Goethe University Frankfurt, Germany

Goethe University opts for FTTOs

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Educational facilities have highly specific demands and challenges when it comes to data networks. To deal with large distances and high performance requirements, Goethe University opted for a dedicated Fibre To The Office (FTTO) solution with some 8,000 switches.

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Goethe University in Frankfurt am Main, Germany was founded in 1914. With some 45,000 students, 500 professors, 5,000 employees and 16 specialist divisions offering 170 degree programs, it is one of the largest universities in Germany. The University is spread across four large Campus areas: Bockenheim, Riedberg, Westend, which incorporates the Financial Department and Auditorium, and Niederrad, where the university hospital is situated. The needs of a multi-site University are not unlike those of a large office environment. The distances involved can add up quickly and access points may be spread across multiple locations. It is important that networks can scale up easily, with regards to footprint as well as number of users. High-speed, reliable wireless access is becoming more and more important, with many portable devices needed to connect directly to the network. Truly vast volumes of data may be generated, especially at research facilities. Of course, even the slightest downtime must be avoided at all costs. And preferably, cables and hardware should last for decades and be capable of supporting both new and legacy equipment.

FTTO: the obvious choice

"Owing to the large distances and very high safety requirements fibre optic cabling, in conjunction with intelligent FTTO systems, was the best option in this environment," explains Dr. Hansjörg Ast, lecturer with the University's Institute of Theoretical Physics and also Head of the IT infrastructure services department. "Some of our larger buildings may contain as many as 1,500 workplaces. Operating a system to cater for this could, in theory, be very costly and take up a huge amount of time, but FTTO is efficient, flexible and very easy to expand. The planned addition of some 850 workplaces is no big deal with this solution. Connections are simply branched out from the access point to wherever your devices need to be connected." "Originally, a copper-based network was planned, however, the inherent 90 metre length restriction would have been a big issue for us. We would have needed 25 patch cabinets to make 400 connections for some remote and smaller buildings on our campus. Many of our buildings are historical, which brings restrictions to how and where you can implement

networks. The distance we can achieve with fibre is much more practical. Network management is also easy. Everyone working in the research group, for example, needs access to specific resources, regardless of their - varying - location across the various campuses. Our current solution makes this easy." "By now, over 8,000 FTTO switches are in use. This solution gives us a great deal of flexibility. A great bonus is that staff members don't need to repeatedly visit buildings in order to configure equipment manually. One person can take care of administrating thousands of switches. The stability of the FTTO switches is extremely high. Almost all of our first switches, acquired in 2006, are still up and running."

+ 8,000
FTTO switches

"We have a primary access point in each building. Via the FTTO switches VoIP phones are powered directly with Power over Ethernet and three ports go into office VLANs and are connected to laptops, network printers and so on, with the fourth port always reserved for VOIP. We use 1 Gb per port, which is enough for nearly all applications. There are 60,000 active staff, students and facilities accounts, so we really do need a great deal of bandwidth. Fast growing numbers of students, with more and more advanced wireless devices means we need ample wireless connectivity, which in turn requires fast, reliable cabling."

Joint effort

HRZ, the University's competence and service centre, worked closely with Aginode on specifying, testing and installing the FTTO solution. HRZ operates the University's fibre ring, its voice and data communications and its entral IT services such as e-mail, Internet services, e-learning and public computer systems. "We selected Aginode as supplier based on the reliability of their systems, security features and their support offering. They did more than just provide the equipment, a great deal of thought went into the solution beforehand. Both we and Aginode are learning continuously. To

restrict installation time and cost, systems come pre-configured from Aginode. What's more, we don't need to equip individual devices with expensive fibre cards. The network is stable, easy to maintain, highly configurable and has redundancy built in at strategic points. "Facilities managers might initially look only at the cost of the equipment and installation. If you exclusively consider the expense, copper appears less costly. However, you need to look beyond that and consider the total cost of ownership, including energy and administrative costs. Factoring this in means that fibre and FTTO switches are a much better idea. I'd happily advise this solution to other universities. The main benefits are obvious: you can have just one network room per building and, thanks to structured cabling, you always know where your devices are. What's more, their huge flexibility makes it possible to meet all kinds of user needs."

FTTO centralised cabling technology for LAN

Fibre To The Office combines passive fibre cabling and active switches to provide Gigabit Ethernet to end user devices. Large distances between buildings, campuses or industrial sites can be easily bridged. Fibre needs no grounding or earthing and is immune to electromagnetic interference. Distances of over 550 metres can be covered with no signal attenuation. Floor distributors and signal repeaters are not required. The solution saves on installation space, power usage, cooling and active components and supports VOIP, Power over Ethernet (PoE/PoE+)* and extensive security features. FTTO switches consume only 3.5–3.6 Watts per Switch (with Energy Efficient Ethernet activated), which is crucial to sustainable networks. Furthermore, management is easy and efficient.

Goethe University

Problem

- High demand in flexibility & cost efficiency
- Great distances between the buildings
- High security requirements

Solution

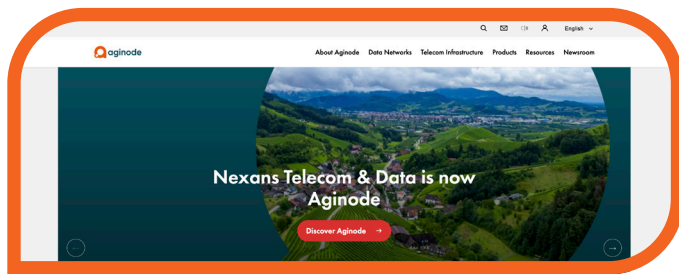- LANactive FTTO switches to the end user
- Already preconfigured systems

Benefit

- Fast and easily expandable cabling infrastructure & cost-efficient solution

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