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S&G Communications

How to Implement a School Firewall with Better Throughput that's Eligible for Category 1 E-Rate

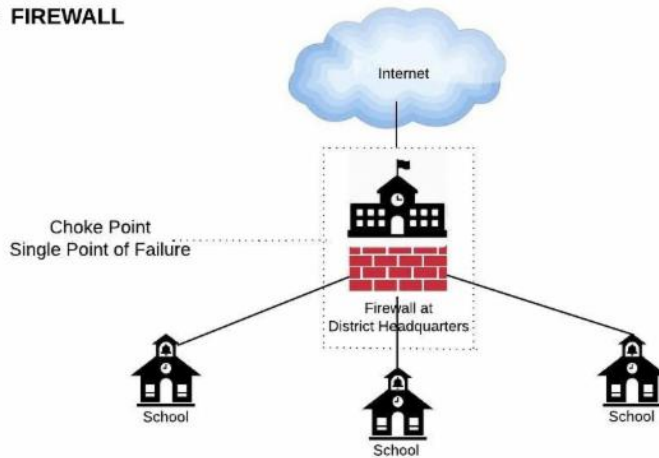To help keep school networks highly secure, a robust firewall is the first line of defense.

Premises-Based and Network-Based Firewalls

All messages entering or leaving your network pass through the firewall which examines each message and blocks those that do not meet the specified security criteria. The two main firewall options available are premises-based and network-based firewalls.
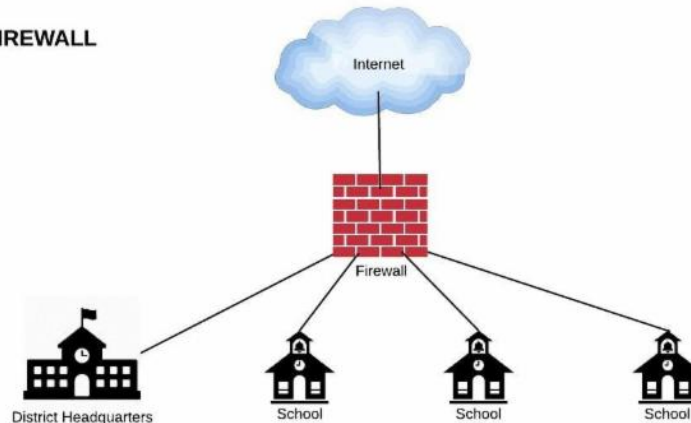
A premises-based firewall is a firewall installed on your site that controls incoming and outgoing network traffic and determines whether to allow it.

A network-based firewall is a firewall installed in your service provider's central office, and provides all the same security functions.

PREMISES FIREWALL

Internet

Choke Point
Single Point of Failure

Firewall at
District Headquarters

School

School

School

NETWORK FIREWALL

Internet

Firewall

District Headquarters

School

School

School

Benefits of Network-Based Firewall in a Multi-Site School District

Increased Network Speed and Throughput

If your district WAN consists of a 1 Gig connection at each site and you have a premises firewall at the district HQ, all schools are limited by the speed of the network connection at headquarters; it is a choke point. In the illustration above, if each school and the district HQ has a 1 Gig connection, all four sites are sharing 1 Gig total, even though they may each have their own 1 Gig fiber.

With a network-based firewall, each school can utilize the full bandwidth available to it. If each school has a 1 Gig connection, it can have the full 1 Gig; it is no longer goverened by the speed of the HQ connection.

Important will be to size the new network-based firewall correctly. It is highly recommended that schools fully configure a firewall with intrusion prevention, next generation firewall, and unified threat management. Each of those functions inspects the traffic more deeply and impacts total throughput. The premises firewall may have performed acceptably by providing 1 Gig of throughput because it only had 1 Gig of bandwidth. With 3 schools and a HQ that want to utilize their full 1 Gig of bandwidth, a firewall that can provide up to 4 Gig of throughput is required. That is a much more robust and expensive firewall, but can be a far more cost-effective solution than increasing the bandwidth to 4 Gig at the HQ.

Other Benefits

- There is a substantial savings because the link to the district HQ can remain 1G
- The single link from the district HQ is no longer a single point of failure for the entire network, each school has direct internet access
- Network engineers centrally manage security policies and user permissions and school IT resources can focus on education
- No over-subscription; school can have full bandwidth to the internet
- A network firewall can be custom-tailored to meet state and federal Children's Internet Protection Act (CIPA) requirements and adapt to policies as compliance requirements change
- A network-based firewall has been approved by USAC as a category 1 expenditure

Category 1 E-Rate Eligible Firewalls

E-rate eligibility rules view premise-based firewalls as a Category 2 service, meaning there's only a limited amount of funding available to help you purchase and maintain a firewall within each five-year period. **A network-based firewall bundles high-speed internet access with a network-based firewall and USAC confirms it is eligible for Category 1 E-rate funding**. Because of this eligibility, schools may be able to get help from the E-rate in paying for a firewall without being subject to the five-year funding cap on Category 2 services.

NexGen has Engineers to Help You

NexGen's engineers can help you with all of your technology upgrades, provide you with multiple quotes, and provide all the information you need for your E-Rate documentation.

NexGen is a telecom and network engineering firm specializing in advanced IP voice and data, cloud services, network analysis, network optimization, wireless, and structured cabling. We create customer solutions by designing, installing, and maintaining their systems. For more information, contact Jack Bush at 847-459-1220 or jbush@sandgcom.com.

NEXGEN IS AN E-RATE APPROVED VENDOR

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About NexGen / S&G Communications

Our engineers provide design and implementation of IP phone systems and network services from all the leading carriers. We also offer WiFi services, cloud services, network analysis and network optimization services.

Our technicians install voice and data cabling, fiber optic cabling, racks, cabinets, under-floor tray systems, wireless access point installation, and more.

Our installers are certified, union technicians. By using quality products and certified technicians, we can provide you with an infrastructure capable of supporting all applications designed for today's standards.

Training and Service - As a provider of premier IP phone systems, we offer free on-site training and a suite of post-implementation services to help you successfully maintain your system.

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