

LANCOM Wireless LAN in Use

University of Karlsruhe

The University of Karlsruhe, the oldest German polytechnic founded in 1825, is known in particular for its excellence in the fields of Engineering and the Natural and Applied Sciences. Humanities, Arts and Economics have also traditionally played their role at the university. The faculty of Architecture with its strong ties to the technology and engineering departments, completes the array of academic excellence upon which the "Fridericiana", as the university is widely known, has founded and still continues its national and international success.

 Universität Karlsruhe (TH)
www.uni-karlsruhe.de

DUKATH – Wireless University of Karlsruhe (Drahtlose Universität Karlsruhe TH) - Offers Progressive Application Scenarios

The university's computing centre is one of the largest and most innovative of its kind at German universities. For more than 25 years it has proven its excellence in the operation and use of high and maximum performance computers. Technological innovations in the areas of high frequency networks and high performance communication on campus and throughout the country were developed to a large extent here. As a central component of the supply concept of the University of Karlsruhe, the computing centre offers services of the highest technical and technological standard.

The requirements: True to its innovator role and excellent international ranking, the polytechnic uses mobile wireless technology for progressive application scenarios. Nowadays, an outstanding communication and information infrastructure has become more and more important, particularly in view of growing international competition between universities. With DUKATH a campus-wide wireless communication network was set up to complement the already existing high frequency network.

Using wireless LAN technology, students, faculty and staff were to be given easy access to both the Internet and its campus network no matter where they are. In order to enter new realms of university learning, teaching, and research, laboratories had to be connected as well as near off-campus locations and student residences.

Whether in the lecture hall, seminar or conference room, on campus, at the work place, or even within the student residence facilities, Internet research, email, or other net applications were to be made possible using mobile communication devices such as notebooks, PDAs or webpads.

The solution: In the first phase of implementation, the existing high frequency network was extended using modern wireless network components, achieving a transmission rate of up to 11 Mbps at a transmission range of up to 50 m indoors and up to 400 m outdoors. On the entire campus 180 LANCOM Wireless L-11 base stations were integrated into a VLAN (virtual local area network) with 80% outdoor network coverage.



The computing centre of the University of Karlsruhe was founded in 1966 and has always been considered one of the largest and most modern German university computing centers. As early as the beginning of the eighties, work was done here using super computers and high performance networks. The computing centre was the first in Germany to introduce computer lecture halls and the first in Europe to have a campus-wide high frequency glass fibre network. Since then the university has been renowned for its excellent curriculum and facilities for students and scholars alike.

LANCOM
Systems

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Testimonial:

**Prof. Dr. Wilfried Juling,
University of Karlsruhe (TH):**

Thanks to LANCOM's innovative WLAN technology we were able to do justice to our claim to outstanding information and communication infrastructure and to underline our pioneering and innovative position yet again. With DUKATH we are offering our students, faculty, and staff new possibilities and application scenarios of university learning, teaching, and research. The motto is live, teach, and learn - anytime and anywhere."

At a glance:

- ▶ 16,200 students, 4,000 employees, 275 professors
- ▶ campus area: approx. 70 hectares, over 3,500 users, 35 buildings, 48 lecture halls
- ▶ Implementation phase 1:
WLAN Standard IEEE 802.11b (11 Mbps)
180 x LANCOM Wireless L-11 Access Point
50 x LANCOM 3050 Wireless
- ▶ Implementation phase 2:
WLAN Standards IEEE 802.11 a,b,g (11, 54 Mbps)
180 x LANCOM Wireless L-54g Access Point
50 x LANCOM 3050 Wireless
50 x LANCOM 3550 Wireless (high speed)
- ▶ Highly developed security and management concept

In the second phase, the 11 Mbps access points were replaced by LANCOM Wireless L-54g High-Speed Access Points which transmit at 54 Mbps within the IEEE 802.11g standard and can be installed away from the conventional mains power supply using Power-over-Ethernet. With the switch to the 802.11g standard, the 802.11b standard is also automatically covered (g is compatible with b). In addition, 50 LANCOM 3550 Wireless devices are used on campus. These highly integrated products are able to transmit within the IEEE 802.11a, b and g standards and can achieve transmission rates of 108 Mbps in turbo mode within 802.11a. With this step DUKATH has migrated from 11 Mbps to a maximum of 108 Mbps, offering high frequency coverage within its wireless LAN as well. A highly developed security and management concept provides protection against unauthorized access and attacks, and guarantees easy administration.

With DUKATH a multitude of information is made available to users, anywhere on campus. Using wireless LAN devices, one particular course on parallel programming and parallel computer architectures, for example, allowed students to solve programming exercises using their laptops during the lecture, enabling them to communicate directly with the lecturer and present their results instantaneously. Faculties that have outdoor measuring stations also benefit from this new form of mobility. Data obtained here can be directly transmitted to be saved and further evaluated at labs or it can be further processed computerbased on the spot.

DUKATH users are able to download lectures, order library books, research in the university Intranet or to simply chat on a campus area of approx. 70 ha – whether they're in the lecture hall, conference room or at their work place.

Customer benefits: Having introduced the additional wireless network DUKATH, which now almost entirely covers the campus area, at such an early stage, the road was paved for the further development of the Fridericiana on its way to becoming a so-called mobile or notebook university. LANCOM products' easy configuration made smooth and fast implementation possible. The LANCOM operating system LCOS enables standardized operation and maintenance of the products; LANtools are extremely user-friendly.

It is due in large part to the innovative role played by the computing centre in introducing a "wireless campus", that the Fridericiana figures among the top twelve of more than one hundred state-aided universities which are supported by Germany's Federal Ministry of Education and Research as part of their project "Notebook Universities".

The Campus Network of the University of Karlsruhe

