



Fiber to the Classroom

Transforming classrooms into flexible learning spaces

During the pandemic, education had to transcend physical spaces. Flexible learning models became an imperative. Now there are even more reasons to turn physical classroom spaces into flexible learning spaces, including:



Digital curriculum

Digital content is firmly part of education. It's an upward—and unstoppable—trend. The commitment to digital equity is also pushing the adoption of a digital curriculum (and distance learning).



Device proliferation

Computer labs used to be the only places where students had access to computing technology. Now every classroom is a technology hub, with the proliferation of smartphones, laptops, tablets, smartboards, printers and video conferencing equipment.



Safety and wellness

Connecting IoT sensors and devices to your Wi-Fi and wired networks supports safety and wellness initiatives. These include cameras, vaping, sound and fire detection, connected door locks, and smart lighting and badges.



New programs like esports

Esports is an example of a technology-based program that can become an important part of a district's offering virtually overnight. Esports, unlike traditional sports programs, can have its home base in a classroom.



Distance learning

Distance learning was not a typical offering for schools until the pandemic. Now, it's entirely possible that distance learning will be a mainstream educational model.



Video conferencing

Video conferencing is being incorporated into classrooms to a degree that never seemed possible. Now that it's here, conferencing technology continues to evolve into a mainstream resource for collaboration, communication and creativity.

School systems have been studying the relationship of spatial settings to learning for a long time. A classroom configuration that's perfect for a lecture makes group collaboration difficult. So why not make the same physical space adaptable to different educational models?

At CommScope, we call this "flexible learning spaces." Without moving walls and doors, you can use technology to reconfigure the same physical classroom for a number of different educational scenarios.

Fiber to the Classroom creates flexible learning spaces

It starts with changing the old copper backhaul to a fiber-optic backhaul. For years, the traditional choice for a school's cabling has been copper. In simpler times, copper gave schools a strong core. But as the demands on school districts have grown, copper has become the limiting factor. It constrains bandwidth and makes classroom configurations difficult to change.

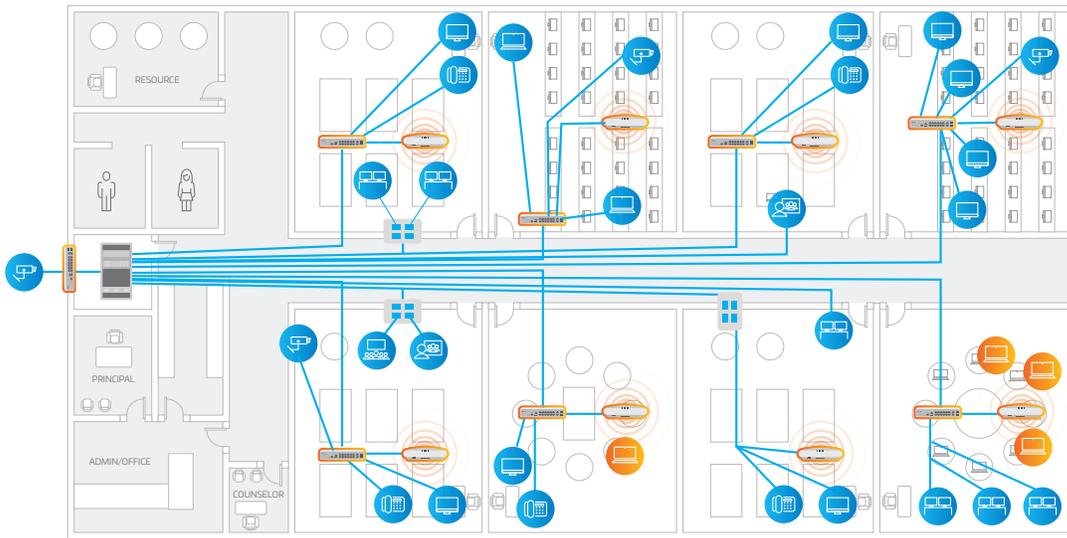


Figure 1. Traditional copper network architecture (a cabling nightmare with limited distance, bandwidth and no flexibility).

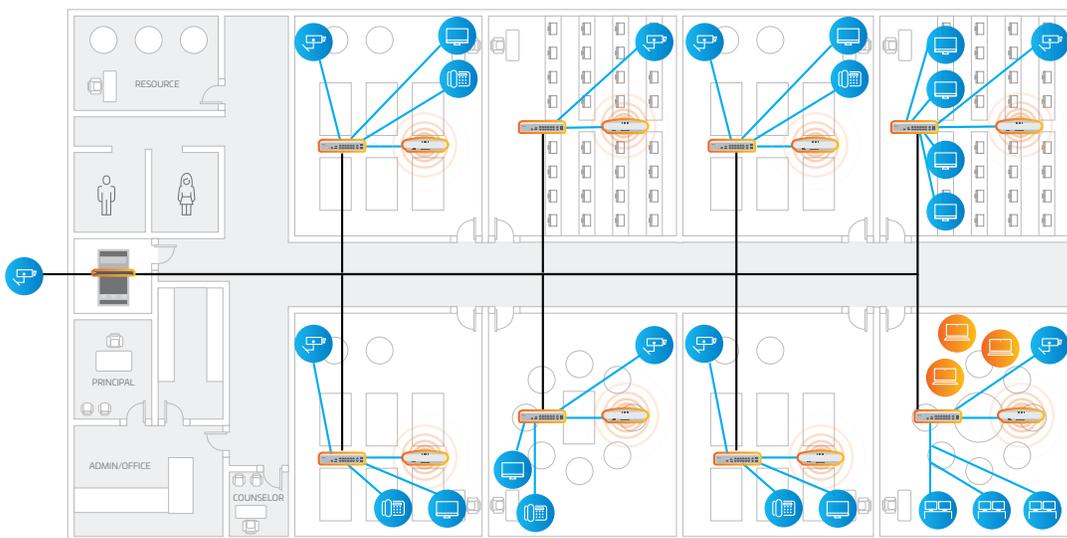


Figure 2. New fiber cabling network architecture (simplifies your backhaul network and provides flexibility for every classroom).

Teachers can reconfigure classrooms: no technical skills required

Fiber to the Classroom gives teachers the ability to easily adapt their classrooms for different uses. They don't have to call maintenance or IT to set up for distance learning in the morning, create a lab (a collaborative project space) in the afternoon, and host a practice for your new esports program after school hours.

As a district administrator, you don't have to limit expensive equipment—like 3D printers—to a single classroom or just one location in a classroom. Move equipment where it's needed, making the most of those investments.

It's not simply about moving desks and chairs into different configurations. With flexible learning spaces, equipment—such as printers, monitors, set top boxes and gaming consoles—isn't confined to a fixed area. Teachers can reposition desks, chairs and electronics to create a completely different teaching or activity space. As shown in Figure 3, teachers can set up monitors for a lecture or distance learning (A); they can move a 3D printer into the center of the room for a collaborative lab (B); and they can place monitors facing each other for an esports competition (C).

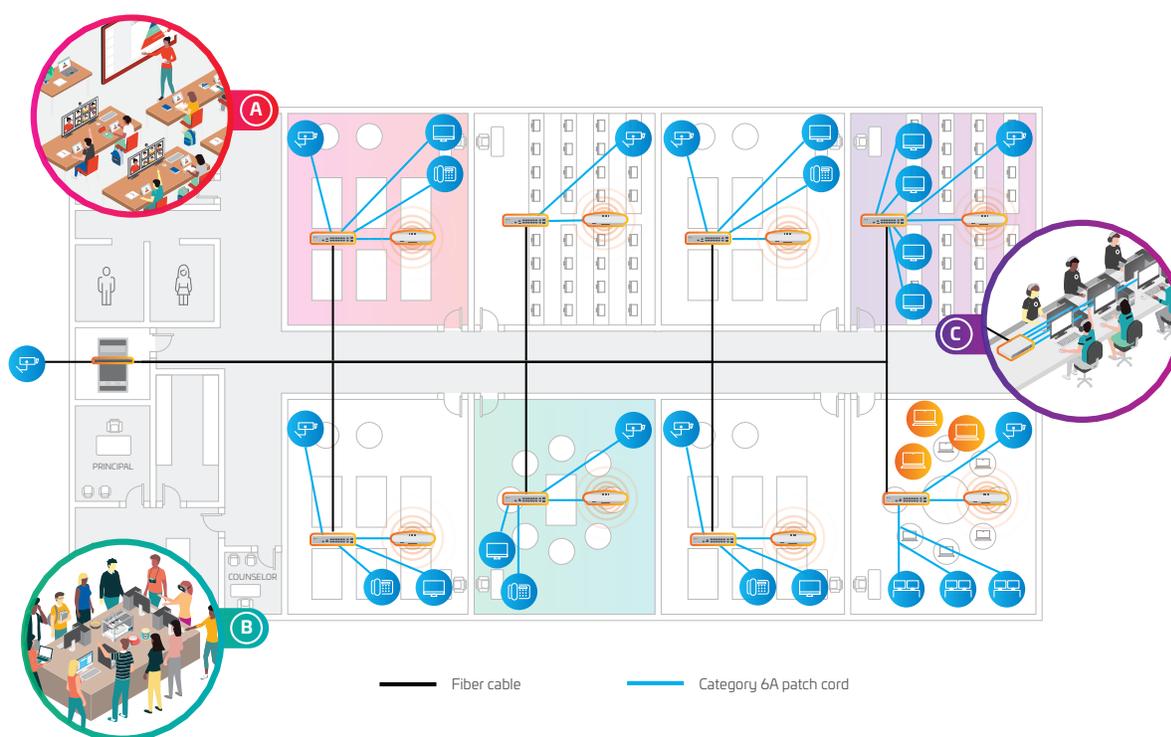


Figure 3. Fiber to the Classroom turns any physical classroom space into a flexible learning space.

Fiber to the Classroom unblocks bandwidth bottlenecks

With RUCKUS® Wi-Fi and switching networks, schools have eliminated the bottleneck between applications and the Wi-Fi network. But now there's a new bandwidth bottleneck—the 1 Gbps copper backhaul.

The proliferation of devices and applications has created multigigabit classrooms. This bandwidth consumption isn't just for data—it's voice, video and data.

When you have congestion in the copper backhaul, screens freeze and networks crash. Speech is garbled and graphics fracture. Video is unwatchable and applications unusable.

Fiber to the Classroom eliminates that 1 Gbps constraint, delivering more bandwidth and faster throughput to the classroom.

Reducing maintenance costs and adding adaptability

Copper is rigid, which makes it difficult to route through buildings. In contrast, fiber is flexible, making moves, adds and changes easier. This reduces the burden on maintenance staff and makes your backhaul infrastructure more economical to own and operate over time.

Making your infrastructure more secure to the core

Protecting student information is a high priority. Traditional copper cabling is more vulnerable to cyberattacks; hackers can easily tap into the copper conduit to access the data flowing through it. Fiber-optic cables are much less vulnerable to this type of security threat.

Creating a backhaul that supports you for the long haul

Fiber is scalable, so you can refresh your capacity without replacing your fiber infrastructure. You can easily, incrementally and cost-effectively scale your existing fiber backhaul.

Fiber also gives you more reach than cable. Copper has a practical performance limitation of 100 meters from the wiring closet to the classroom. Fiber can reach virtually any distance without any degradation in throughput and performance.

Fiber to the Classroom also gives you the foundation for even more demands, like augmented and virtual reality applications. And the same foundation can support automated systems for building operations and health and safety systems.

Additional resources

Classrooms everywhere are being transformed into flexible learning spaces that inspire, promote collaboration, improve well-being, and unite students to engage in learning. Our portfolio of solutions—ranging from the highest rated fiber cabling, stackable GbE switches, and superior Wi-Fi 6 access points, all managed through RUCKUS Cloud combined with RUCKUS Analytics—will support all your needs end-to-end and provide a best-in-class learning experience for your students and staff.

We collaborate with our customers and partners to design, create and build the world's most advanced and flexible learning networks. Discover more on CommScope's [Education Website](#) or download our [Education Product Ordering Guide](#).



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Digital equity depends on sufficient bandwidth to the classroom

The State Educational Technology Directors Association (SETDA) has made the following recommendations for bandwidth:

- Small school districts (those with fewer than 1,000 students) should have at least 4.3 Mbps per user, with a minimum of 300 Mbps per district.
- Medium-sized districts (3,000 students) should have a target of at least 3.0 Gbps per every 1,000 users.
- Large school districts, which are those containing over 10,000 students, should have a target of at least 2.0 Gbps per every 1,000 users. "Users" include administrators, staff, teachers, students, and guests.

SETDA recommended that each district have a target of at least 10 Gbps per every 1,000 users for the 2020/2021 school year.