SOLUTION BRIEF

Why Fortinet Secure Wireless Gets High Marks in K-12 Education

Executive Summary

As Wi-Fi becomes a more important tool for education, cyberattacks targeting K-12 schools are increasing, with 389 cyber incidents in U.S. public schools occurring in slightly less than three years.[1] School Wi-Fi networks give hackers one of their most promising attack vectors. Meanwhile, school IT teams face tight budgets and greater demands on their time. What schools need is a wireless network solution that minimizes administration time, scales easily to handle growing use, and maximizes security capabilities. Part of the Fortinet Security Fabric, the Fortinet secure wireless solution is easy to use for IT professionals, teachers, administrators, and students, while offering robust security controls such as built-in security, end-to-end network visibility, integrated detection, and automated threat responses.

eLearning on the Rise

eLearning is growing in popularity in K-12 classrooms. The reason is simple: students love almost anything digital. As an example, 54% of students use YouTube frequently, and 40% search for online videos to help them with their homework.[2]

To tap this passion, 63% of K-12 teachers used technology in the classroom daily in 2017, up from 55% in 2016. Laptops are the most popular tool, employed by 86% of teachers.[3] Google Chromebooks are increasingly popular, with 70 million users of Google G Suite for Education recorded in January 2017, up from 60 million in 2016.[4] And school districts plan to increase eLearning further: 40% have a one-device-per-student program, and 43% more expect to reach that threshold within three years.[5]

The foundation for all this eLearning in the classroom is Wi-Fi. 88% of schools indicate they have sufficient classroom access to Wi-Fi, up from just 25% in 2013.[6] Wireless connections are dissolving classroom walls.

The growing use of Wi-Fi puts pressure on school IT professionals. They need to provide wireless services for millions of students, administrators, and teachers, many of whom are nontechnical. They need to onboard student devices successfully and maintain compliance with the Children's Internet Protection Act (CIPA). They must also balance security with the flexibility of allowing almost any device on the network.

The Fortinet secure unified access solution is designed to solve these challenges by delivering high-performance Wi-Fi with proven cybersecurity. It includes both wired and wireless connectivity as well as identity and access management capabilities. The solution simplifies management with the needs of IT professionals and nontechnical users in mind, and it has the ability to scale easily from small learning centers to large campuses.

Highlights Include:

- Choice of deployment options to fit your needs
- Fast zero-touch remote deployment
- Streamlined, centralized management
- Rich set of options for self-service onboarding
- Easy-to-demonstrate compliance
- Ability to discover and understand everything connected to the network

63% of teachers use technology in the classroom, and many of those technologies connect wirelessly.

Wi-Fi adoption in schools has skyrocketed, with 88% reporting sufficient classroom access to Wi-Fi today versus only 25% a few years ago.

Choose a Deployment Option That Fits your Needs

Three options help educational institutions tailor the solution to fit a wide range of needs, from covering a small site to extending coverage across multiple sites that serve tens of thousands of students:

1. **Have a FortiGate Firewall?**
   Schools with a FortiGate Next-Generation Firewall (NGFW) can leverage the built-in Wi-Fi controller to manage access points. No additional equipment or licenses are needed.
2. **Have a Large Site or Multiple Sites?**
   For sites with hundreds to thousands of access points, it makes sense to separate and segment Wi-Fi management from firewall management. The best fit is a Fortinet dedicated WLAN Controller (FortiWLC), which can handle large-scale deployments as well as complex radio frequency functionality. The FortiWLC uses Virtual Cell technology to minimize Wi-Fi channel planning, which can otherwise take months for a large installation. Further, existing access points do not need reconfiguration once a solution is deployed.
3. **Want a Cloud-managed Solution?**
   The third option is cloud-based wireless management. FortiCloud can serve up to thousands of access points, and it makes sense wherever FortiGate firewalls are not in place.

Simplify Wireless Learning

Manage Easily

School IT professionals need to be able to focus on what matters instead of wasting cycles managing day-to-day network operations. Fortinet secure access solutions are designed to save IT staff time. From a single pane of glass, IT professionals can:

- Manage wired and wireless network policies from one interface while easily customizing policies for different sites.
- Manage a complete line of available FortiSwitches, from 1 to 100 Gbps with Power over Ethernet (PoE) and higher-power PoE+.
- Manage FortiAP access points (APs), available for indoor, outdoor, and remote locations. With their plug-and-play installation capability, they are easy to install, with no onsite IT staff required. For bulk provisioning, FortiDeploy enables zero-touch provisioning.

Simplify User Access

IT teams can customize captive portals that make guest access and self-service onboarding easy. Users are protected with automated device integrity checks, virus scanning, and a broad range of authentication options.

Get Automated, Coordinated Security

As the Fortinet secure unified access solution is part of the Fortinet Security Fabric, it provides broad visibility, integrated detection (with many third-party Fabric-Ready solutions), and automated responses to threats. The Fortinet Security Fabric enables IT teams to discover and understand what is connected to the network. It also quickly quarantines an endpoint and sends alerts if indicators of compromise (IOCs) are detected. Additionally, comprehensive protection against wireless protocol and RF attacks, malware, keyloggers, viruses, and zero-day attacks is included.

To assure protection from even the newest attacks, threat experts at FortiGuard Labs work 24/7 to deliver near-real-time automated network protection updates to Fortinet Security Fabric elements.

Additional protection comes from granular application control. It enables IT teams to prioritize, throttle, or block applications at group, user, or device level, using signatures for over 4,000 applications. With this feature, teams can boost productivity by keeping out unwanted applications and content, and prioritizing mission-critical application performance.

FortiGuard Labs has written signatures for over 4,000 applications.

Enhance Compliance

Educational institutions can protect personal student records without affecting teacher applications by using network segmentation. This keeps guests and their devices away from sensitive data. Features such as content filtering, automatic quarantine of compromised endpoints, and automated logging and reporting make it easier to demonstrate compliance with regulations such as CIPA.

Reduce Costs

All security services are included as a standard. Thus, there are no costly surprises as organizations activate new security features—only added protection.

Get Everything Else You Would Expect in a Wireless Solution

Need	Feature	Benefit
Performance	Wave 2 operation on 802.3af	Maximizes speed and performance
	Channel utilization (duty-cycle measurement)	Helps minimize interference
	Automatic channel selection	Optimizes transfer speeds
	Probe response suppression	Ignores weak signals from clients beyond the coverage area to prioritize performance
	Fast failover for controller redundancy	Helps maximize availability
Efficiency	802.3az power-efficient Ethernet	Reduces power use during idle periods
	Broadcast/multicast management	Enables greater predictability of traffic behavior
	Frequency and AP load balancing	Optimizes client connection demand across multiple APs
	Mesh wireless network	Enables many nodes to share one node's wired connection
	Onboard BT/BLE	Integrates with Bluetooth and Bluetooth Low Energy devices
Security	Multiple PSK for WPA2 Personal	Improves security with multiple pre-shared keys (PSKs)
	Rogue detection and suppression	Helps remove rogue APs for greater security
	Fortinet Wireless Intrusion Detection System (WIDS)	Identifies and reports on a wide range of attacks
Ease of Use and Management	Bonjour Genius	Simplifies device connections
	QoS profiles (per SSID/per client)	Provides bandwidth controls per channel or client
	Remote APs	Enables a traveling employee to plug in a FortiAP at a remote site and get the corporate SSID, eliminating the need for a VPN

Figure 1: Wireless requirements in education.

Case Study: East Noble Schools Boost Access and Reduce Cost

For a great example of how to enhance wireless coverage and overall security while achieving savings, consider Indiana's East Noble School Corporation. With 3,700 students at 10 locations, the district faced rising costs for legacy wireless and security solutions.

The IT team turned to E-rate, a Federal Communications Commission (FCC) program that enables schools to purchase security and networking technology at zero or reduced cost, once they can certify that they are CIPA-compliant. Here, East Noble used the E-rate program to deploy more than 400 wireless access points supported by a FortiAP solution, along with 80 FortiSwitch secure Ethernet switches.

The IT team also implemented a FortiGate firewall, which combines intrusion detection system (IDS), firewall, and web-filtering capabilities as well as application control. In addition, the team activated FortiGate VPN capabilities, enabling remote access for security officers to FortiCamera video and for teachers to the grading system. And the IT team added FortiClient to protect endpoints.

Overall results include:

- Up to 10x more bandwidth at most locations
- $45,000 savings in annual network security licensing
- 45% reduction in endpoint protection costs
- 35% reduction in wireless network costs
- 30 hours/month saved in IT administration

"We have a great price-performance ratio with FortiSwitch, and the features that come with them are amazing. We were very impressed with how easy they were to set up and deploy."

– Rick Williams, Network Administrator, East Noble School Corporation

Details

Customer: East Noble School Corporation

Industry: K-12 Education

Location: Kendallville, Indiana, USA

Solutions

- FortiGate
- FortiAnalyzer
- FortiAP
- FortiAuthenticator
- FortiCamera
- FortiClient
- FortiRecorder
- FortiSwitch

A Secure Foundation for Learning

To address the needs of today's eLearning environments and connected students, teachers, and administrators, schools need powerful wireless networks that deliver much more than basic operational support and internet access. They must also provide tools that enable learning without being a burden on IT or a roadblock for teachers.

The Fortinet secure unified access solution provides that foundation, combining it with the most advanced application intelligence on the market. This gives educational IT professionals the tools they need to help students succeed in the online era.

[1] "The K-12 Cyber Incident Map," K-12 Cybersecurity Resource Center, accessed December 3, 2018. 389 incidents between January 2016 and December 3, 2018.

[2] Livia Mihai, "4 Big Reasons Why K12 Students Love eLearning," eLearning Industry, June 18, 2016.

[3] Meghan Bogardus Cortez, "Classroom Tech Use Is on the Rise [#Infographic]," EdTech, September 6, 2017.

[4] Susan Biddle, "Google Chromebook Security: At The Forefront of Education Discussions," Fortinet, July 7, 2017.

[5] Sean Cavanagh, "Snapshot of K-12 Tech Landscape: More Districts Reach 1-to-1, But Equity Gaps Persist," EdWeek Market Brief, January 5, 2018.

[6] Benjamin Herold, "Analysis: 94 Percent of School Districts Nationwide Meet Federal High-Speed Internet Access Targets," Government Technology, September 19, 2017.

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