

# Enabling the Digital Transformation of Education

Nuclias Solutions by D-Link are designed to rebalance the on-campus learning equation by putting professional-grade managed wireless capabilities back into the hands of educators. By minimizing the burdens, lowering the barriers and solving problems, they enable the EdTech revolution to achieve its full potential – at the primary, secondary and tertiary levels.

EDUCATION

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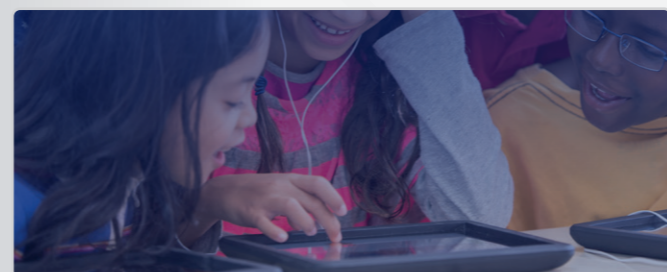
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How you face today's challenges in **Education** will define your success over the coming years

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## Today's education challenges

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- » Education is Transforming
- » More Bandwidth is Needed
- » More Devices are Connecting
- » Cybersecurity Risks Are Growing
- » Obsolete Infrastructure
- » Overextended IT Staff
- » Solutions Are Needed
- » Budgetary Restrictions

# Key challenges educators like you are currently facing

1.

## Education is Transforming

Educational Technology (EdTech) promises a more personalized and dynamic learning experience in schools, on campuses, and at various other institutions of study. But the Digital Transformation of education is bringing with it a variety of pressures that are pushing faculty and IT staff out of their comfort zones, creating a need for wireless network solutions that alleviate them.



2.

## More Bandwidth is Needed

In 2013, the FCC issued guidance that 100kbps per student was the minimum bandwidth necessary for schools to provide a connected learning experience. In 2018, as the expectations moved beyond mere connectivity towards personalization, that threshold increased tenfold, with further increases possible as Augmented Reality, Virtual Reality (AR/VR) and the Internet of Things (IoT) enter the picture.



3.

## More Devices are Connecting

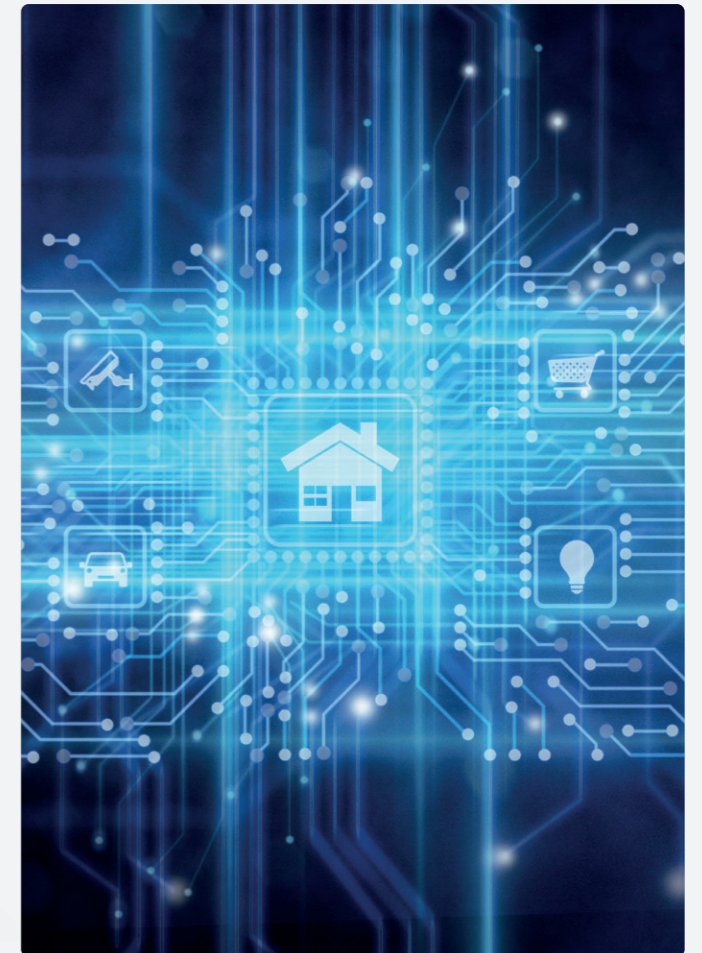
When the 2013 guidance was issued, there were two connected devices per person on US college campuses. That number has since doubled and is projected to double again by 2025. This sheer number of connected devices creates problems for campus wireless networks, since many are using wireless technologies from one or two generations ago and weren't designed with IoT-scale connectivity in mind.

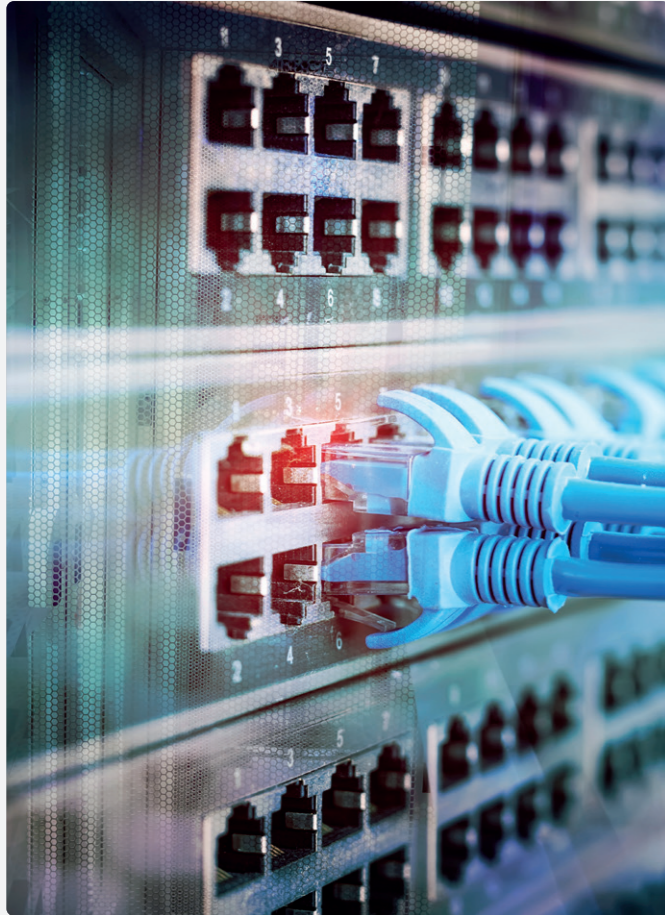


4.

## Cybersecurity Risks Are Growing

Any new device on your network is a security risk, as bad actors are making clear. Schools are increasingly being targeted for data breaches and ransomware, while parents and lawmakers increasingly expect educators to do more to protect student safety and privacy. This creates new types of stress for institutions of learning, many of which lack dedicated cybersecurity staff.





5.

### Obsolete Infrastructure

Many campus networks in use today were built to meet the FCC standards from 2013, and many of those are comprised of equipment well past its warranty, and therefore no longer receiving updates to security that address the latest threats. And even if updates are still coming in, they may not be reaching all the devices of your network, since you may be using an unmanaged deployment, with equipment from multiple vendors. An unmanaged campus network deployment (regardless of its age) is inherently obsolete, because it has no centralized security update mechanism, no significant transparency (which makes bad actors' activity and latent network problems very hard to spot), and is very hard to upgrade in terms of capacity (for a variety of technical reasons).



6.

### Overextended IT Staff

The IT footprint on campuses is growing fast, and educators need ways to lighten the administrative workload. And since many schools lack significant network engineering expertise, outsourcing the administration would be highly efficacious. Unfortunately, this is very hard to do with an unmanaged deployment, as remote administration is nearly impossible.



7.

### Solutions Are Needed

Many educators have been trying to minimize networking expenditures by using consumer-grade gear. This is problematic, as consumer-grade gear typically has a relatively short warranty, and isn't meant to handle a high-volume workload for long periods. Enterprise-grade solutions have the capabilities educators need, but they can come with a steep price tag, which often includes many technical features that educators don't really need. Professional-grade solutions are needed that address real-world IT headaches for educators, without exceeding their means.



8.

### Budgetary Restrictions

And finally, there is the cold hard matter of dollars and cents, and the lack thereof in education, which makes it hard to pay the salaries of IT people and to buy IT equipment. With the average K-12 school in the US already spending \$400 per student per year on IT, educators must find new ways to keep this number from growing.

The answer?

# Nuclias Managed Networking Solutions by D-Link

Nuclias managed networking solutions deliver the robust infrastructure that educators need to connect large numbers of Wi-Fi devices seamlessly, and the tools to minimize the hassles, lower the barriers, and solve the problems inherent to the Digital Transformation of on-campus learning at the primary, secondary, and tertiary level, with no pre-requisites in terms of an institution's size, hosting needs, or IT resources on hand.

*Your Network, Your Way*

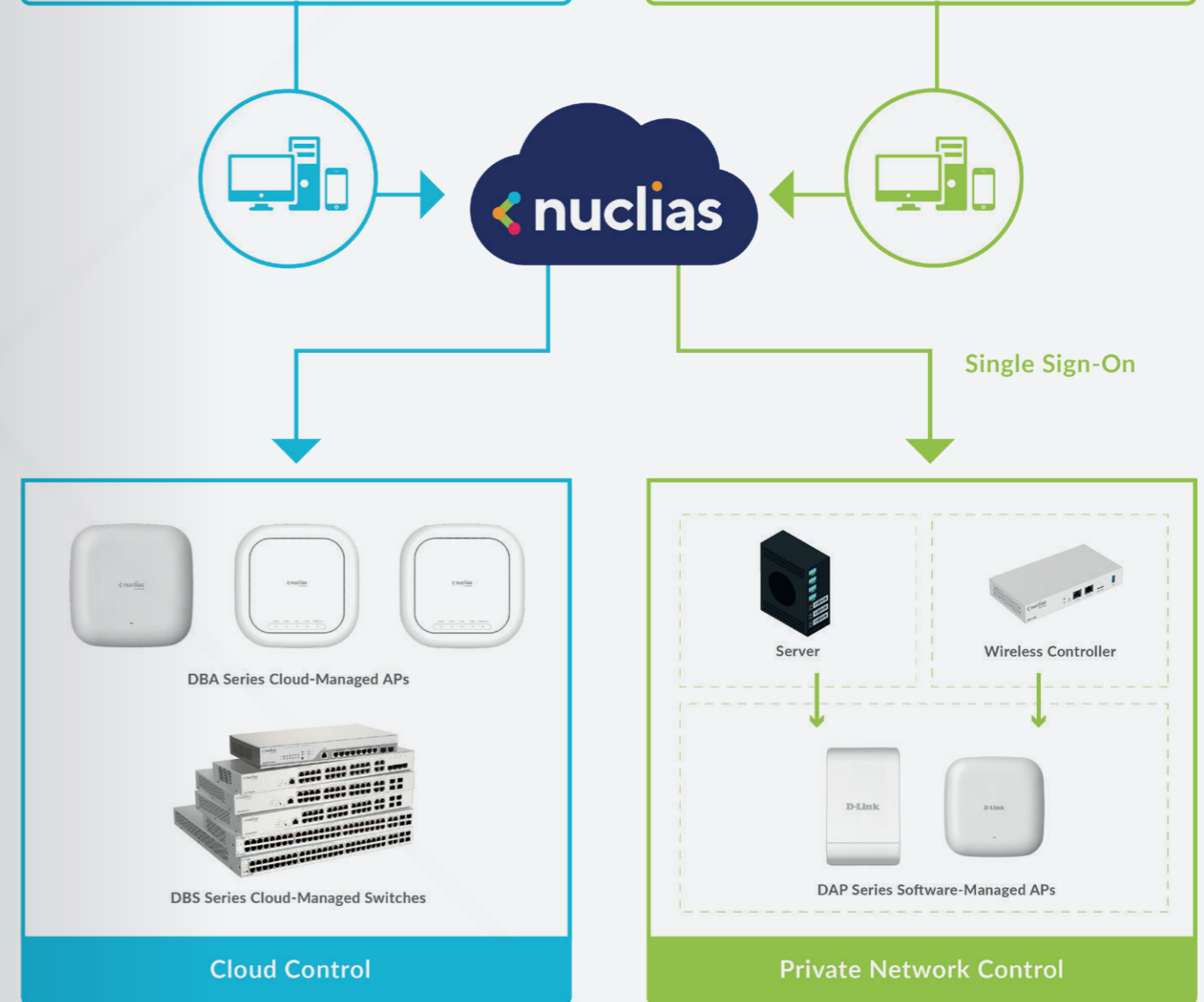


# Why are leading educators turning to Nuclias?

Nuclias Managed Wireless Networking Solutions offer the capability, hosting flexibility, and value that educators need to carry out their Digital Transformation efforts with minimal burden, inconvenience, or distraction. Both solutions offer centralized remote network management via an intuitive interface, and multi-tenant architecture that makes outsourcing a breeze.

A 100% Cloud-Managed Turnkey Wireless LAN solution that enables centralized management and configuration of every Device, every Site, and every Deployment on your Nuclias Cloud network, with no limitations whatsoever in terms of scale or geography, and no need for onsite IT management support or hosting equipment.

A Software-Based Managed Networking solution that combines remote centralized multi-site monitoring, management, and troubleshooting of wireless devices with flexible localized hosting and easy customization.



# Nuclias: Solution Comparison

		
Management	Wired and Wireless	Wireless
Hosting	100% Pure Cloud	On-Premise, Cloud-Enabled
Components	Cloud Platform, APs, Switches, Gateway	Software Controller, APs, Control Hub (Optional)
Access	Web Browser, Tablet App	Software, Mobile App
Multi-Site Management	Yes (Integrated)	Yes (via Single Sign-On)
IT Expertise Required	Low	Moderate
Configuration	Zero-Touch	Onsite
Scalability	Unlimited	Up to 1000 devices







Nuclias Solves  
Problems  
for **Educators**

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## Network Problems

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- » Too Many Devices, Too Much Demand
- » Too Many Disruptions

## Too Many Devices, Too Much Demand.

A bandwidth-starved online experience is defined by waiting, for websites to open, for uploads to complete, and for interactive tasks (such as tests) to respond. It also means being kicked off certain sites due to timeouts, and difficulties with streaming video and multimedia. But the real problems come after that, when students and faculty get frustrated, student attention starts to wander, and planned activities exceed their allotted time. An overcrowded network will also exhibit these same difficulties, with added challenges with logging in and staying logged in, making for a highly unpredictable and unreliable network experience.



## Enter Nuclias

Nuclias's core function is to connect bandwidth to more devices. It achieves this through more intelligent resource allocation and coordination across all network devices than what you would have if each device acts alone, coupled with newer, more powerful, and more efficient radio frequency (RF) technologies than what you may be using now.

### Key Solution Features

- 01. Auto RF Optimization
- 02. Airtime Fairness
- 03. Bandwidth Prioritization & Quality of Service (QoS)
- 04. Cutting-Edge Technology



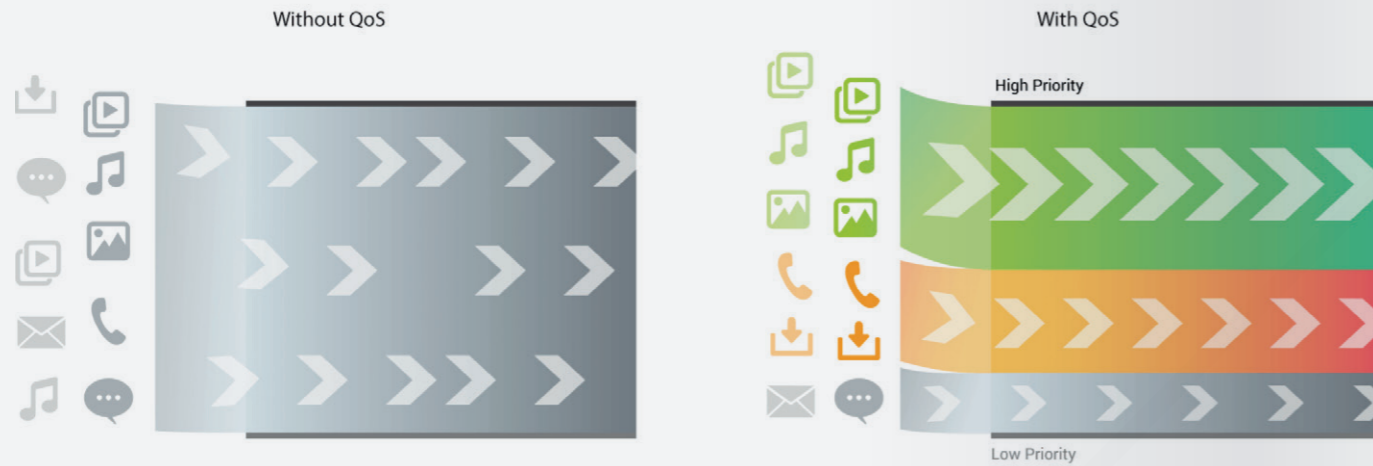
### 01. Auto RF Optimization

A wireless campus network is a complex system, and Nuclias intelligently coordinates the workload between the Access Points (APs), enabling better coverage and performance per AP than each could achieve on their own. This coordination also enables better client handover between APs, so that network service interruptions are minimized as users move around campus.



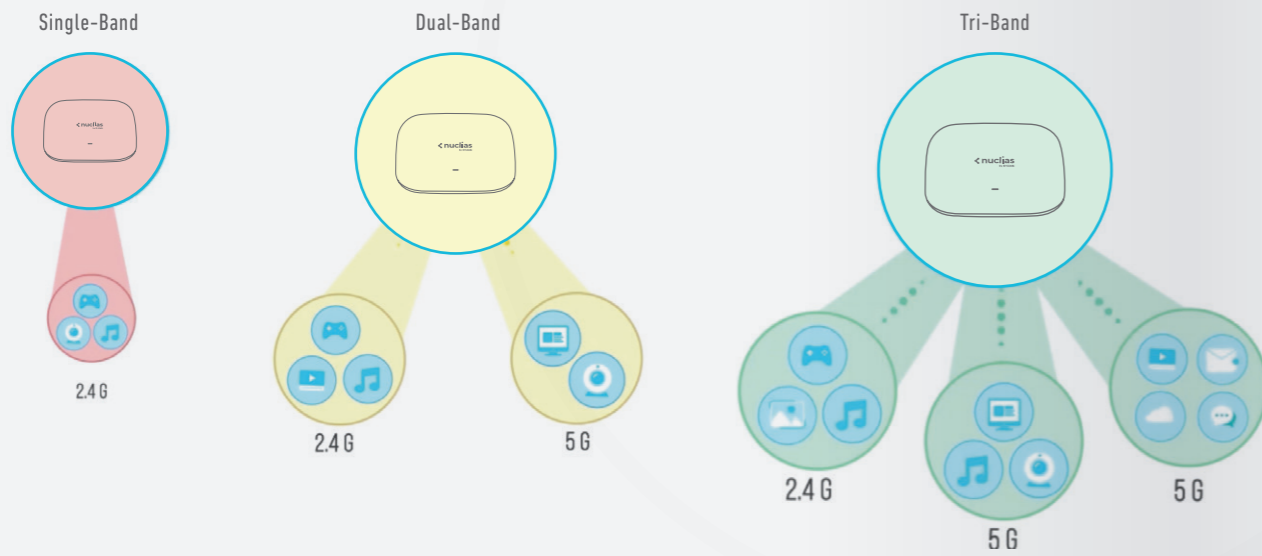
### 02. Airtime Fairness

If one network user consumes a large portion of the available wireless bandwidth in a given area, it can create a poor online experience for other users nearby. But Airtime Fairness eliminates this problem, by allocating an equal amount of bandwidth dynamically to everyone within a coverage area, so no one's experience suffers to excess.



03. **Bandwidth Prioritization & Quality of Service (QoS)**

Bandwidth to a specific device (such as the main classroom monitor) or to a specific network (such as the teachers' network) can be prioritized, so that lesson-critical online activities are less likely to freeze-up or fail. Traffic can also be prioritized by category to favor certain resource-intensive activities (such as video streaming or remote conferencing).

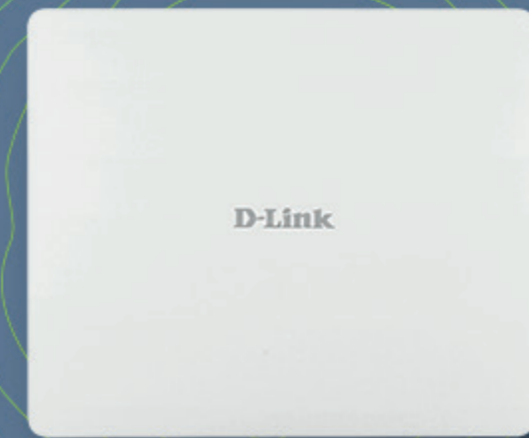


04. **Cutting-Edge Technology**

Nuclias offers a variety of device-level innovations and technologies that enhance the online experience compared to legacy networks. The latest generations of 802.11ac Wave 2 and Wi-Fi 6\* are supported on select devices, as are Tri-Band and Smart Antenna technology, all of which are enable a much higher connected device density and greater bandwidth.

\*Wi-Fi 6 refers to IEEE 802.11ax standard

# A Higher Power for a Greater Distance



## Too Many Disruptions

Beyond the aforementioned capacity reasons, network problems can stem from a variety of technical problems that can be even more disruptive, and can be a race against time to fix. And if an IT person is hurriedly dealing with a technical problem on your network, it means that other tasks aren't being done, and those things matter too.



## Enter Nuclias

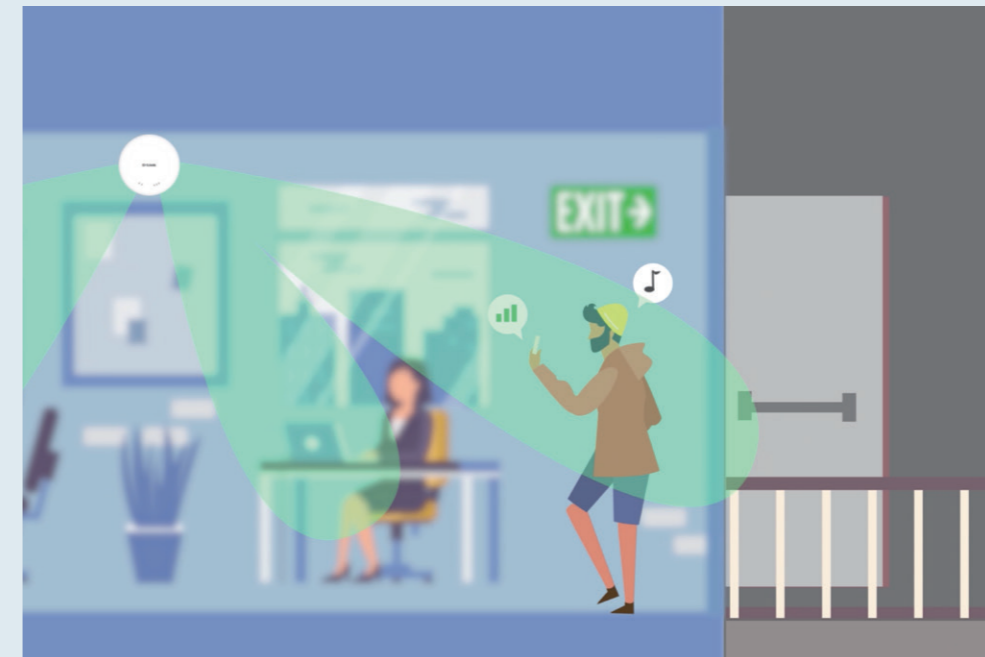
Nuclias is designed to address this concern, both by minimizing the number of disruptions, and by minimizing the time it takes to address them, by eliminating network bottlenecks, enhancing redundancy, and alerting you to latent issues before they become disruptive.

### Key Solution Features

- 01. Network Self-Healing
- 02. Mobile Alerting
- 03. Geographic Overlay



Smart Antenna



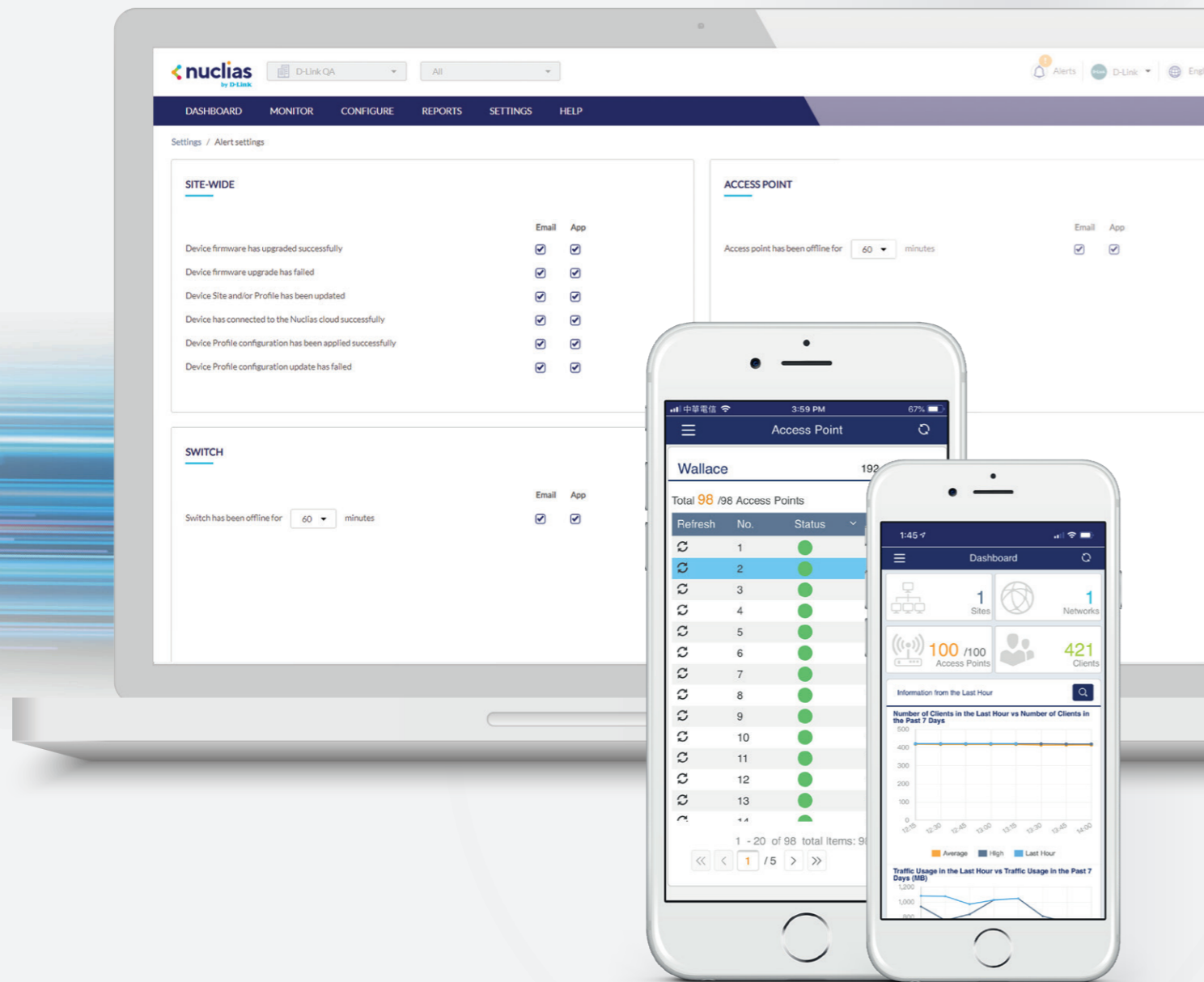
Smart Antenna

\*Supported Model: DBA-2620P

### 01. Network Self-Healing

Because of the interference they generate, individual Access Points in a network deployment typically don't run at maximum coverage power. This, combined with Nuclias's intelligent device coordination, enables other APs to compensate automatically if one should fail or malfunction.

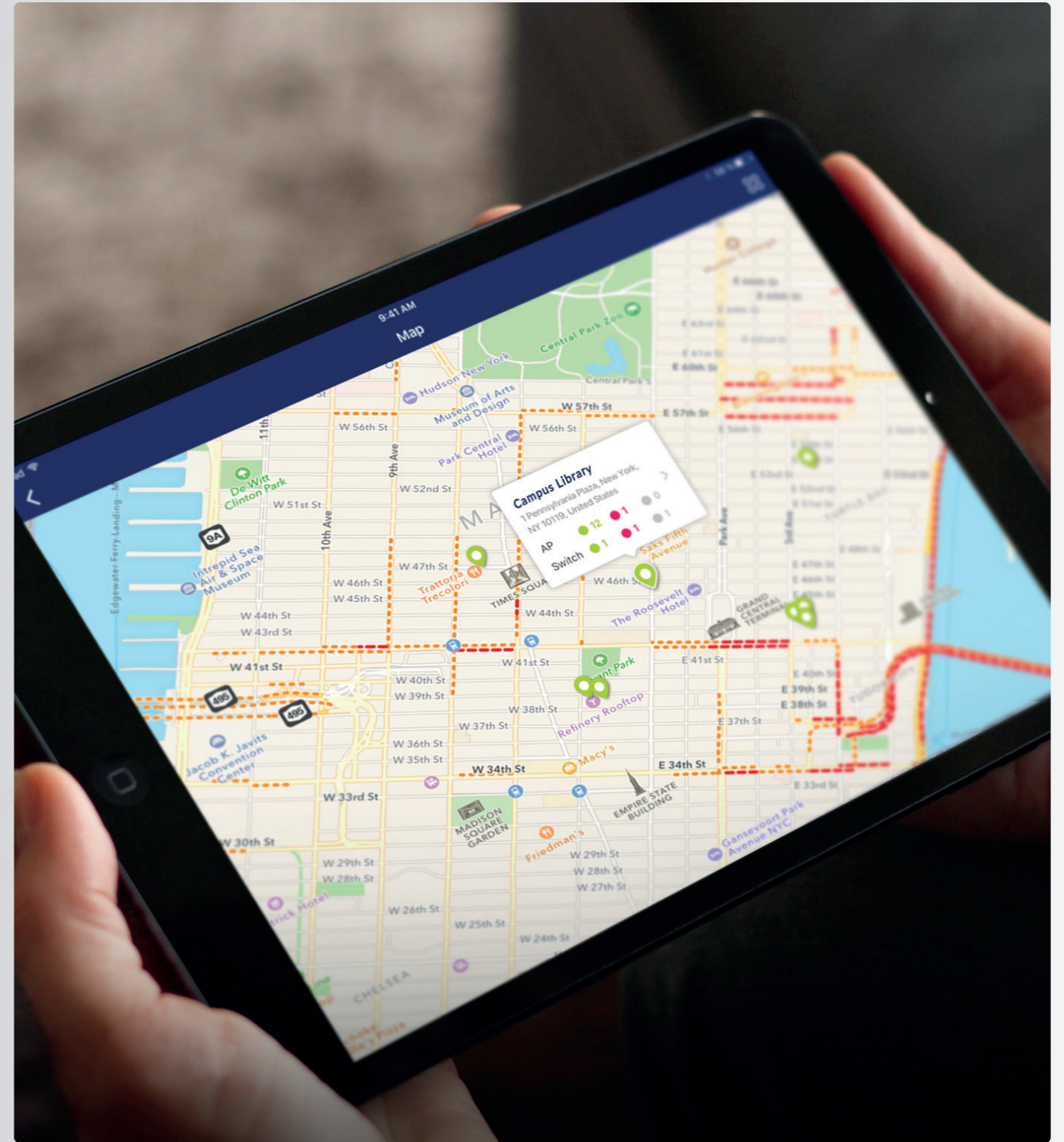
\*Support: Nuclias Cloud



02. **Mobile Alerting**

— If a network failure occurs, you don't want your network admin finding out about it at the same time as your students and teachers. But with Nuclias's ability to send out mobile alerts anytime via mobile app or email, admins will have as much time as possible to respond, and perhaps prevent a learning disruption before it occurs.

\*Support: Nuclias Cloud and Connect



03. **Geographic Overlay**

— With Nuclias, every Access Point (and relevant alarm) can be viewed in Google Maps, making it much easier to track down points of failure, while also enabling a more intuitive and granular understanding of your network, which can enhance the efficiency of planning, installation, expansion, and a variety of other administrative tasks.

\*Support: Nuclias Cloud Only



Nuclias Solves  
Problems  
for **Educators**

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## Safety, Security & Privacy Problems

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- » Protecting Students
- » Protecting Schools

## Protecting Students

Online learning and testing materials are being increasingly integrated into the on-campus learning experience, which means students are spending more time online during class and between classes, and educators have a responsibility to keep those activities safe and private.

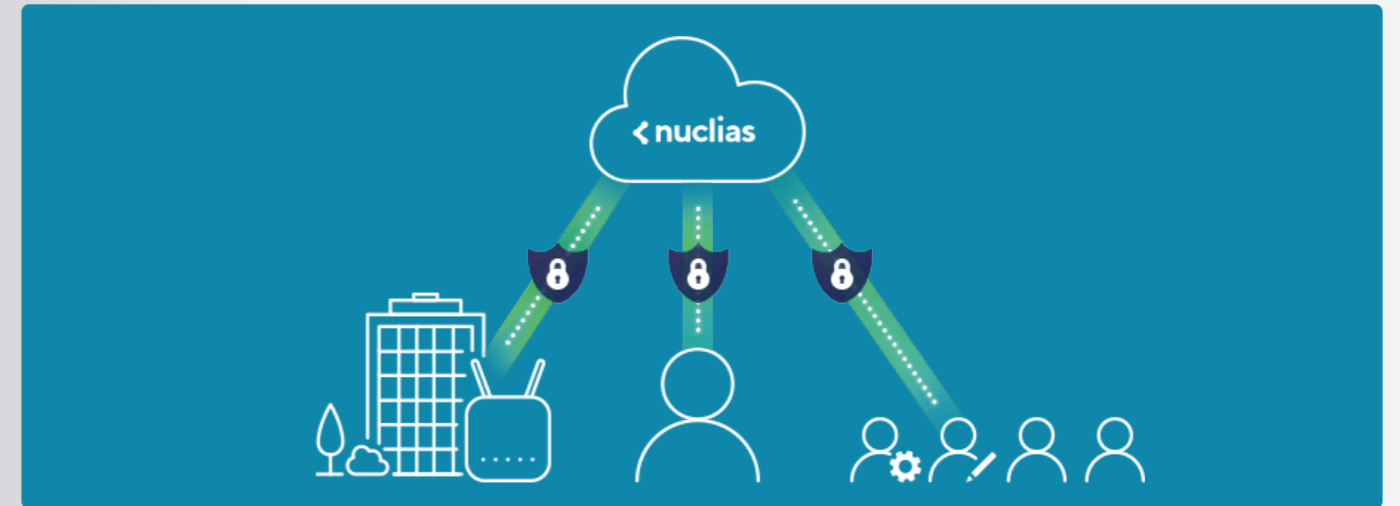


## Enter Nuclias

Nuclias protects students by making it easier for educators to regulate their online activities, both in terms of what they can do online and what they can't do online, and by minimizing their potential exposure to bad actors while connected and/or utilizing your school network.

### Key Solution Features

- 01. Robust Encryption
- 02. Whitelist/Blacklist
- 03. Network Access Scheduling
- 04. Captive portal
- 05. Ticketing Ability



### 01. Robust Encryption

Nuclias's robust encryption capabilities (up to 192 bits) go above and beyond the aging WPA2 standard in use since 2004, while adding other measures to protect your network against intrusions and attacks on the insecure passwords often found in user-brought (BYOD) and IoT devices.

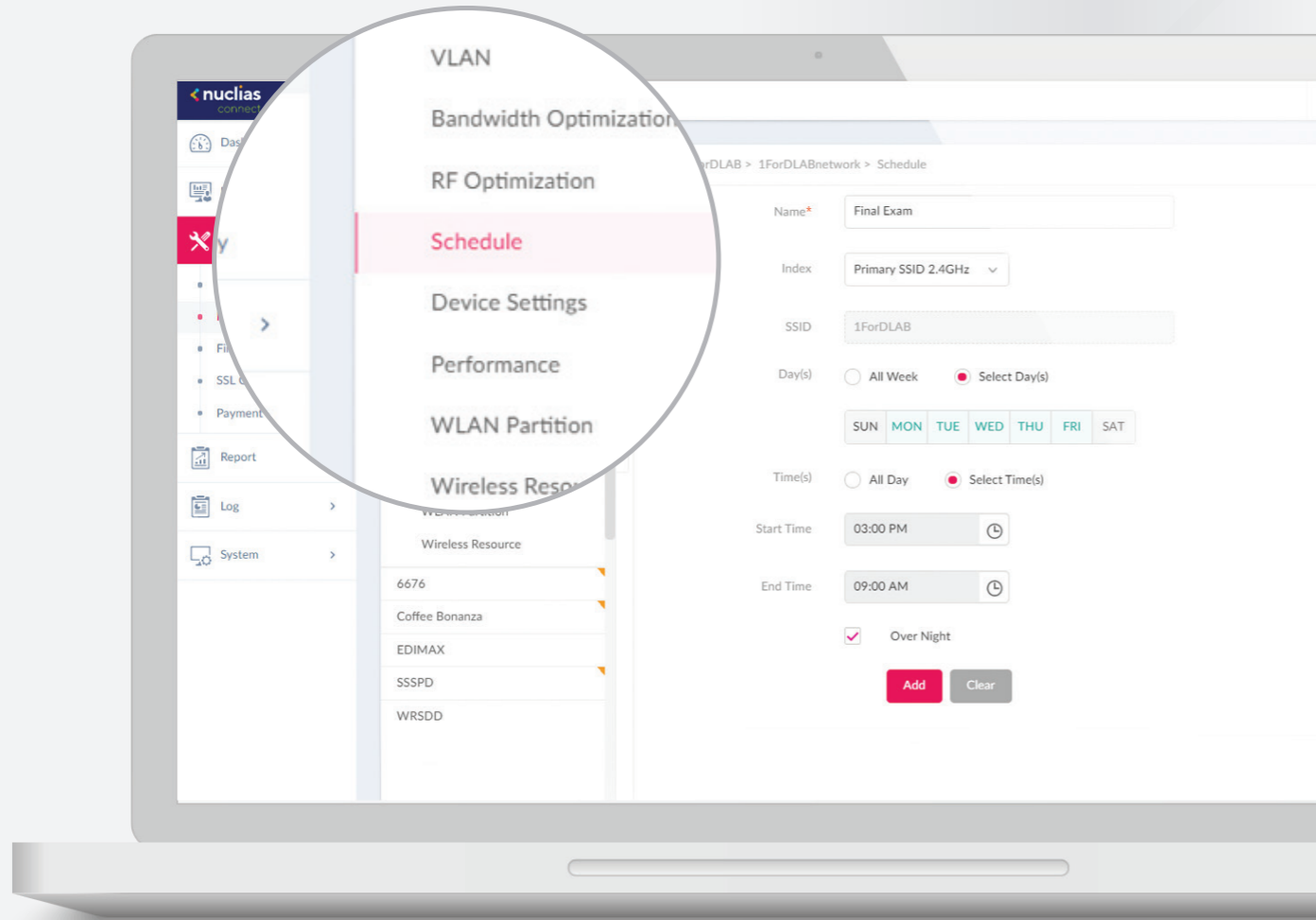
\*Support: Nuclias Cloud and Connect



### 02. Whitelist/Blacklist

This function (also known as Access Control Listing) allows educators to confine user Internet access to certain websites, or to block access to certain websites. Not only does this limit student access to distracting or objectionable content, it's also a good security practice, as such sites often harbor malware.

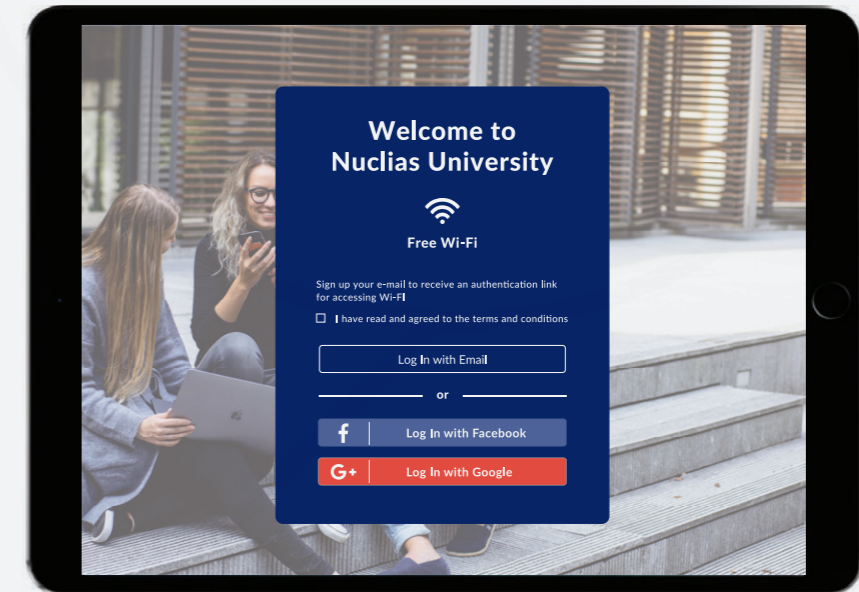
\*Support: Nuclias Cloud and Connect



03. **Network Access Scheduling**

— This feature lets schools restrict online access to certain times of the day, a useful feature if you want to eliminate online temptations during times when students should be looking at their books, taking tests, playing in the gym, or sleeping.

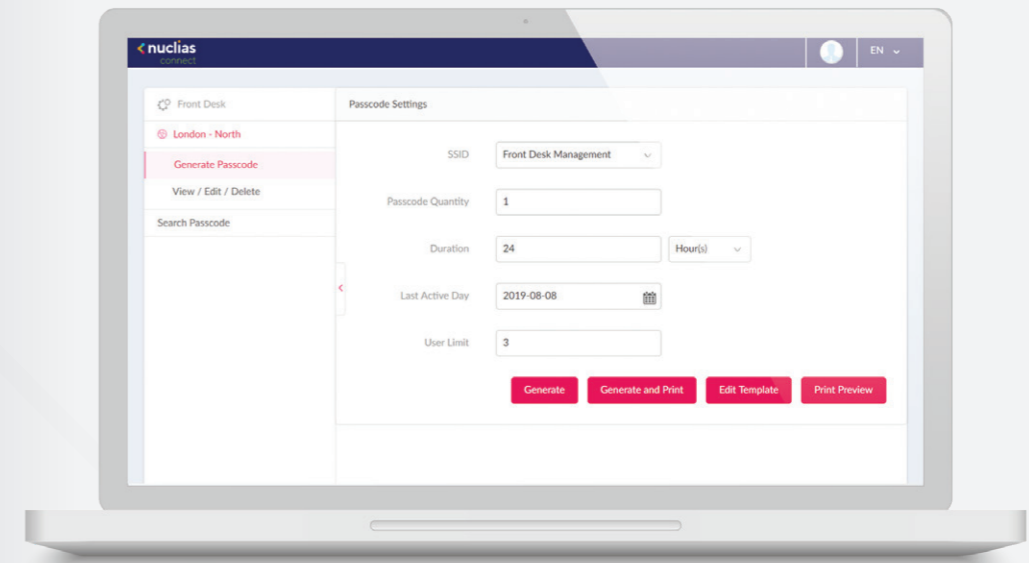
\*Support: Nuclias Cloud and Connect



04. **Customized Captive Portal**

— Easily create a customized captive portal through our splash page editor with your school's existing theme and collect client's access log for offline presence analytics.

\*Support: Nuclias Cloud and Connect



05. **Front Desk Ticketing Management**

— Front Desk Ticketing Management allows you to easily and securely offer temporary Wi-Fi passwords for visitors such as academic visitors or conference guests to prevent out-of-hours or unauthorized Wi-Fi access.

\*Support: Nuclias Connect



## Protecting Schools

As educational institutions grow increasingly technology-dependent, they increasingly become tempting targets for bad actors. Sometimes the results of an intrusion are relatively minor, like when some of your computing power is hijacked to mine cryptocurrency. Or they can be major, like when access to your school's vital data is thwarted during a ransomware attack.



## Enter Nuclias

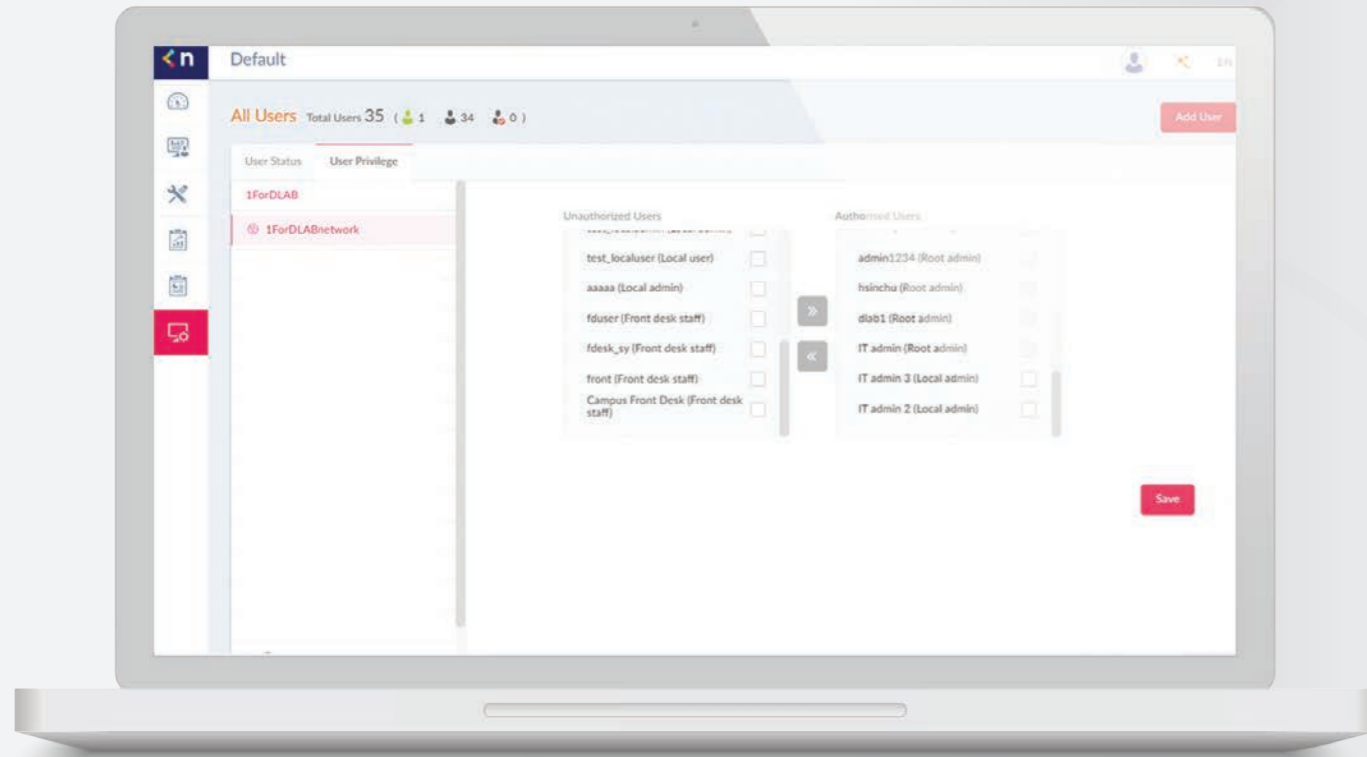
But Nuclias helps protect your vital IT infrastructure by making it harder for the wrong people to access and utilize it, without asking your staff, faculty, and IT people to become cybersecurity experts themselves.

### Key Solution Features

01. Network Transparency
02. Tiered Access
03. Social Login



01. **Network Transparency** / The ability to see what's happening on your network is a major security advantage, as bad actors often create anomalous traffic patterns that are easy to spot, and they can even add additional Access Points (Rogue APs) that can utilize your network without authorization. But Nuclias has functions that can spot Rogue APs, and illustrate your traffic intuitively, making it easy to identify what doesn't belong.



02. **Tiered Access**

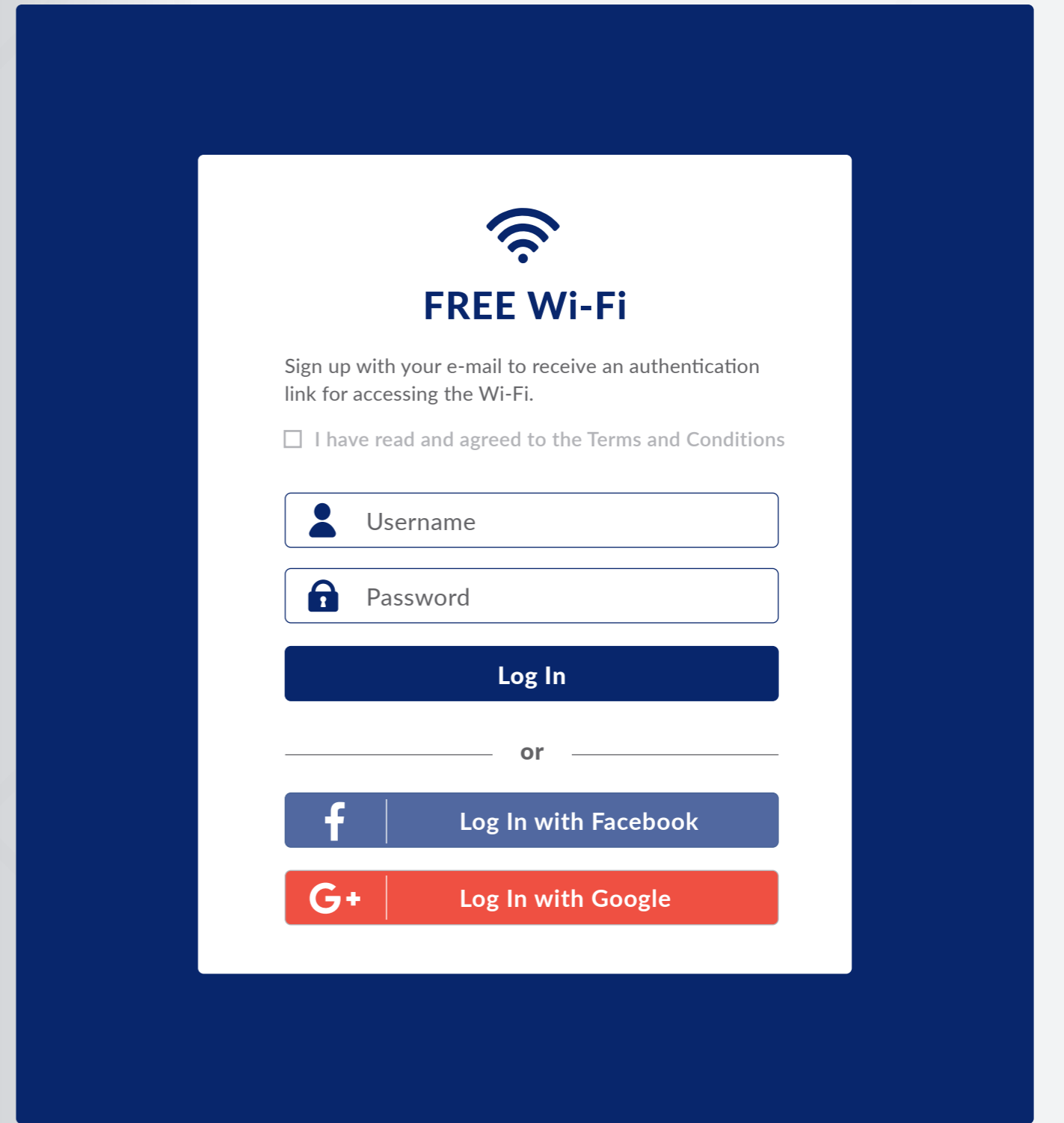
✓ Nuclias enables the creation of separate virtual networks over the same physical network equipment, with different levels of access for each user category (educators, students, guests, etc.), so that each has access to what they need, and nothing more.

\*Support: Nuclias Cloud and Connect

03. **Social Login**

✓ An open network for guest users, or even one with a single generic password, is practically an invitation for bad actors to come right in. But Nuclias enables guest users to login using their Facebook or Google passwords, enabling schools to maintain a reasonable degree of security on these networks with minimal effort.

\*Support: Nuclias Cloud and Connect





Nuclias Solves  
Problems  
for **Educators**

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## IT Problems

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» Minimal IT Resources

## Minimal IT Resources

Digital Transformation is forcing educators to become tech experts, a very awkward situation as schools are typically understaffed and under-resourced compared to businesses with comparable IT needs.

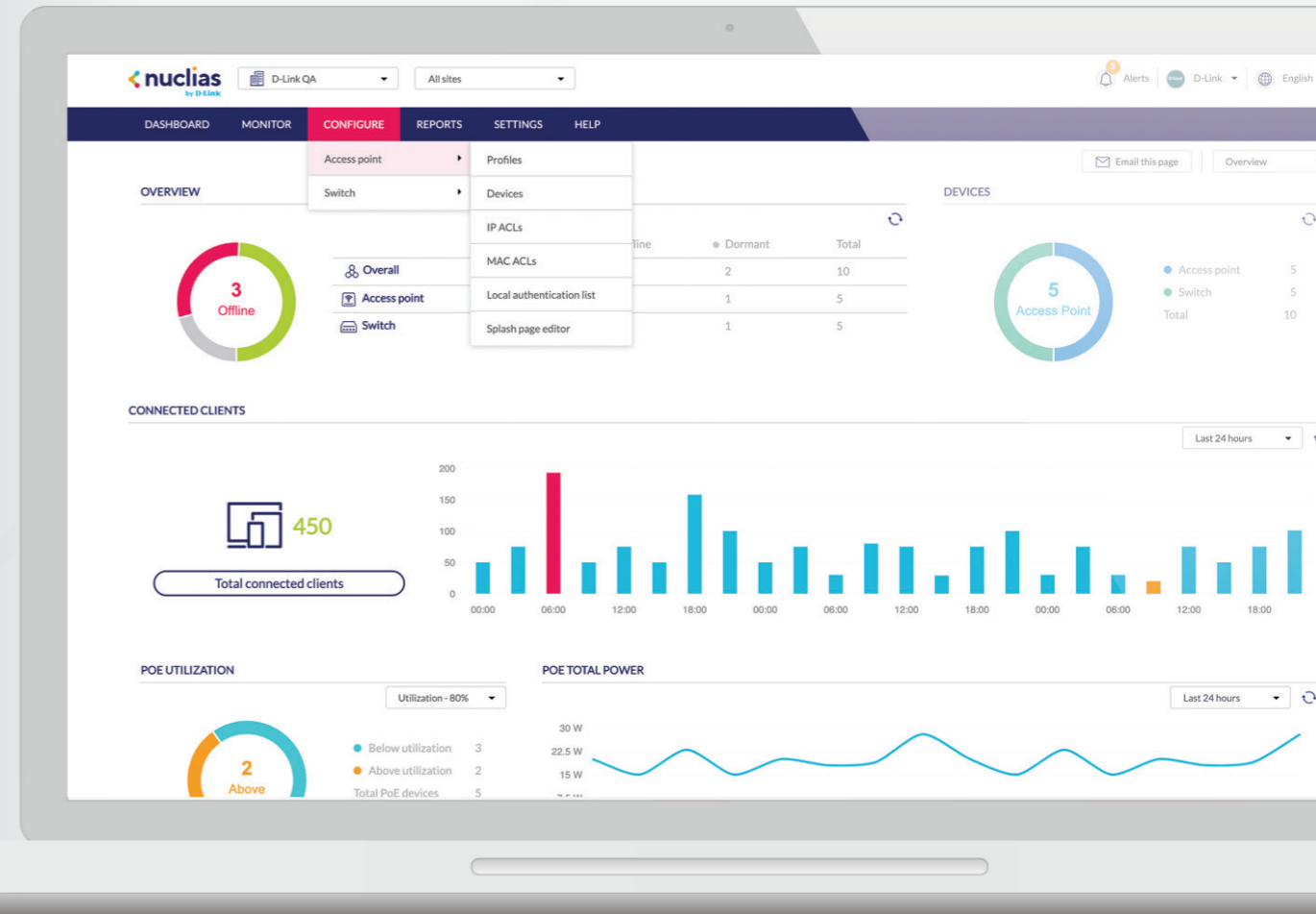


## Enter Nuclias

Nuclias addresses this problem by enhancing what your IT people can do, expanding where they can do it, reducing the number of breakdowns they have to fix, reducing the amount of attention your network requires, and by making it easier to outsource your network management to a third party, such as a Managed Service Provider (MSP).

### Key Solution Features

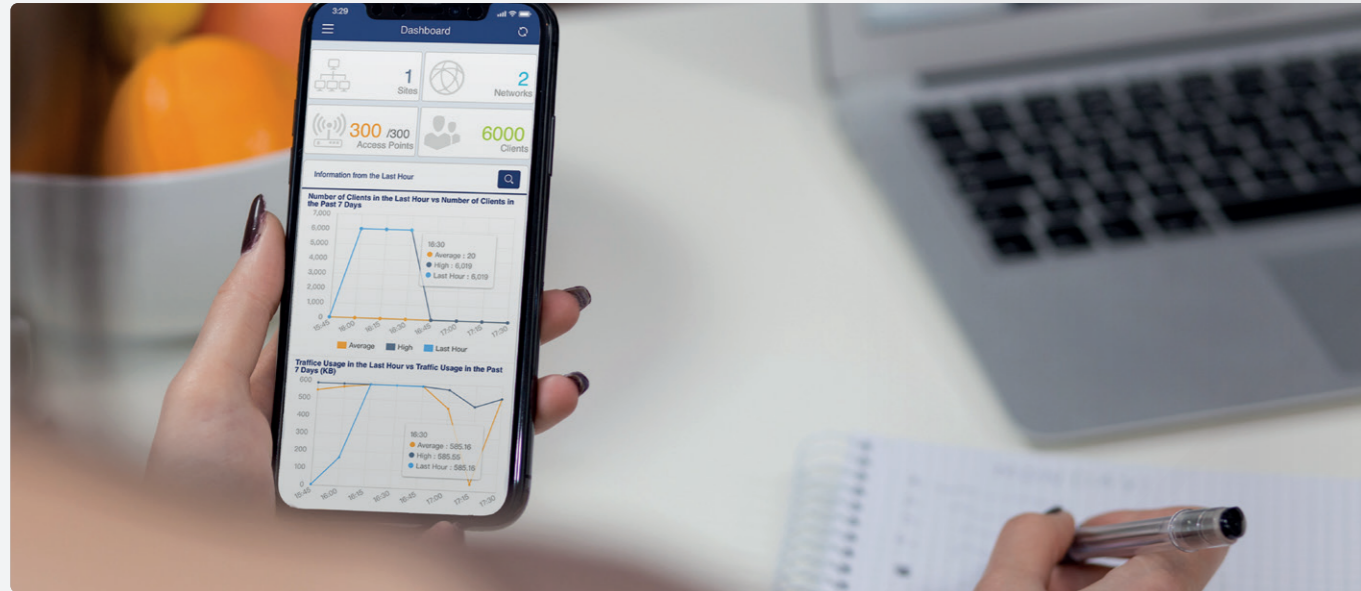
01. Intuitive Centralized Management
02. Mobile Access & Administration
03. Timely Analytics & Reporting
04. Multi-Tenant Architecture w/Easy Remote Management



### 01. Intuitive Centralized Management

Nuclias enables an at-a-glance understanding and comprehensive control and troubleshooting across your entire network. Not only does this reduce the time spent visiting various sites, it also reduces the number of network breakdowns that cause such visits in the first place (by alerting you to latent problems before they become disruptive).

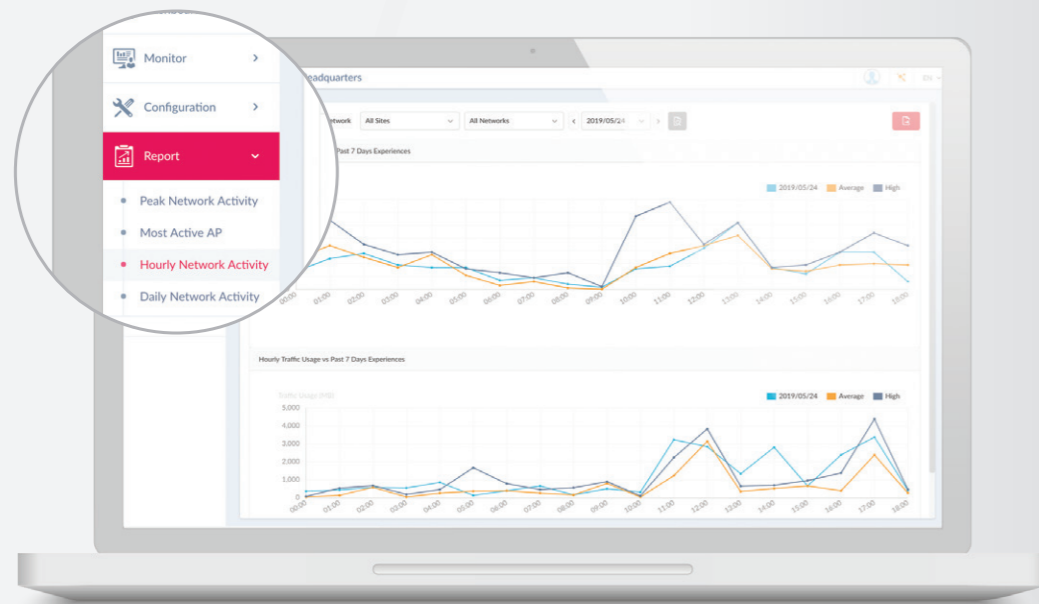
\*Support: Nuclias Cloud and Connect



## 02. Mobile Access & Administration

Nuclias enables mobile access to its control, monitoring & management functions, enabling admins to carry out tasks from wherever they happen to be. And with Nuclias's Cloud-based account system (w/Single Sign-On), geographic limitations to where management can be done are all but eliminated, even when localized hosting is used.

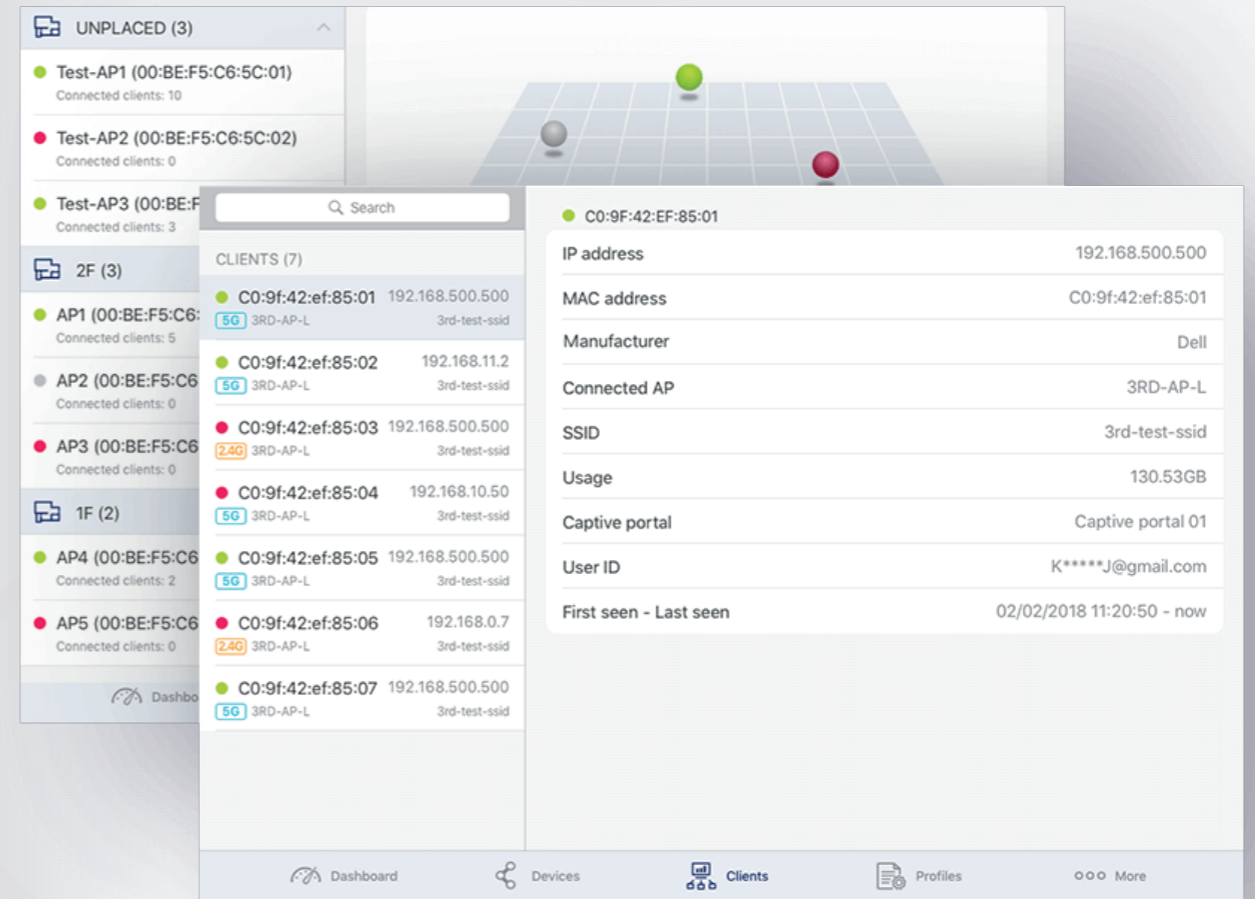
\*Support: Nuclias Cloud and Connect



## 03. Timely Analytics & Reporting

Educators often have a limited-to-non-existent understanding of what's happening on their networks. But with Nuclias, admins can enjoy an intuitive grasp of what's happening now, where it's happening, and how it's trending. By seeing where busy spots are, where underutilized spots are, what percentage of available resources are being used, and any alarms, admin efficiency is enhanced, both now through timelier maintenance, and in the future through better planning.

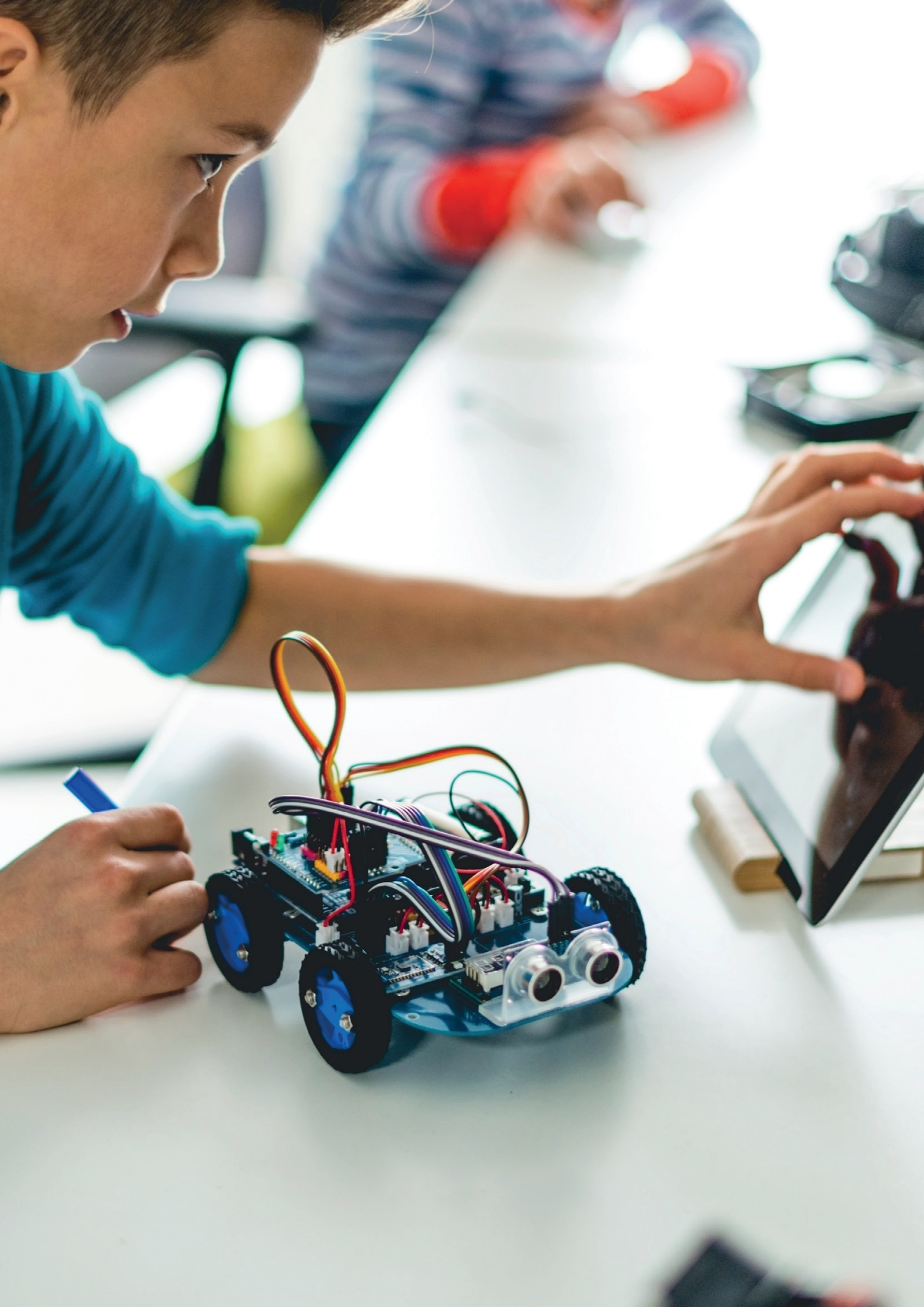
\*Support: Nuclias Cloud and Connect



## 04. Multi-Tenant Architecture w/Easy Remote Management

Nuclias enables easy outsourcing of network management to an MSP by enabling multiple networks (i.e. multiple MSP customers) to be managed through a single interface, operable remotely, so that your in-house IT staff are freed up to focus on other things.

\*Support: Nuclias Cloud and Connect



### Nuclias Cloud

A 100% Cloud-Managed Turnkey Wireless LAN solution that enables centralized management and configuration of every Device, every Site, and every Deployment on your Nuclias Cloud network, with no limitations whatsoever in terms of scale or geography, and no need for onsite IT management support or hosting equipment.



### Nuclias Connect

A Software-Based Managed Networking solution that combines remote centralized multi-site monitoring, management, and troubleshooting of wireless devices with flexible localized hosting and easy customization.



## Educators Need Nuclias

With devices, demand, and security concerns growing for your wireless network, educators need professional-grade solutions that can assuage these concerns, without creating an undue IT workload. Nuclias solutions, by D-Link, deliver these capabilities for a wide variety of educational institutions of diverse specialties, sizes, and conditions on the ground.



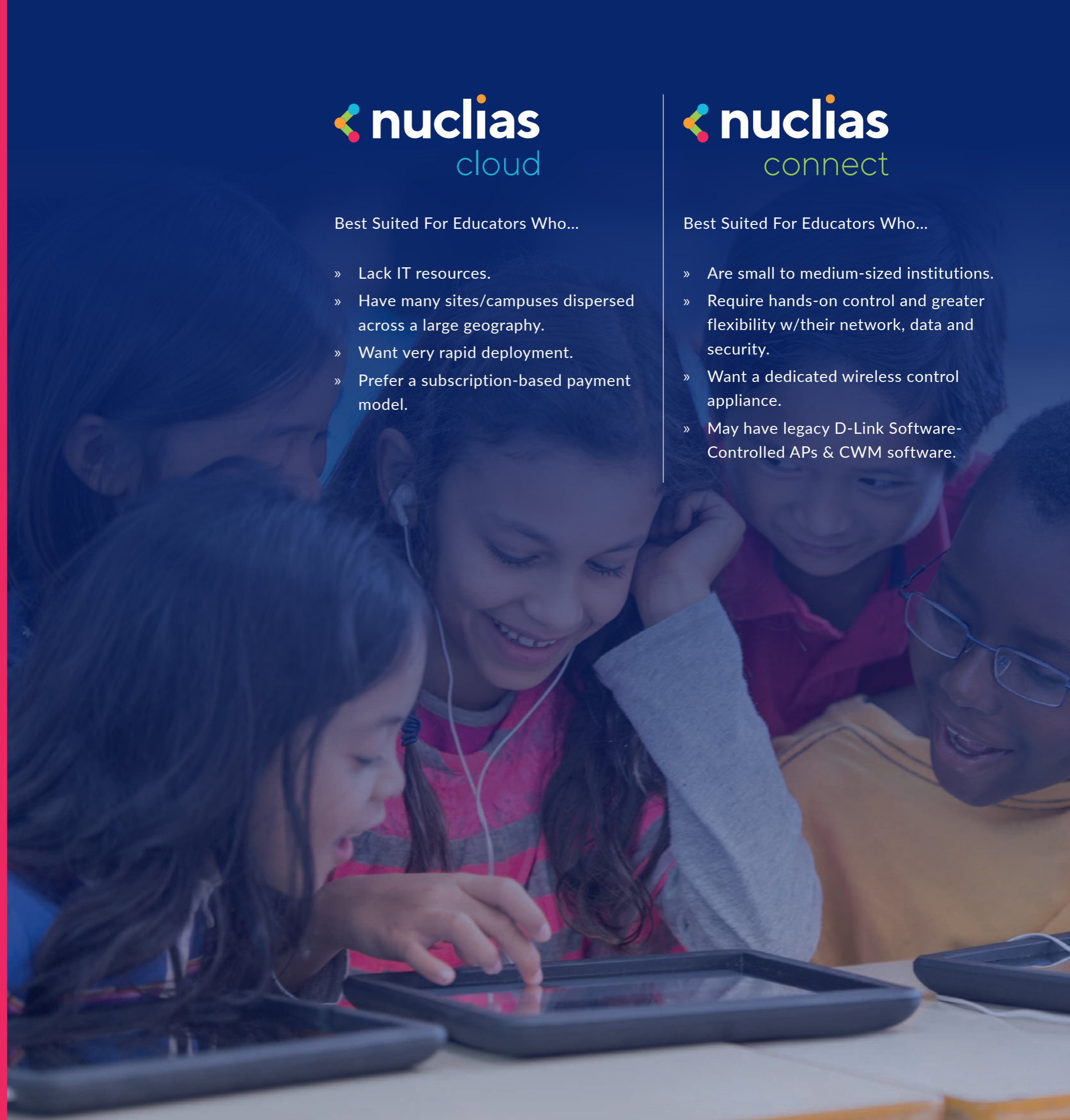
Best Suited For Educators Who...

- » Lack IT resources.
- » Have many sites/campuses dispersed across a large geography.
- » Want very rapid deployment.
- » Prefer a subscription-based payment model.



Best Suited For Educators Who...

- » Are small to medium-sized institutions.
- » Require hands-on control and greater flexibility w/their network, data and security.
- » Want a dedicated wireless control appliance.
- » May have legacy D-Link Software-Controlled APs & CWM software.







To Learn More About Nuclias Solutions  
Visit our Nuclias website  
[www.nuclias.com](http://www.nuclias.com) or  
Contact your local D-Link representative  
[www.dlink.com/en/contact-us](http://www.dlink.com/en/contact-us)

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