



CASE STUDY: FREE UNIVERSITY OF BERLIN (FREIE UNIVERSITÄT BERLIN)

One of Germany's top ten universities has selected Foundry NetIron MLX switches for its new MPLS campus backbone



SUMMARY

The Free University of Berlin has replaced an ATM network with an MPLS campus backbone incorporating 10 NetIron MLX switches. The metropolitan area network, based on 10 gigabit Ethernet, connects 10 campuses distributed over the south of Berlin. It supports vital academic collaboration and e-learning, and will allow widespread adoption of applications such as Voice over IP (VoIP) and videoconferencing. Virtual Private LAN Service (VPLS) techniques allow SAP to run securely on the same infrastructure, where the university previously needed to run two separate networks.

Despite its sophistication, the new network is simple and economical to operate. Mr. Rainer Ronke, head of the University's networking and communication unit says, "We're very happy that we've bought Foundry equipment. The switches represent good value and are simple to use. They will also be easy to upgrade as our network traffic grows: they're designed for 100 gigabit Ethernet."

OBJECTIVE—ENABLING THE E-CAMPUS

In order to keep attracting the best scholars and students, and support from the German government, the university needs to offer an advanced computing and communications infrastructure. It's increasingly important for researchers to be able to collaborate electronically, both internally and externally. Internally, research in interdisciplinary clusters is part of the university's strategy, designed to identify social, economic, and cultural trends on a global scale. Externally, the university has offices at Stanford University and elsewhere and also encourages academics to work with other universities and research institutions as well as private enterprise.

For students too, the network has a vital role to play. The university is creating an "e-campus" in which more and more courses will be delivered at least partly through e-learning techniques such as videoconferencing. Students can sign up for seminars over the network; examinations too, are increasingly conducted on-line. It's therefore essential to have a network that performs fast and is available at all times.

The previous ATM campus backbone lacked the necessary capacity to support the university's collaborative research and e-learning plans, and there were other respects in which it was starting to be a constraint. The university wanted to roll out VoIP but this would have been difficult and expensive with ATM. Already some backups, which involved streaming large amounts of data over the network, weren't able to complete overnight and were still running the next day (the university has to deal with huge data volumes, for example in connection with the department of meteorology).

Security was also an issue; the university had been running a separate network, linked to the main one but separately firewalled, to be sure that its SAP data was safe. That cost money; overall, the university believed it was spending more money on running the old network than it needed to.

SOLUTION—EASE OF USE PLUS UPGRADABILITY

The team therefore decided to install a new backbone based on 10 gigabit Ethernet and MPLS. It needed to be capable of transporting the required data volumes, to enable VoIP for the whole organisation, and be able to run SAP securely. For performance reasons, the university was looking for the ability to use both Layer 2 and Layer 3 MPLS service.

WWW.FU-BERLIN.DE

INDUSTRY

Education

ORGANISATION

The Free University of Berlin is one of Germany's top 10 universities. Founded in 1948 and promoted by the Ford Foundation, it now has around 38,000 students, 4,400 staff and 170 buildings. It has 10 campuses distributed through the south of Berlin and interconnected by a Metropolitan Area Network.

OBJECTIVE

- Replace ATM campus backbone with MPLS
- Support collaborative research and e-learning
- Enable VoIP roll-out
- Provide a secure and future-proof infrastructure

SOLUTION

- 10 NetIron MLX switches enable 10 gigabit Ethernet and MPLS linking 10 campuses
- Secure VPLS for SAP
- Redundancy is comparable with ATM

RESULTS

- Smooth cut-over
- Easy to configure
- Tidier network
- Cost-effective solution
- Reduced management overhead
- Flexible upgrade path to 100 gigabits

The university's technical staff are experienced with advanced network technologies and so their choice of Foundry was well-informed and carefully considered. The team shortlisted two other well-known solutions alongside Foundry's—others had been eliminated because they did not meet all of the university's essential criteria.

Foundry had a significant price advantage over its competitors but that was not the only or even the main reason for the university's choice. Upgradability was a major consideration. Rainer Ronke explains that the Foundry switches had a modern design whereas the competitors both had essentially the same design that was seven to eight years old, though speeded up. "We expect that in two to three years time we may want to upgrade to a 100 gigabit backbone. Those other machines' design means that they can handle a maximum of 40 gigabits, whereas the Foundry machines' newer design gives us the upgradability that we need."

Functionally, Mr Ronke says that the competing products had similar features. "But where there is a big difference is in the ease of use. On one machine we know about, defining an MPLS path can be very complex and requires 12-15 commands. With Foundry, though, you just need two or three commands—the default values are excellent and often you don't have to change them."

RESULTS—SMOOTH CUT-OVER

The university designed the new network itself working with other universities' data centres who had MPLS experience. After a week of training from Foundry and one of its partners, the university's technicians were able to implement the network themselves. The cut-over from old network to new went exactly according to plan, with no surprises and minimal service interruptions. Little support from Foundry was needed but when it was, a quick response was forthcoming.

The new solution has resolved the security issue surrounding SAP. The university has been able to create a secure VPLS for SAP. "SAP is still running securely on its own network, but we don't need to separate it physically any more, so we have eliminated the overheads that involved," comments Mr Ronke.

Importantly, the solution is also robust: it has been possible to design redundancy into the MPLS network that is comparable with what can be achieved with an ATM network. Mr Ronke is also pleased that the network design is tidier, with simpler cabling.

As expected, the MPLS solution is cost effective. "Compared with the old backbone, the personnel costs associated with running the network are reduced, and we have freed our people up to do other work."

THE FUTURE—RELIABILITY SOLUTION, SENSIBLE PRICE

The university is currently testing VoIP and expects to install 8,000 to 9,000 VoIP phones organisation-wide over the next two or three years.

Despite its increasing use of applications like VoIP and videoconferencing, the university foresees no problems with speed and capacity for at least a couple of years. After that it will look at installing additional 10 gigabit lines. "MPLS gives you the flexibility of installing extra 10 gigabit lines in parallel as well as changing the main lines to 100 gigabits when it becomes available."

The networking unit is run as an enterprise, earning money from other parts of the university to fund its work, and so Mr Ronke has carefully projected his costs for the next four to five years. "If I'd gone with a supplier other than Foundry I would be spending two or three times as much. Foundry has been a good choice for us and has helped us to build a fast, modern and reliable network which we can develop further, at a sensible price."

" WE'RE VERY HAPPY THAT WE'VE BOUGHT FOUNDRY EQUIPMENT. THE SWITCHES REPRESENT GOOD VALUE AND ARE SIMPLE TO USE. THEY WILL ALSO BE EASY TO UPGRADE AS OUR NETWORK TRAFFIC GROWS: THEY'RE DESIGNED FOR 100 GIGABIT ETHERNET. "

— Rainer Ronke,
head of networking
and communication unit,
Free University of Berlin

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