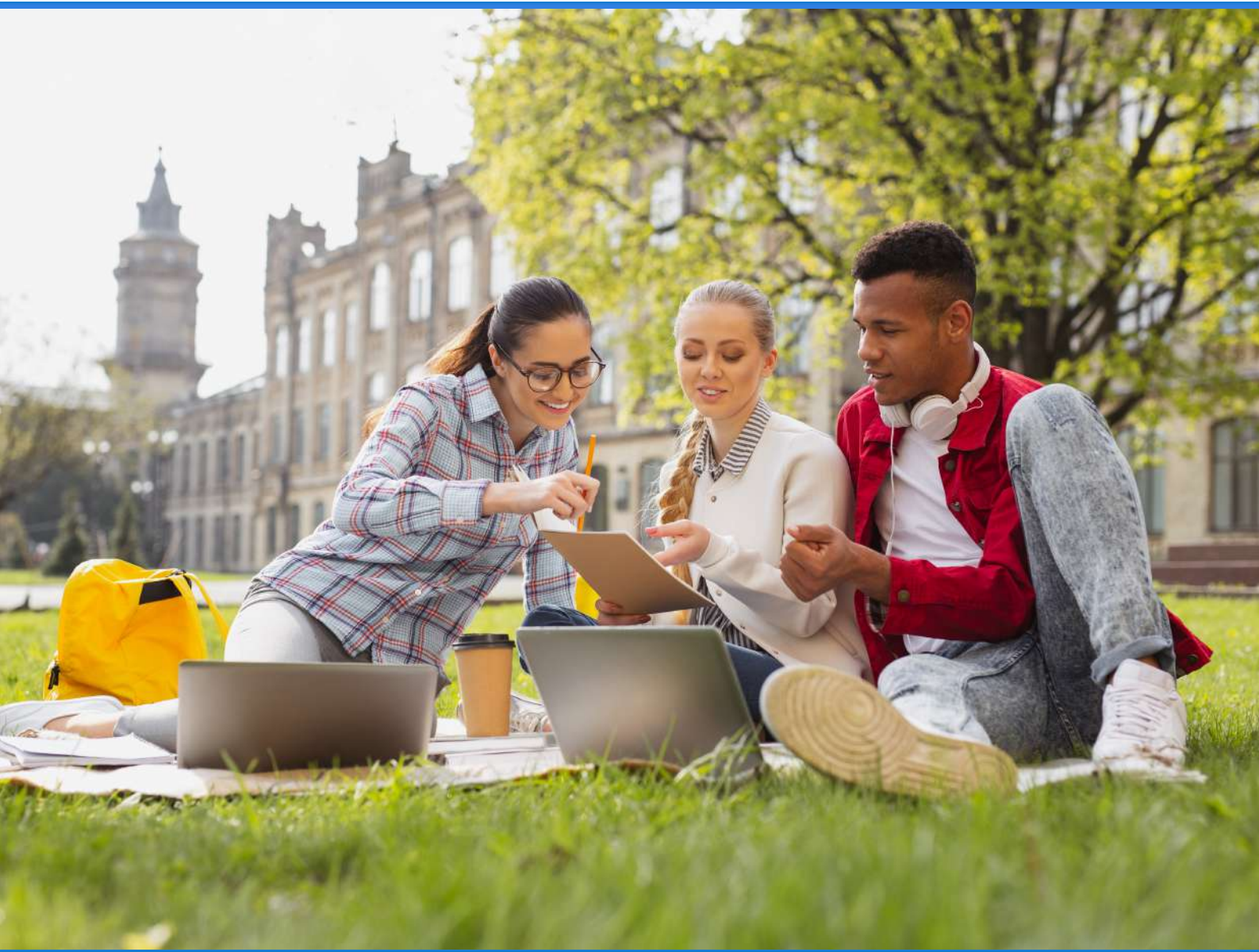







WHITEPAPER

# Better network performance for colleges & school districts



**GFI** Software™

## Table of Contents

	Introduction	3
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	Current challenges	4
	Heavy use of bandwidth	4
	More devices & BYOD	5
	Analytics	5
	Signal dead zones	6
	Old and outdated equipment	6
	Lack of visibility and control	6
	Security	7
	No easy-to-use management	7
<hr/>		
	Addressing current network challenges with Exinda	7
	Managing bandwidth use	7
	Generating detailed analytical report	8
	Enabling complete control through visibility	9
	Ensuring security	10
	Simple to set up and use	12
	Reinforcing adherence to policies	12
<hr/>		
	Exinda and educational institutions	12
<hr/>		
	Request your free demo	12



## Introduction

Students, teachers, and the academic community as a whole depend on the connectivity of a reliable network to further their knowledge and understanding. Networks are used extensively for communications between professors and students, for research, to gain access to library materials, for course work and so much more.

Students entering colleges today think and use technology differently compared to previous cohorts. Staying connected is a central part of their lives.

To meet the needs of such students and to improve the overall quality of education offered, universities invest in large, smart, and capable networks. Despite that investment, many challenges continue to exist.

Let us take a look at some of the challenges faced by university networks and effective ways to resolve them.



## Current challenges

Universities face many challenges with respect to their network and applications. Some prominent ones are:

### Heavy use of bandwidth

College students access the Internet for both education and recreation.

According to a [study](#) by Allison, Bottu, and Heckadon, students use the Internet for more than six hours a day. Out of this, two hours are devoted to educational purposes and four hours to entertainment and social media. College networks are densely populated and must support high levels of collaboration among students while maintaining stability and speed.

Here is a snapshot of the activities and hours spent by students on the Internet.

Activities	Mean*
Classroom activities and studying using an electronic device	4.01
Writing documents (word processing)	3.76
Surfing the Internet for pleasure	3.47
Creating, reading, sending e-mail	3.47
Chatting with friends or acquaintances using instant messaging	3.45
Using an electronic device (computer, Palm device) at your place of employment	3.31
Downloading or listening to music or videos/DVDs	3.15
Completing a learning activity or accessing information for a course using course management systems	2.48
Using a university library resource to complete a class assignment	2.46
Playing computer games	2.39
Creating spreadsheets or charts (Excel)	2.07
Online shopping	2.06
Creating presentations (PowerPoint)	1.82
Creating graphics (Photoshop, Flash)	1.79
Creating Web pages (Dreamweaver, FrontPage)	1.39
Creating and editing video/audio (Director, iMovie)	1.34

Source: [Kvavik](#)

These varied uses put enormous pressure on bandwidth capacity. Some universities respond by spending considerable budget amounts to increase their existing bandwidth. However, it is not a practical idea to continue endlessly increasing bandwidth. Networks eventually fail, affecting mission-critical applications.

## More devices & BYOD

A [report](#) shows that Ohio State University has more than 135,000 unique devices on its network and processes up to 12 million wireless authentication on a busy day. Many students arrive on campus with their own laptops, tablets, smartphones, e-readers, and other IP connected devices, and they assume that the existing college network will support all their devices.

More than [42 percent](#) of students use two or more devices every day. At the upper end, some college students use more than 3.5 devices on an average. All of this puts a big strain on college networks. In addition to the personal devices of students such as mobile phones, tablets, and laptops, the desktop computers of the college are connected to the network as well.

The study by Allison, Bottu, and Heckadon shows that there are significant differences in bandwidth usage between mobile devices and desktops. Students preferred to read and download educational material on their laptops, and use their smartphones for browsing and social media. Many times, all of these devices are used at the same time. The average network resource consumption per student goes up. And these numbers are growing by the year.

Administrators are scrambling to increase their bandwidth or restrict student access, depending on their budget constraints. Even when a college increases its bandwidth, more users will access more applications, so the bandwidth may never be enough.

The unavoidable takeaway: Colleges need a network that will help support a growing number of devices and must find a way to enable their available bandwidth to handle the load.

## Analytics

Organizations should be proactive, not reactive, when solving problems related to network usage and bandwidth. A consistent effort should be made to identify and resolve issues before they affect end users. This requires actionable intelligence about the network.

Making data-driven decisions based on visual reports about the Internet and network usage of users, departments, times of the day/night, locations, devices, and applications is the ideal way to stay on top of network performance.

This requires good analytics software that presents all the necessary information in easy-to-read reports to ensure adequate network maintenance.

## Signal dead zones

Network signal strength is not the same everywhere. This is caused by many factors: such as the presence of walls and large objects, non-availability of access points, interference from other signals, digital noise, and more. Due to these issues, signal strength may not be enough to support a connection in some parts of the campus. These areas are known as “signal dead zones.”

Such dead zones create considerable inconvenience for students and adversely affect the digital reliability reputation of a university as a whole.

The fix is not easy. It entails checking the signal strength in every nook and corner of the campus. Amelioration may be difficult or impossible as you often cannot simply move walls and other large, fixed barriers.

A better solution is to use mapping software that will present the signal strength across the entire coverage area in a single report. Based on this information, the college management and IT departments may consider measures such as adding new access points or switching to more powerful routers.

## Old and outdated equipment

Outdated equipment can decrease the ability of students and teachers to use the campus network and Internet effectively. It may also mask underlying faults in network management. Some universities address this problem by replacing old equipment with new or by adding access points when needed. This method is rarely a permanent fix. The underlying network usage and management issues continue even with the changeover.

## Lack of visibility and control

Many times, the poor performance of a network is not due to infrastructure or bandwidth issues alone. It also results from a lack of control over who gets access to the available network resources. For example, Netflix streaming can consume all your network resources so enough bandwidth may not be available for a teacher to give an online test. This scenario happens when there are no filters or control over how Internet bandwidth is used.

The solution is to have a tool that provides in-depth visibility and control so access to different applications can be prioritized and controlled.

## Security

Colleges and universities are often targets of cyberattacks because of the high quality of data they store. Health and other personal records of thousands of students and teachers can be stolen and sold. Universities have intellectual property records based on original research conducted at their lab facilities.

To make it worse, not all colleges have high-security protocols embedded in their network — and this vulnerability is well known by cybercriminals.

A [report by University Business](#) shows that 539 breaches have occurred in college networks since 2005, resulting in the compromise of more than 13 million records.

## No easy-to-use management

Not all college administrators are tech-savvy. A simple GUI (graphical user interface) that allows them to do basic tasks like granting permissions is essential from a usability point of view. But many network products don't have an intuitive GUI and this, in turn, means the college has to pay more money to have a technical person or team.



## Addressing current network challenges with Exinda

Many of these challenges are common across all universities and colleges with varying severity levels.

To address these challenges, Exinda delivers WAN optimization and network control solutions to many universities and educational institutions around the world. It helps thousands of customers meet their service level agreements (SLAs) and gain better control over the consumption of their bandwidth and network resources.

Exinda helps address the individual concerns of these institutions and provides solutions tailored to meet their needs. Also, Exinda is constantly innovating to create products and functionality that meets the growing technological needs of the “digital natives” educational organizations serve.

## Managing bandwidth use

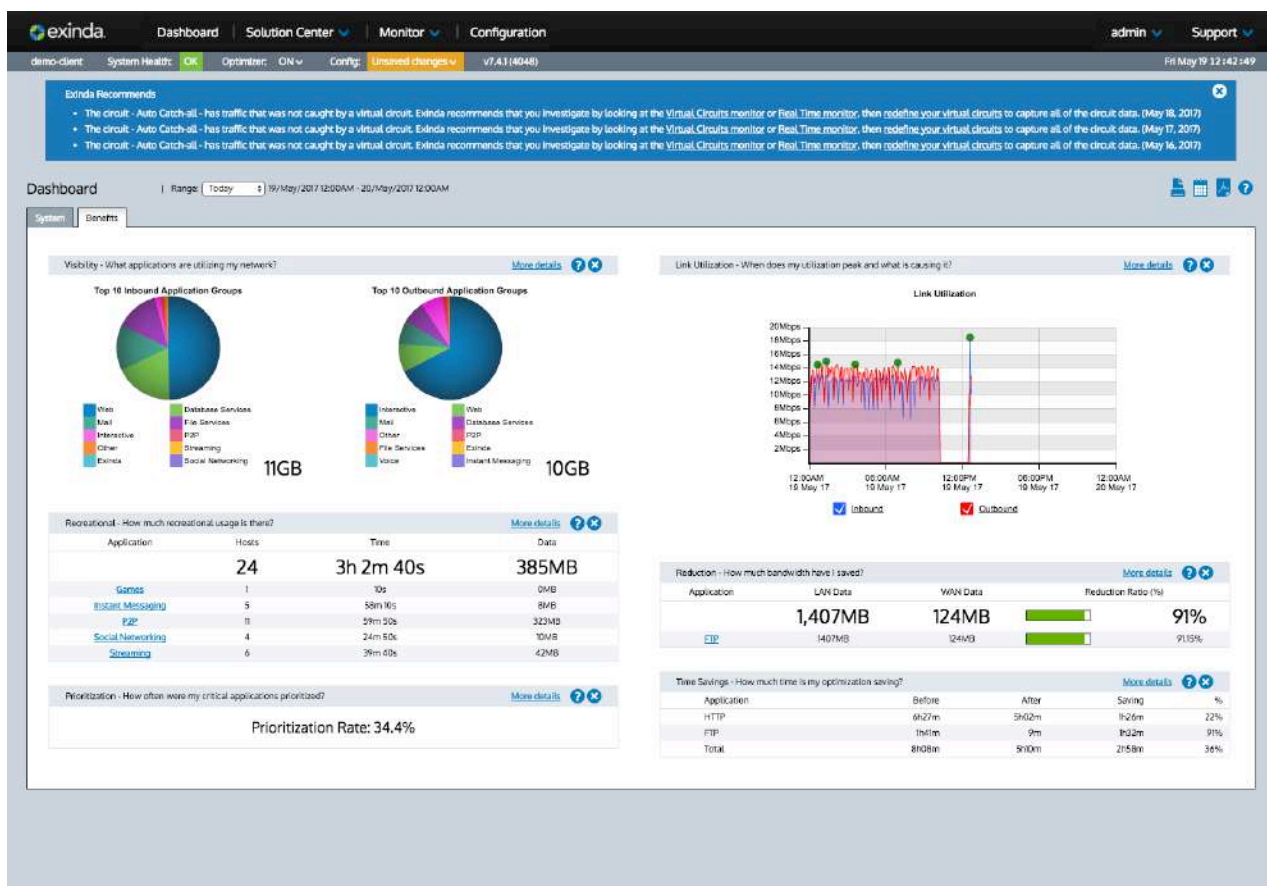
Exinda Network Orchestrator prioritizes applications so more bandwidth is available for mission-critical applications. This helps maintain the integrity of the entire network and at the same time ensures that the available bandwidth is used in the most optimal manner.

Exinda Network Orchestrator gives complete visibility into how bandwidth is used including the applications that access it, duration of access, and other related metrics. Based on this information, colleges can create filters that will provide more bandwidth for educational applications than entertainment.

## Generating detailed analytical reports

College administrators require easy-to-read reports that detail bandwidth usage, total costs, number of devices, and other related information for capacity planning and budgeting.

Exinda comes with a reporting engine that presents all this information in a central dashboard. It even comes with a “Recommendations” section to help identify potential problems in a network and the best solutions for the same. These visually appealing reports are more convenient and readily understood when compared to plain logs.





## Enabling complete control through visibility

Exinda provides complete visibility into bandwidth use and delivers total control over the applications that use the network.

With this control, IT staff can optimize the use of network resources so critical applications are reliable and deliver consistent performance.

In-depth visibility and control also help handle the challenges of multiple devices and BYOD. While increasing bandwidth to deal with the numbers of devices is one option, there is a limit to how much a college can grow its networks. Instead, controlling the number and type of applications that access the network ensure resources are available for educational and business applications over recreational ones.

Case in point: Georgia College in Milledgeville, Georgia. It was forced to impose a cap of 10MB on each student because it was not practical to increase bandwidth usage. However, applications such as YouTube and Netflix continued to drain existing network resources so students and teachers were unable to use academic applications during class hours. Students regularly hit the bandwidth cap leading to a lot of frustration as well.



*We just always assumed we needed to give everyone a bandwidth cap and never considered looking at it from the application side. But right out of the box, Exinda eliminated our bandwidth issue and ensured all of the applications had the network resources they needed for a great user experience.*



**Charlie Weaver,**

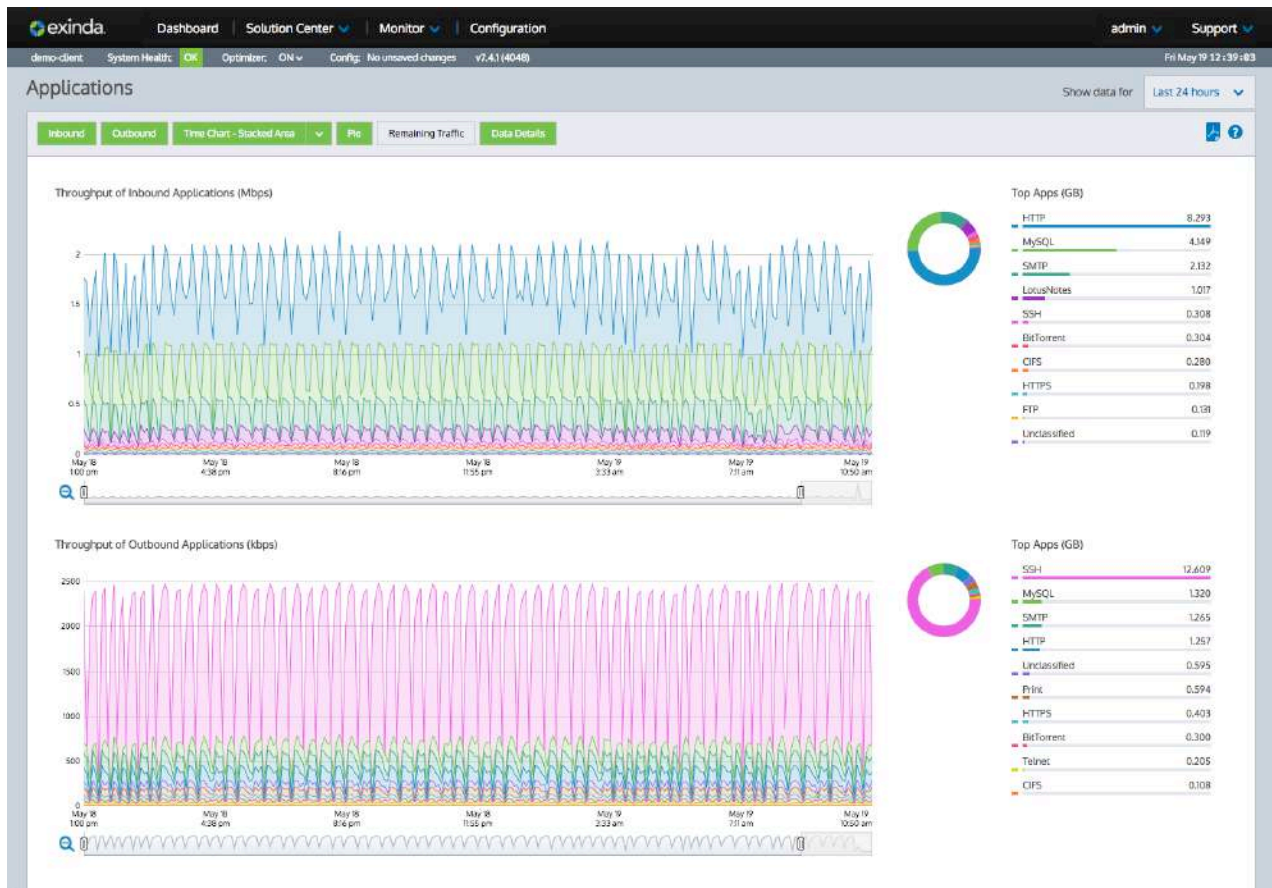
**Director of Network Services & VoIP Telecommunications at Georgia College**

[Georgia College](#) turned to Exinda for help. The previous legacy packet-shaping solution was replaced with Exinda. After install, the college was using only 75 percent of its network resources, user complaints decreased, the performance of learning and recreational apps improved, and there was no bandwidth restriction on students.

[Request your free demo](#)

## Ensuring security

Network control and visibility lead to improved security. It is easy to plug security loopholes by knowing more about the applications and users who access a network.



Exinda Network Orchestrator gives information about the top applications, user groups, and users who are consuming bandwidth. At the same time, it gives in-depth visibility into the different ways network resources are being used. Armed with this information, network administrators can reduce the possibility of breaches and plug other security loopholes.

Case-in-point: [Denton Independent School District](#) is one of the fastest-growing school districts in the North Texas area. This school has 31,000 users across 42 different locations, and the available network was not supporting it well.

The school district installed Exinda and immediately was able to see how network resources were being drained. This tool was able to discover undetected traffic, including traffic routed through VPNs. With such detailed information, the school district realized that many students were using VPNs to bypass the school's filters to access inappropriate content. It could also see that a major portion of its resources was consumed by Snapchat and Netflix. As a result, the performance of educational applications was suboptimal.



*We wanted something that was easy to use and configure and doesn't require a master's degree to operate. Exinda has the ability to see things that our web filter can't see, including instant messaging apps that are typically difficult to block like Snapchat and Kik. It's way easier to create policies now because we can see the traffic and in a matter of a few clicks it's taken care of and we don't have to worry about it anymore.*



**Chris Langford,**  
**WAN Manager at Denton Independent School District**

With these insights, the school could limit the use of non critical applications and block traffic against the school's usage policy. The IT staff could create a safe learning environment for the students, and they could easily comply with the Children's Internet Protection Act as well.

Westminster Public Schools, one of Colorado's largest school districts, embarked on a massive Chromebook deployment to all students and moved standardized testing initiatives online. Westminster needed an application control solution because the district was routinely hitting its bandwidth cap.



*Prior to using Exinda, our No. 1 pain point was that we were maxing out our bandwidth, but couldn't identify what was causing us to keep hitting our cap. After we implemented Exinda, we could finally pinpoint what was consuming the district's bandwidth and control it.*



**Mark Hanson,**  
**Network Administrator at Westminster Public Schools**

[Westminster](#) used Exinda for real-time monitoring and found that YouTube was consuming 75 percent of the district's total bandwidth. With the information from Exinda, Westminster was also able to restrict students' access to district-unsanctioned applications such as Snapchat and Tor as well as eliminating bandwidth bottlenecks.

[Request your free demo](#)

## Simple to set up and use

Exinda can be up and running in minutes. Nontechnical users can set it up using a web-based wizard that takes users through the installation process. With just a few simple answers, Exinda can create a custom configuration and a set of policies tailored specifically for the needs of a particular network. To top it, its GUI is well-developed and easy to navigate.

## Reinforcing adherence to policies

Exinda offers a policy-based traffic-shaping feature that identifies traffic at a granular level. This ensures there are no violations of organizational policies while making it easy for administrators to stay on top of bandwidth use and availability.



## Exinda and educational institutions

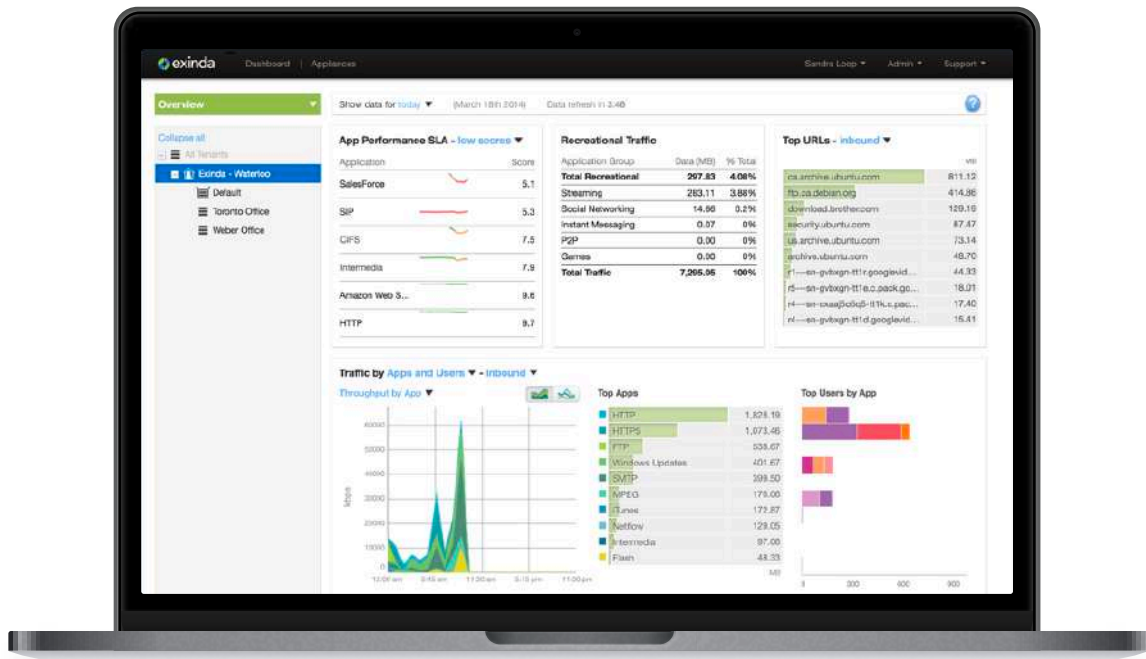
Educational institutions have a complex set of network issues due to the nature of what they seek to accomplish and their clients and network users. Exinda addresses the network challenges and problems faced by schools and colleges. It takes an intelligent approach to network visibility, control, and security. It is part of an integrated and easy-to-use suite of technology that is constantly developing and evolving to ensure it anticipates and manages the next issues colleges and universities may face with their networks.



Reach out to an Exinda  
Solution Expert today



[Request your free demo](#)



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