

Aurelis Optical LAN for education facilities

Enlighten your LAN with a high-performance connectivity infrastructure that fosters innovative learning, research and collaboration



In their efforts to attract students and faculty, universities are turning to advanced technologies to enhance campus life and introduce new approaches to teaching and learning. Today's students demand a learning experience that goes beyond traditional classroom and lab-based teaching environments. They also expect a vibrant university campus that stimulates learning, living and a sense of community by enabling on-demand communication and collaboration with fellow students and faculty.

To create this enriched campus environment, the different applications and systems that enable the functioning of dormitories, libraries, faculty offices, recreation areas, F&B outlets, outdoor environments, healthcare, security, management facilities and so much more, must blend and work together seamlessly. Students, faculty and staff expect the networks that support these areas to be available at all times for everything from basic voice interactions to complex multimedia exchanges on a variety of devices and with greater mobility.

Universities need advanced communications networks that provide greater support for real-time collaboration and new approaches to research, as well as remote and e-learning.

These technologies must adapt easily to dynamic university environments where frequent changes, expansions and enhancements to networks are needed to support short-term requirements, without placing a heavy burden on limited IT staff resources. They must also support the introduction of sustainability and green initiatives, such as smart building management systems.

The Aurelis Optical LAN solution delivers a future-ready, simple, and reliable technology foundation that supports exceptional learning, research, and collaboration through high-performance connectivity. It enhances communication and interaction across the entire campus connecting students, faculty, staff, and the facilities they rely on. With inherently low power consumption, Aurelis Optical LAN also aligns perfectly with green campus initiatives. Just as importantly, it helps reduce operating costs and ensures smarter use of limited budgets, making it a strategic investment for forward-thinking educational institutions.

Streamline university operations and processes

The Aurelis Optical LAN solution is based on industry standard Passive Optical Network (PON) technology and supports 1 Gb/s, 10Gb/s and 25Gb/s speeds today and is ready for 50 Gb/s and 100 Gb/s in the future. It is the network infrastructure technology of the future and of choice for all universities — whether for new facilities or upgrades to existing ones — because it is engineered to enable all operations, communications and collaborations with:

- **Industry-leading fiber technology** that is available today with enough bandwidth to meet all university user demands for years to come
- **One integrated, centrally-managed network** to run all services, including high-bandwidth consuming services, such as cloud applications, IoT, Wi-Fi, collaboration tools, communication systems, and more — and ready to support any new service needed tomorrow
- **A one-time investment** in fiber infrastructure— future-ready for 50 years and beyond
- **Large network support** for campuses with indoor and outdoor spaces spread over wide areas up to 40 km
- **Lower capital and operating expenditures**, enabling optimal use of limited funds and resources
- **No forklift upgrade** — unlike traditional copper-based networks, future bandwidth upgrades on an optical LAN do not require new cabling or replacement of the switches
- **A completely passive network** between active components, which provides massive savings in space, power consumption, air-conditioning needs and maintenance, thereby supporting green building initiatives and standards
- **A scalable fiber network**, which can be extended easily to new areas and configured to add new services as needed
- **High reliability** on a secure digital network

Optimize precious real estate and facilities

A centralized, integrated Aurelis Optical LAN infrastructure has a smaller footprint because it requires fewer racks, LAN switches, and patch panels compared to conventional LANs (Figure 1). This eliminates the need for telecom equipment closets on each floor or at every 100m, the extra power supplies (mains and UPS) associated with equipment rooms, as well as additional air-conditioning, special cable channels for CAT cabling (Figure 2) and other support requirements. As a result, it enables large savings on initial capital expenditures, as well as reductions in daily operating expenditures from lower energy consumption and reduced maintenance. The floor space freed up by eliminating unnecessary equipment can be used for enhancing learning facilities.

Once the optical LAN infrastructure is installed — whether for a new network or as part of a network renovation — it will last for generations, ready to support any new service that may come along. The capacity of the infrastructure will be sufficient for years to come, but if higher bandwidth is required in the future, the upgrade will be easy and cost-efficient. There is no need for forklift upgrades. And expansions to new rooms or for new facilities can be made by simply extending the fiber and adding an optical modem — no major cable runs or additional switches/ports are needed.

Figure 1. Go from many distributed network elements to one central configuration

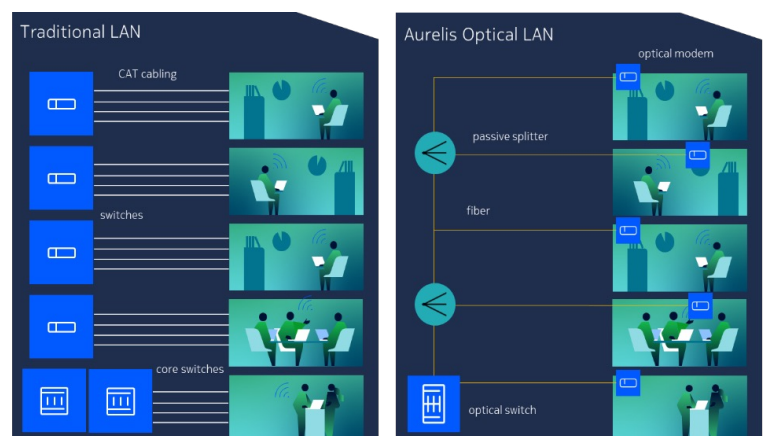
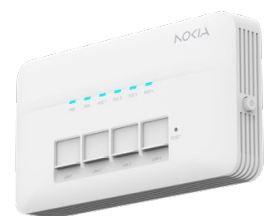


Figure 2. Eliminate bulky cables and reduce cable clutter





Simplify management and maintenance

The Aurelis Optical LAN provides substantial savings on management and maintenance costs because all office/department/campus communications and information systems are integrated onto **one infrastructure** that can be managed from **a single, central location**. As a result, fewer IT staff resources are needed to keep the entire campus network up and running. Maintenance is also easier because there are fewer active electronics on site.

Support future bandwidth demands

With an optical LAN capable to deliver 25 GB bandwidth to the endpoint, every user on campus is better equipped to handle their work and play needs at a modern university. The optical LAN infrastructure is optimized for the increasing volume of digital communications and information exchanges associated with web-casting of lectures, e-learning, and remote instruction / collaboration with faculty anywhere in the world. It provides native network support for sophisticated research projects that need to run on many virtual desktops with integrity. And it allows faculty to work efficiently with large complex files and processes for architecture, simulation, 3D design, animation, digital image processing and many other digital data heavy functions that will probably require even more bandwidth in the future.

The Aurelis Optical LAN offers 25 GB capacities today and scales easily to support more tomorrow on the same fiber infrastructure, providing all the high bandwidth needed for productive and sustainable university traffic growth.

Choose optical networking for upgrades and renovations

Aurelis Optical LAN infrastructures are not just for new projects. They are a cost-effective choice for upgrades and renovations to existing facilities. Because optical fiber is more resilient and supports a smaller bend radius compared to other cabling, it can fit in existing ducts and channels easily.

It is inherently resistant to signal and noise interference from other sources, so it can be run almost anywhere. Once installed, existing legacy services, such as analog voice, or RF-based services, such as TV, surveillance and security, can be migrated to the new optical infrastructure easily to enable a single network for all services. And by replacing old equipment with a more cost-effective fiber infrastructure, an optical LAN lowers the overall cost of an upgrade or renovation significantly. It sets the stage for substantial cost savings on network operations and maintenance in the future and frees up precious real estate for other uses.

Leverage carrier grade reliability and built-in security

The availability and reliability of a university's operations and education support functions influence its campus spirit and play an important part in maintaining its public image and reputation as an institution of higher learning. The Aurelis Optical LAN brings carrier grade reliability and built-in security to university network infrastructures.

The Aurelis Optical LAN is the ideal foundation for all university networks. It provides users with robust and reliable connectivity wherever they need it— whether on a few floors, or across a sprawling campus — using the same network topology. And it provides a future-ready technology base upon which to enable leading-edge education facilities and superb learning, research and collaboration.



Nokia Fixed Networks is a global leader in fiber technology, providing a high-performance connectivity solution for enterprises across all industries. With over 700 optical LAN customers, we support enterprises, hospitals, hotels, universities, airports, smart campuses and more with cutting-edge connectivity. Our optical LAN solution helps businesses to enhance user experiences, gain a competitive edge, and drive digital transformation with future-ready, simple and reliable connectivity.

For more information about how the Aurelis Optical LAN can enhance daily operations and stimulate learning, living and a sense of community on your campus, contact your nearest Nokia partner



Aurelis MF-2 Optical Switch



Aurelis Optical Modem U-490XP-P

About Nokia

At Nokia, we create technology that helps the world act together.

As a B2B technology innovation leader, we are pioneering networks that sense, think and act by leveraging our work across mobile, fixed and cloud networks. In addition, we create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs.

Service providers, enterprises and partners worldwide trust Nokia to deliver secure, reliable and sustainable networks today – and work with us to create the digital services and applications of the future.

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Nokia OYJ
Karakaari 7
02610 Espoo
Finland
Tel. +358 (0) 10 44 88 000

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