



CIRRUSWORKS

Solution Brief: Education

Optimizing Internet Speed Improves the Digital Learning Experience

The way students learn in the classroom has evolved considerably. The introduction of tablets in the classroom and online testing have strained the network to its limit. With tight budgets and IT resources, schools have struggled to provide an acceptable level of bandwidth to students and faculty during peak periods, often causing delays in online testing, or making students wait to upload or download assignments in the classroom. Bandwidth congestion and the resultant Internet delays are inhibiting the progress of students. Is this acceptable for our most precious resource, our kids?

The Challenge: Learning in the Digital Age

The way students learn and the mediums used for education are changing rapidly. Online testing, in-classroom tablets and laptops, cloud-based storage, and video-based curriculum are now firmly rooted in the education experience.

Classroom time is precious. Common core online testing, in-classroom devices, and video-rich media are all driving the need for fast, reliable Internet. Waiting for files to download or videos to stream reduces actual learning time. Page turn delays during online testing are simply unacceptable.

New applications, devices and cloud-based systems all depend on high-performance, optimized Internet. The challenge is that the local circuit often falls short. Demand for bandwidth often exceeds available supply – generating local WAN circuit congestion, packet delays and ultimately poor service quality.

As school systems migrate applications and file storage to the cloud, the amount

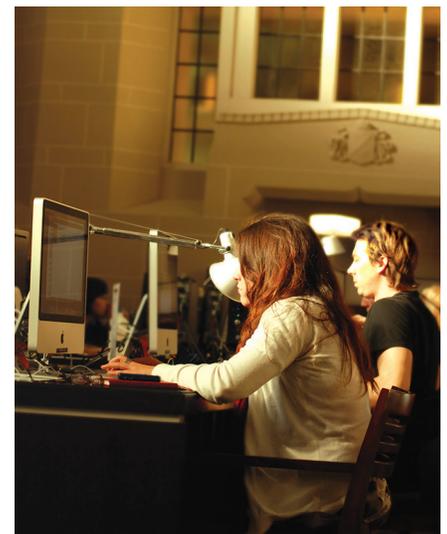
of simultaneous data transfer has grown exponentially. With data being retrieved and stored outside the education venue, network traffic – which was previously relegated to the local LAN – is now transported to/from an off-premise data center or cloud server. Since this data is normally delivered via private or VPN networks, the cost and labor involved in developing and managing WANs continues to rise. This becomes even more acute when multiple school districts pipe data through a centralized hub before accessing the public Internet.

Traditional approaches to improving Internet speed – from adding bandwidth to installing complex packet shaping software – are expensive, time-consuming and often fall short.

When collisions and delays are experienced on the Internet, the traditional course of action has been to increase the bandwidth of the WAN circuit. Adding bandwidth is not only expensive – it has also proven to be insufficient.

CIRRUSWORKS FOR EDUCATION

- Reduces internet delays during peak periods so students spend less time uploading and downloading assignments in class, and more time learning.
- Facilitates online learning by reducing network congestion and providing a seamless internet experience.
- Enables simultaneous online testing and reduces page turn delays.



Traditional Approaches are No Longer Enough

Data congestion is a function of student and faculty data demand, which is highly concentrated during the school day – such as during online testing or when students are uploading/downloading assignments at the beginning or the end of a class, or at the end of the semester. Provisioning more bandwidth does not necessarily solve the problem.

Traditional Packet Shaping – Complex and Expensive

Traditional packet shaping solutions require extensive setup and configuration – often costing upwards of \$50,000 - \$100,000 in software and consulting. IT budgets are tight and technical staff generally lack the time and expertise necessary to set up, maintain and continually monitor packet shaping software. As a result, for most schools, traditional WAN optimization or packet shaping solutions are simply out of reach.

While blocking access to certain websites may help open up bandwidth in the short term, schools have found that it is nearly impossible to predict where students and faculty will go, rendering traditional site filtering ineffective. Compounding the problem, faculty often demand unrestricted access to websites.

While rate capping frees up bandwidth for certain groups of users most of the time, it falls short when simultaneous demand for bandwidth exceeds available supply, particularly within a given rated tier. Schools often experience this phenomenon during online testing or when students simultaneously

download class projects at the end of the period. Suddenly, capping students at 5 Mb/second during an online test, for example, can result in slow page turns due to high retransmissions.

The Solution: Next Generation Bandwidth Management from CirrusWorks

The CirrusWorks Governor is a plug-and-play-bandwidth shaping device that uses its unique analytic algorithms to enable fast and reliable Internet during peak periods of network congestion. The Governor installs in 5 minutes and is maintenance-free. The Governor costs a fraction of alternative approaches to improving network performance.

The Governor takes a new approach to improving Internet speed. Instead of procuring additional bandwidth or configuring complex rule sets, the Governor uses mathematical algorithms to automatically adjust bandwidth utilization based on user demand in real-time.

Technology Benefits

Reduced need to add surplus bandwidth.

Adding too much bandwidth is an expensive, short-term fix that rarely solves the data congestion problem during peak usage. The Governor ensures that your available bandwidth, regardless of circuit size, is maximizing its efficiency of allocation to users.

Zero configuration = reduced IT costs.

No configuration is necessary in most network environments. Since the Governor engine automates the process for you, there's no need for training or dedicated IT staff – saving you time and money. The Governor's self-learning algorithm even

improves network performance over time, eliminating the need for ongoing adjustments.

Automated and dynamic. The Governor, with its patent pending bandwidth shaping technology, improves traffic flows by making instantaneous decisions about the optimal prioritization scheme to be applied to the traffic – all in real time. By constantly making “best fit” decisions, traffic becomes normalized and tends to stay normalized – averting the rushes and surges often seen in traditional packet shaping implementations.

Augments traditional packet shaping.

The Governor's bandwidth shaping algorithm was designed to coexist with other packet flow devices on your network, including routers, firewalls, gateways, content filters, traffic shapers and L2 or L3 switches. The Governor complements your network, maximizing your existing infrastructure investments, while enabling effective rate-capping to ensure students and faculty get the online experience they expect and deserve.

ABOUT CIRRUSWORKS

CirrusWorks™ is the leader in dynamic bandwidth management. The CirrusWorks Governor™ optimizes traffic during peak congestion periods to ensure fast and reliable Internet performance for all users. Only CirrusWorks employs AutoAlgorithms™ that adapt to unpredictable traffic patterns in real time, without the need to pre-configure static rule sets or policies. For more information, visit www.cirrusworks.net.