laptops (1:1) being rolled out across our school to all of our students, and prioritize online and cloud-based educational tools.

In today's learning environment, students and teachers are relying increasingly on technology to enhance the educational experience. It is important that they can all access and effectively use cloud-based educational tools in the classroom.

The NetEqualizer automatically gives priority to web-based educational applications and portals, which typically use short-bursty bandwidth, and so will retain priority during peak periods of congestion on your network.

We have had great success automatically providing priority for online learning environments with our standard configuration.

## We need to give priority to classroom videos.

The NetEqualizer has a feature to enable you to designate specific IP addresses as "priority traffic." Those IP addresses will be immune to bandwidth control and will not be equalized. Therefore, if you have particular internal or external hosted video servers that you use in the classroom, you can identify these to the NetEqualizer, and they will be considered priority traffic.

We recommend that you consider prioritizing specific IP addresses if you utilize live streaming video. Otherwise, you should not need to set priority traffic.

## We need to support a wireless guest network.

In addition to Equalizing, there are shaping parameters that you can set to customize your NetEqualizer implementation. One that schools like to use is our concept of "Pools", which are shared bandwidth limits. Typically, Pools are defined to split out bandwidth to groups (faculty, staff, students, and guests) giving them separate bandwidth allocations. Think of a Pool as a mini "virtual NetEqualizer", as each Pool is shaped when it becomes congested (typically 85%).

Faster Networks

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For example, if you have a guest wireless network on campus, you can define that as a Pool to give guests a defined shared allocation on your Internet pipe.

## We need a solution that doesn't require "per-user" licensing.

The NetEqualizer is not licensed per user. Rather, the NetEqualizer license is tied to the size of your network pipe. It can be updated as the size of your pipe is increased, typically by purchasing a NetEqualizer license upgrade. Also, unlike other solutions on the market, you pay a one-time license fee for the NetEqualizer, and then only a small yearly support fee to cover software upgrades and support questions.

You can size your network to support your anticipated number of students, teachers, staff, and guests. Then purchase the NetEqualizer that matches your network pipe size, knowing that you have the option of a license upgrade for more users later on. For more details on our sizing recommendations, see our contention ratio blog post Can Your ISP Support Video for All?, which specifically addresses the needs of administrators.

Furthermore, if you need to architect your network to support full redundancy, you can buy a second NetEqualizer and put it in place as either a cold backup or in hot-swappable mode.

### For more information...

Although we've covered a few of the most pressing issues K-12 Schools face, we understand that everyone's situation can be different. To learn more about how the NetEqualizer might help your school, please contact us at sales@apconnections.net or call us at 303.997.1300 x103.