



R&S Stories

Cybersecurity

Tackling the challenges of school digitalization

German schools adopt network technology from Rohde & Schwarz subsidiary LANCOM Systems

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Five billion euros from Germany's digital pact for schools (DigitalPakt Schule) have gone into driving digitalization of the German educational system since May 2019. The nationwide school closings due to the pandemic since March 2020 make digitalization even more urgent and act as a catalyst. However, IT security is suffering from the pressure of the crisis. In this situation, the Rohde & Schwarz subsidiary LANCOM Systems, as a German network specialist, offers integrated solutions that are reliable, GDPR compliant and highly effective. The key elements are LANCOM Wi-Fi 6 access points and the LANCOM Management Cloud (LMC) for intelligent management of entire school networks.

On March 16, 2020, the first day of the pandemic-driven school closings, the mebis virtual classroom collapsed under a barrage of requests. This was not due to students, but instead hackers. With hundreds of thousands of page calls, they brought the learning platform of the Bavarian Ministry of Education to its knees. In response, the ministry directed users via Twitter to the video learning platform Schule daheim – Online Lernen (school from home – online learning) on the ARD-alpha educational TV channel. And so the students sat watching television.

DigitalPakt Schule: pacesetter for the virtual classroom

For Bavaria, this new age of digital education has been a baptism of fire and is a typical example of the challenges facing schools throughout Germany when it comes to digitalization. One of these challenges is IT security, with the DigitalPakt Schule of the German Federal Ministry of Education and Research acting as a key pacemaker. Since May 2019, in total 32,000 primary and secondary education institutes in Germany have been able to apply for financial support from a EUR 5 billion fund, with an additional EUR 500 million from the federal states. According to Redaktionsnetzwerk Deutschland, only EUR 242 million was approved by the summer of 2020, and EUR 916 million, or around 18 percent, was approved by the end of 2020.

The radically changed conditions of the coronavirus crisis made fast and hassle-free action necessary, so the Ministry of Education quickly made an additional EUR 100 million available as corona aid, to keep education going with the help of state-funded online platforms and learning content. This was because the DigitalPakt Schule budget was earmarked for hardware. This budget has been topped up twice. At the start of July, EUR 500 million was approved so that all students could receive devices to enable them to use platforms like mebis or bildungsserver.de for home learning, and a further EUR 500 million euros for IT administration were added in December 2020.

Especially now, classroom teaching also needs digital support by smartboards, computers and tablets, so that everyone can access the same content simultaneously or at different times, even if they are not sitting in the classroom. This means that students and teachers, as well as administrative personnel, need to be connected through their devices and a high-performance internet infrastructure.



Is the traditional chalkboard too old-school for the new smart school? According to a Bitkom study, the lack of use of digital media in teaching is what upsets students the most in German schools. With Wi-Fi solutions from Lancom, digitalization can be implemented quickly and securely.

Smarter education: Germany lags behind

Fast outfitting with modern IT infrastructure often fails in old school buildings that cannot be easily cabled end-to-end. As Jan Buis, Project Manager in the Task Force DigitalPakt Schule of IT network specialist LANCOM Systems, observes, "The German school system is lagging behind in digitalization." The Wi-Fi penetration is 26.2 percent. In Buis's home country, the Netherlands, it is 98 percent, and in Denmark 100 percent of the schools have Wi-Fi access. Other countries such as Kazakhstan (58.8 percent) and Chile (53.1 percent) are apparently better off in this regard, as reported by Tagesspiegel with reference to a study by the International Education Association (IEA).

But even before devices are connected to servers, the question of IT security arises. Many schools are opting for cloud services, which are quickly available and have low up-front costs but do not necessarily conform to the provisions of the EU General Data Protection Regulation (GDPR). Ralf Koenzen, founder and Managing Director of the Rohde & Schwarz subsidiary LANCOM Systems, has seen in numerous projects that GDPR compliance and IT security are missing in applications for federal funding.

This despite the fact that school networks contain a wealth of sensitive data, such as personal data or grades. Koenzen warns, "The parties concerned must ensure that the coronavirus crisis does not turn into a persistent data protection crisis." André Faßbender, Senior Manager Corporate Communications at LANCOM Systems, comments, "Many schools and school funders may not be aware that the cloud based solutions of US providers are not compliant with European data protection regulations." Just this summer, the Court of Justice of the European Union overturned the "Privacy Shield" data deal. This ruling makes the transfer of personal data from the EU to the USA unlawful in many cases.

What Germans think about the DigitalPakt Schule and the cloud in schools



© Source: Representative YouGov survey in September 2019 on behalf of LANCOM Systems

Data protection and IT security made in Germany

With solutions from LANCOM Systems, schools are on the safe side. As a German manufacturer, LANCOM is exclusively subject to national legislation, and by hosting its management solution in Germany, LANCOM ensures that data does not leave the legal domain and application area of the GDPR. US companies, by contrast, are obliged to grant their government access to the data of their users. LANCOM is also committed to ensuring that its products are free of backdoors and holds the "IT Security made in Germany" mark of confidence initiated by the Federal Ministry for Economic Affairs.

The Viktoriaschule in Aachen already benefits from the high level of data protection and freedom from backdoors. In the summer of 2019 the school's network architecture was upgraded with a cloud-managed Wi-Fi network from LANCOM. The students at the Protestant secondary school receive devices from the school's tablet pool, work together on documents stored in a central location and stream teaching videos from the school's own media server via Wi-Fi. Where previously there were separate networks for school administration, teaching and the personal devices of students or guests, and all devices had to be manually configured, now IT administrators can conveniently manage the entire school network through the in-house cloud based IT network infrastructure.



The Viktoriaschule upgraded the network architecture in 2019 with a cloud-managed Wi-Fi network from LANCOM.

Cloud management replaces IT administrators

With time short now, there is a strong demand for high-performance school Wi-Fi, accompanied by the need for practical solutions for the management and maintenance of school networks. Network administration, usually a task for experts, must be designed to minimize the impact on teachers and the school budget while at the same time ensuring reliable operation of the Wi-Fi network.

The LANCOM Management Cloud (LMC) allows schools and school funders to almost fully automate both the initial setup and the ongoing operation of school networks. LANCOM uses software defined networking (SDN) and makes the technology available at low cost via a cloud.

The LANCOM Management Cloud supports the configuration, administration and monitoring of complete network infrastructures; IT administrators are no longer needed in the schools. This enables uniform and intuitive management of the entire LANCOM network portfolio – routers, switches, access points and firewalls. From any site and over all sites, if necessary from a simple tablet. This is a boon for all schools trying to fill a vacancy for IT administration. In addition, the LMC makes things easier for school funders that are responsible for multiple schools. It can be rolled out in just a few days during weekends, breaks or school holidays.

LANCOM sets the example

More than just individual schools now benefit from the comprehensive IT structure. In February, the city of Helmstedt, as the first funder of material costs in Lower Saxony, received a grant from the DigitalPakt Schule program. Since then, Wi-Fi access points from LANCOM have been providing full-coverage wireless access for all five elementary schools in Helmstedt. The network is managed by the municipal IT department.

Most schools in Germany would welcome professional and progressive care of their IT systems by someone who organizes, repairs and monitors them so that teachers and students can concentrate on education. "Everyone needs a digital custodian," comments Dirk Hetterich, Director Public at LANCOM Systems. Teachers should teach, instead of spending two additional on-call hours handling IT administration. "After all, you don't ask beginner drivers to pave the streets before they start driving."