

Protecting K-12 School Districts with the Fortinet Security Fabric

Executive Summary

K-12 school districts are rapidly adopting digital innovation (DI) technologies that include mobile devices such as Chromebooks and Internet-of-Things (IoT) devices that enhance student learning experiences. However, these DI initiatives, along with others such as cloud adoption and new eLearning technologies, require a modernized, high-performance network with security that is easy to manage, affordable, and spans cyber and physical protection. To meet these requirements, the Fortinet Security Fabric delivers integrated and automated security that supports digital learning infrastructures, distributed districts, campus safety, as well as student online safety and compliance.

Key Security Challenges for K-12 Environments

K-12 schools face increasing network security risks due to the adoption of new learning initiatives, unknown mobile and IoT devices entering the network, and cloud adoption. In addition, aging networks, legacy security, and a lack of awareness of cyber threats by students and staff make K-12 schools an attractive target for cyber criminals. In an effort to combat threats and deliver high-speed internet access that DI requires, many districts have deployed a number of disparate point products, creating complex infrastructures that are difficult for lean IT teams to manage.

Further, strained IT teams must be responsible for both cyber and physical security. As the risk of criminal activity on campuses increases, districts also need physical surveillance measures that help keep students and staff safe. Schools must also factor in the need to maintain and demonstrate numerous compliance regulations that keep student data secure. Prioritizing where to allocate limited funding and security budgets can be extremely difficult choices. Here, security not only must be effective in stopping the latest threats but it must also be efficient and easy to manage, thus reducing IT resource needs and total cost of ownership (TCO).

Cyber criminals are deploying more sophisticated attacks to compromise personal and financial data that K-12 school districts store.¹

A majority of K-12 school districts do not have a dedicated cybersecurity staff member.²

K-12 School District Security Use Cases

The above challenges break across various use cases for K-12 school districts:

Digital learning infrastructure

K-12 districts are increasingly integrating eLearning tools in the classroom, such as interactive smartboards and issuing students Chromebooks so they can access lesson modules that are hosted in cloud-based applications. School networks not only need to support the bandwidth requirements of these DI technologies but must provide security across the resulting expanded attack surface from device to cloud—where the network edges continue to propagate.

The Fortinet Security Fabric delivers end-to-end integration from device to cloud, protecting the critical data and personal information schools store. In addition, the E-rate eligible FortiGate next-generation firewall (NGFW) can act as a router in K-12 networks, and protects the network from known and unknown threats, backed by industry-leading threat intelligence from the FortiGuard Labs research team. FortiGate NGFWs include multiple security and networking controls as well as a Wi-Fi controller in a single platform for reduced complexity, ease of management, and lower TCO. Fabric Connectors for filtering integrate into the entire Security Fabric, providing critical filtering capabilities of school devices to keep students safe.

To ensure protection of hybrid IT infrastructure that includes multiple cloud applications and services, including Software-as-a-Service (SaaS) and Infrastructure-as-a-Service (IaaS), FortiCASB cloud access security broker (CASB) provides transparent visibility and centralized control. FortiCWP cloud workload protection helps teams keep track of their entire multi-cloud security posture and analyzes traffic across clouds. FortiWeb web application firewall (WAF) uses powerful machine learning to discern between benign and malicious traffic, blocking malicious activity.

In addition, lean IT teams benefit from unified management and analytics. FortiManager enables visibility with a single pane of glass for all Fortinet and partner products, while FortiAnalyzer uses analytics-powered log management to increase efficiencies and offer greater insights.

The distributed district

The majority of K-12 school districts span multiple campuses for individual elementary, middle, and high schools. Resource-constrained IT teams need to deliver secure networking capabilities to each individual campus while maintaining centralized control and visibility.

FortiGate Secure SD-WAN helps deliver a complete WAN edge transformation with WAN optimization, application steering, and unified security management across campuses. In addition, Secure SD-WAN offers simple, zero-touch deployment and reduces TCO. Fortinet SD-Branch further extends these capabilities, allowing IT teams to seamlessly deliver secure access to distributed schools. It consolidates networking, wired and wireless access controls, and security in a simplified platform for complete visibility of the network status of each location.

Campus safety

Ensuring and maintaining the physical safety of students during school hours and functions is of paramount importance to K-12 school districts. This means protecting students from bullying, as well as from the unfortunate potential of criminal activity on campus. Despite some efforts to implement surveillance cameras, violent incidents in schools increased by 113% during the 2017/2018 school year.³ School districts need physical security that integrates with their cybersecurity solutions.

Fortinet physical and security products can be managed with a unified single pane of glass. This enables K-12 school districts to quickly assess activity across their network and campuses. As part of this process, FortiCamera and FortiRecorder work together, delivering network-based video security and surveillance. Schools can monitor doors, hallways, and other public areas with FortiCamera. Meanwhile, FortiRecorder leverages facial and object recognition, providing a live feed to a centralized dashboard.

Student online safety and compliance

School districts are subject to a wide range of compliance and regulations due to the sheer volume of data they store and number of students accessing the internet. The Children's Internet Protection Act (CIPA) and the Children's Online Privacy Protection Act (COPPA) are designed to keep students safe from cyber threats and inappropriate content online, while the California Consumer Privacy Act (CCPA), the Family Educational Rights and Privacy Act (FERPA), and the Health Insurance Portability and Accountability Act (HIPAA) are designed to protect personal data.

Schools can easily meet and demonstrate compliance with automated reporting tools and a single-pane-of-glass management from FortiManager. They can ensure they remain safe with analytics-powered security for faster breach detection with FortiAnalyzer, and the FortiSIEM security information and event management solution provides automatic response and breach remediation powered by a security orchestration, automation, and response (SOAR) engine that works with technologies from a school's existing infrastructure to remediate threats.

Fortinet Differentiators for K-12 School Districts

The Fortinet Security Fabric delivers solutions that span the entire array of K-12 school district needs for physical and cybersecurity. Key differentiators include:

"The FortiGate enables us to eliminate multiple points of failure, simplify our infrastructure, and save money; all at the same time!"

– Steven Wright, Communications and Technical Systems Manager, Manatee County School District

"Fortinet understands the unique challenges we're facing in education to deliver meaningful learning opportunities to students while maintaining the necessary levels of security."

– John McCormick, Associate Chief Information Officer, Upper Grand District School Board

"For us, it was all about the throughput. That's why we chose the Fortinet integrated security platform. We needed comprehensive support for our current BYOD needs and increased scalability for the coming years through 2020."

– Frankie Jackson, Chief Technology Officer, Cypress-Fairbanks Independent School District

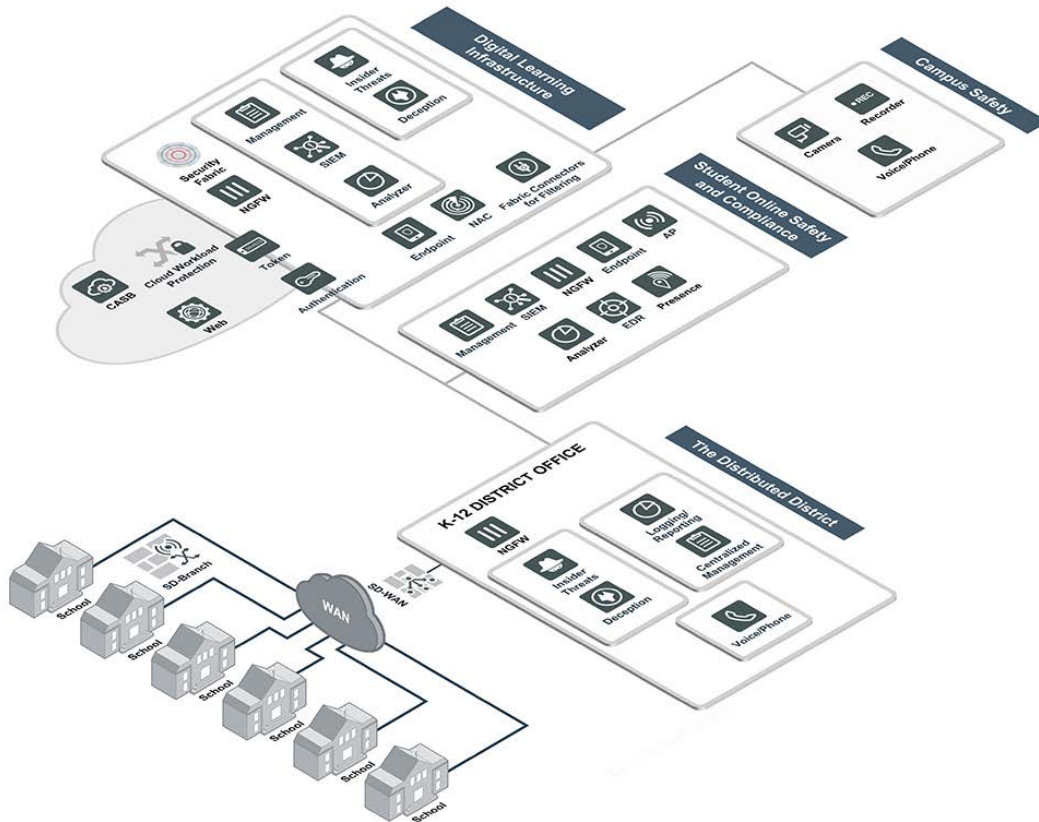


Figure 1: K-12 security architecture overview.

Open, flexible platform

The Security Fabric integrates Fortinet and Fabric-Ready Partner products to enable easier management, better protection, and automation of time-consuming tasks. As part of the Fabric ecosystem, Fabric-Ready Partner solutions in K-12 environments can be integrated with the Fortinet Security Fabric. School districts can leverage existing investments while still gaining the time savings and stronger security of an integrated security architecture.

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SD-Branch

K-12 school districts can provide secure networking to each campus, while controlling access for known and unknown devices with SD-Branch. An extension of the Security Fabric, SD-Branch allows devices to gain high-speed, secure access to school networks all while providing IT teams with complete visibility and control over all connected devices.

Single-pane-of-glass management

Given resource constraints, security management must be simplified and centralized. Single-pane-of-glass management from FortiManager gives small security teams greater control with unified visibility across the network. In addition, it reduces complexity by unifying multiple physical and cybersecurity functions under a single console.

Inside threat prevention

School districts can protect their east-west internal traffic with intelligent intent-based segmentation that quickly quarantines threats. They can further protect against potential insider threats with FortiInsight user and entity behavior analytics, control who and what can access the network with FortiNAC, and automate threat responses with FortiDeceptor.

Proactive threat intelligence

Fortinet invests heavily in research and development (R&D) and holds four times more patents than any other network security vendor. Threat-intelligence experts from FortiGuard Labs work around the clock to discover and analyze threats and to deliver countermeasures in the form of continuous updates to the Fortinet Security Fabric.

Industry leader

To validate product effectiveness and performance, Fortinet frequently participates in third-party tests, consistently earning top scores. Fortinet has earned “Recommended” ratings for different products in tests by NSS Labs,⁴ an independent research and testing organization. Fortinet also regularly receives certifications from ICSA Labs, Virus Bulletin, and more. These unbiased validations let consumers know which products perform the best and deliver the lowest TCO, helping them make informed decisions.

Conclusion

The Fortinet Security Fabric delivers comprehensive, easy-to-manage solutions that address the physical and cybersecurity challenges facing K-12 schools and districts. With an architecture specifically built to meet the needs of public and private school districts, security teams can save time and resources while delivering high-performance networking capabilities and industry-leading security. Fortinet is the K-12 security partner that can provide true end-to-end protection that keeps students safe.

¹ Eric Kellenberger, “[K-12 Schools Overlook a Few Common Cyberthreats](#),” EdTech, January 25, 2019.

² Nicholas Bogel-Burroughs, “[Hackers’ Latest Target: School Districts](#),” The New York Times, July 28, 2019.

³ Marina Pitofsky, “[There were nearly 1,300 more threats made at U.S. schools this past year, report finds](#),” USA Today, August 14, 2018.

⁴ “[Certifications](#),” Fortinet, 2019.



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