



# SOLUTIONS



... connecting your business

# EDUCATION

Network solutions for schools

- Secure broadband Internet access
- Wireless LAN for mobile applications in the classroom
- Protection of minors through Internet access control (content filter)
- Site connectivity with VPN



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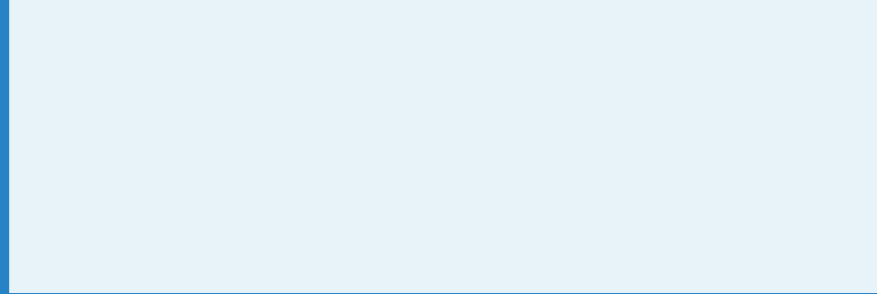
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More information and LANCOM solutions for schools and universities can be found at:  
[www.lancom.eu/education](http://www.lancom.eu/education)



Many schools and educational institutions in Europe successfully rely on solutions from LANCOM, including:

- Cheltenham Ladies College
- Slovenian Ministry of Education and ARNES training network
- Thorbecke College, Rotterdam
- HLW Haag technical college
- Education Senate Bremen
- „Studienkreis Nachhilfe“ private tuition
- Realschule Monschau
- Deutsch-Luxemburgisches Schengen-Lyzeum Perl

# References

User stories can be found on our website at:



[www.lancom.eu/references](http://www.lancom.eu/references)



# WLAN Internet access with protection against misuse

In the interests of modern learning, most schools have equipped an informatics room with wireless LAN Internet access. Wireless LAN is also available in the multimedia corner and in the library so that pupils can research online for their school projects, etc.

School often chose to purchase access points with internal antennas. The discreet design means that devices are not obviously a wireless solution based on expensive hardware. Specialized wall mountings additionally provide the access points with effective anti-theft protection.

The wireless LAN is used by pupils and staff alike, although these groups have completely different access rights and options. To ensure that this scheme works successfully, the WLAN is divided into logical networks, which are 100% separated from one another.

These networks and all of the access points in the school are managed by a WLAN controller, which provides Internet access and monitors the security policies simultaneously. The controller runs a powerful content filter that checks each requested web page for its content. Depending on

the configuration, access to this page is either allowed or blocked. This enables, for example, the observance of guidelines on the protection of minors, and it prevents illegal activities on the Internet.

The same infrastructure can be used to connect the school to the local authorities. This connection is secured by VPN and is available to administrative staff only. The WLAN itself is protected from unauthorized access by professional-standard encryption mechanisms.

## Requirements and projects

Students learn faster when they work with digital media. This was the finding of a representative survey in 2011 by BITKOM (Germany's federal association for information technology, telecommunications and new media). A prerequisite for using digital media in the classroom is, according to BITKOM, broadband Internet access, if possible by wireless.

A number of projects in schools is based on networking solutions from LANCOM, including:

- **Secure Internet connections** with prevention of misuse
- **Wireless LAN** for the classroom, for pupils, teachers and school administrators
- **Laptop classes:** Promotion of media literacy and independent learning
- **Secure networking** of multiple locations and connection to the Ministry of Education or the Education Senate

## LANCOM solutions

Solutions from LANCOM are the basis for secure Internet access and the full wireless networking of schools. Pupils, teachers and school administrators simply log into their respective secured networks – if necessary with very different rights and resources. LANCOM supports the following features for this:

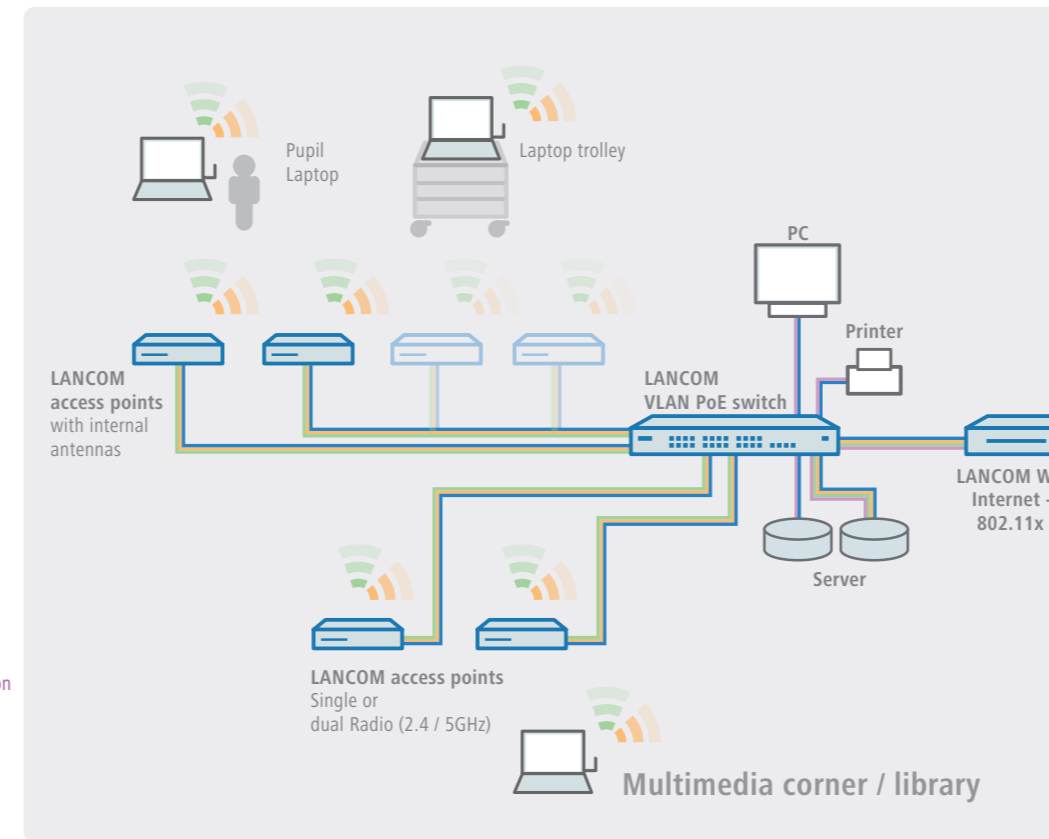
- Internet and VPN routers for secure Internet access and site connectivity
- Multi-SSID/VLAN-capable high-speed wireless LAN access points (some with invisible antennas)
- Content filter for targeted blocking of illegal or undesirable content that is harmful to minors (for routers, gateways and controllers)
- Smart WLAN controllers for central, automatic management of access points
- Ethernet switches

## LANCOM advantages

Several schools in Europe are working with networking solutions from LANCOM. They benefit from performance products that offer numerous advantages, including:

- The complete infrastructure (WLAN, switches, routers, VPN, content filter) from a single source
- Secure separation and authentication of different user groups in the network
- Protection of minors: Control of Internet access and targeted blocking of illegal web sites
- Central content filter protects all workstations (one-time installation)
- Low operating costs through central, standardized management of all access points
- Maximum investment protection with free lifetime updates
- Anti-theft mechanisms protect high-quality hardware
- Pre-sales consultancy for customers

### Classroom / informatics room



Pupils

Teachers

Administration

Content filter

### Administration

- A few to 1,000 access points\*
  - Discreet access point design with internal antennas
  - Power supplied to the access points via PoE
  - Up to 300 Mbps gross per radio cell
  - Up to 16 separated logical networks in the WLAN (VLAN, Multi-SSID)
  - Content filter
  - Networking between sites via VPN
  - Central management of all access points
- \*Upgrading with additional WLAN controllers

State and state-recognized schools will benefit from preferential rates under the LANCOM program „Education: NOW!“. For more information see: [www.lancom.eu/education](http://www.lancom.eu/education)

Education Now



## Security

Networks in schools can be accessed by users with very different rights. LANCOM provides comprehensive security mechanisms to protect your internal resources and data traffic. These mechanisms include:

- Content filter for targeted blocking of undesirable or banned web sites
- WLAN encryption with WPA2/802.11i, user authentication as per 802.1x/EAP (RADIUS server)
- Multi-SSID and dynamic VLAN assignment to securely divide the network into logical networks
- Cross-site 24/7 monitoring of WLAN security policies, including certificate-based authentication of access points
- Protection from attacks and viruses due to the high-performance stateful-inspection firewall with Denial-of-Service protection
- Site connectivity is secured by IPsec VPN (digital certificates)
- No backdoors in the network components



## Stability

Solutions from LANCOM provide wireless networks and Internet services with high bandwidths, even when many users are surfing at the same time. The networks benefit from highest levels of stability without limits on communication thanks to, among other things:

- Excellent signal coverage with gross data rates of up to 300 Mbps
- Fast client roaming for uninterrupted WLAN transmission when on the move
- No single point of failure: Even if a controller should fail, the WLAN continues to work without performance loss
- Redundancy for VPN routers and gateways (e.g. via ISDN, cellular network, VRRP, cluster mode)