COMPANY
Klein Independent School District

INDUSTRY
Education

NETWORK SOLUTION
A10 Thunder SSLi
Harmony Controller

CRITICAL ISSUES
• The rising need for SSL decryption was overloading the security infrastructure, impacting the user experience and increasing the risk of attacks.

RESULTS
• Protect 53,000 students and 6,500 staff against cyberthreats and maintain federal compliance
• Decrypt all content for inspection without compromising application performance
• Proactively adapt controls and policies based on new visibility into anomalies and threats
• Maximize the investment in the existing security infrastructure

“With Thunder SSLi we are better protected. We can stop the use of VPNs and proxies and we’re better protected against dirty traffic coming back into our school sites.”

Chris Cummings, Director of IT | Klein Independent School District
INTRODUCTION

The community of Klein, Texas is growing fast, fueled by proximity to Houston, affordable homes, and excellent public schools. The mantra of Klein Independent School District (ISD) is "every student enters with a promise and exits with a purpose." Klein ISD is known for educational innovation and a model for family engagement in an area where families speak 83 different languages. The district educates 53,000 students at 47 schools.

Klein ISD has been a pioneer in 1:1 learning, reimagining primary education with personalized learning, smart classrooms, and a flexible, challenging curriculum. Intermediate and high school students have their own Chromebooks or Windows tablets. Arts are integrated into everyday learning. Accelerated college pathways put students on the fast track to careers like nursing and geospatial engineering. Career and technical education is strong.

CHALLENGE(S)

“As a K-12 school district, it's important that we do our best to protect our students and staff as learning becomes increasingly digital,” says Chris Cummings, director of IT at Klein ISD.

The transformation of learning means more cloud-based applications and digital content are used at every school. But that also creates cybersecurity risk. Most Internet traffic is encrypted, and that allows criminals to hide their attacks in legitimate traffic to deliver ransomware and other malware or steal students’ and families personal or health data.

Klein ISD uses a variety of cloud and on-premises educational applications including learning management, collaboration, student management, as well as other administrative systems. More than 36,000 laptops, netbooks, and tablets are on the network every day.

IoT is growing rapidly, as the district looks to smart, connected devices to make school sites safer and more sustainable. Security cameras and video surveillance ensure the safety of students and staff on school grounds. Smart thermostats make the classrooms more comfortable and deliver energy savings. Smart irrigation systems help the district conserve water while maintaining the grounds and fields.

As learning became increasingly digital, the rising volume of encrypted traffic put a big strain on the district’s security infrastructure, including the firewall, intrusion prevention system, and content filter. Performance degraded significantly, and students and staff noticed.

“It got to the point where we had to turn off SSL decryption on the firewall because it was negatively impacting performance,” says Cummings.

Without the capacity to scan all encrypted content, the district was flying blind to hidden threats. It also meant that the district wasn’t getting the full value of security investments. “We lost out on the app-based filtering policies and metrics that were available in our next-generation firewall,” says Cummings.
SELECTION CRITERIA

Klein ISD set out to find a dedicated SSL decryption solution to offload the CPU-intensive decryption functions. “We wanted to create a secure decrypt zone and send that traffic into the IPS, firewall, and content filter in clear text for analysis,” says Cummings.

A secure decrypt zone is far more efficient than having different security functions each do their own encryption. With a decrypt zone, the traffic is decrypted once, but inspected as needed, which centralizes the demanding work of decryption and helps maintain optimal application performance. A dedicated SSL inspection solution in the zone decrypts SSL-encrypted traffic and forwards it to the firewall, IPS, or content filtering system. Once the traffic is analyzed and scrubbed, the SSL inspection solution re-encrypts it and forwards it to the intended destination.

SOLUTION

After a competitive evaluation, Klein ISD chose A10 Thunder® SSLi® (SSL Insight) to offload the decryption functions and create a secure decrypt zone. With Thunder SSLi, the district’s security infrastructure can analyze and scrub traffic without missing hidden attacks or impacting the user experience. The district uses Thunder 5840S-11, which supports 25 Gbps SSLi throughput and 2 million concurrent SSL sessions.

Thunder SSLi boosted the performance of the district’s security infrastructure, and mitigated the risks of attacks hidden in encrypted traffic. “Having a secure decrypt zone with Thunder SSLi lowers the chance that our security infrastructure will miss an attack,” says Cummings.

Deployment was straightforward. Each type of school – high school, intermediate, and elementary – has a similar suite of applications, and AppCentric templates sped configuration and rollout. Layer 3 Communications, which has a long relationship with Klein ISD, assisted with training and deployment.

“Layer 3 Communications is privileged to be Klein ISDs partner in securing the digital learning environment for the students of Klein ISD,” says Craig Wall, vice president at Layer 3 Communications.

The IT team at Klein ISD handles day-to-day operations. “Operations are straightforward,” says Cummings.

A10 Harmony™ Controller provides the IT team with centralized management and rich analytics into anomalies and threats. Multiple Thunder SSLi devices can be configured centrally, and the Harmony Controller dashboard provides rapid troubleshooting and rich analytics. “Harmony Controller gives us a great view into the aggregate performance of the boxes, which is important as we add more services,” says Cummings.

RESULTS

“With Thunder SSLi, we are better protected,” says Cummings. “We can stop the use of VPNs and proxies and we’re better protected against dirty traffic coming back into our school sites.”

Klein ISD now has full visibility into encrypted traffic across all ports and multiple protocols, enabling its security infrastructure to inspect previously invisible traffic and detect hidden threats. URL filtering reduces risks by blocking access to inappropriate content and malicious websites. The district can better protect sensitive student information and meet a variety of federal mandates.

Creating a secure decrypt zone with Thunder SSLi allows the district to maximize investment in its security infrastructure. “Dedicated SSL inspection with Thunder SSLi allows us to use our firewall, content filter, and IPS to full value,” says Cummings.

Because Thunder SSLi centralizes decryption and securely stores encryption keys, it minimizes the risk that attackers can acquire keys from vulnerable points throughout the security infrastructure and use them for encrypted attacks or data extraction. Thunder SSLi also helps confirm the validity of certificates it receives from the server, so attackers can’t use invalid certificates as a way to infiltrate the network.
The hard work of Thunder SSLi is invisible to students and faculty. "Our students and staff are better protected, but encrypted attacks are not something they should worry about," says Cummings. "We provide them with computers, Internet and Wi-Fi, and we take ownership of the experience from end to end."

SUCCESS AND NEXT STEPS

"K-12 is always searching for ways to make sure students are safe," says Cummings. As next steps, Klein ISD plans to further leverage Thunder SSLi’s functionality to take on the job of its aging web application firewall and load balancers. "We like that A10 offered other services on the same appliance, so we can consolidate servers," says Cummings. And Klein ISD can be confident as digital learning grows, students and staff are well protected against rising encrypted attacks.

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Chris Cummings, Director of IT
Klein Independent School District

ABOUT KLEIN INDEPENDENT SCHOOL DISTRICT

In Klein ISD, every student enters with a promise and exits with a purpose. We will achieve this vision by focusing on pathways, challenge, equity, leadership, and continuous improvement.

ABOUT LAYER 3 COMMUNICATIONS

Layer 3 Communications is a systems integrator that specializes in providing complex network services and products. Along with its hosted solutions, the company provides its customers design, management, optimization and ongoing support of network infrastructure and security (including real-time monitoring and zero-day threat mitigation). Our philosophical approach involves using intellectual capital (people, processes, and technology) to solve problems. Over the last 20 years, Layer 3 Communications has established eight offices distributed across the Southeast and Central regions. Having multiple locations allows us to provide better service and real time support for our clients.

ABOUT A10 NETWORKS

A10 Networks (NYSE: ATEN) provides Reliable Security Always™ through a range of high-performance solutions that enable intelligent automation with deep machine learning to ensure business critical applications are protected, reliable and always available. Founded in 2004, A10 Networks is based in San Jose, Calif., and serves customers globally with offices worldwide.

For more information, visit: a10networks.com or tweet @A10Networks.