Tuning Up Campus Wireless Access

Customer Case Study

Wireless networking with CleanAir technology helps Tilburg University meet escalating student bandwidth demand.

EXECUTIVE SUMMARY

Customer Name: Tilburg University

Industry: Education

Location: Netherlands

Number of Employees: 1800 staff (of which are 1000 academics)

Number of Students: 13,000

Challenge

- Create faster wireless connections, indoor and outdoor, throughout campus
- Provide robust environment for multiple smart devices and new educational apps
- Rapidly identify sources of network interference for effective troubleshooting

Solution

- Cisco Aironet Wireless Access Points
- Cisco Wireless Controllers
- Cisco CleanAir technology

Results

- Uninterrupted connections and sufficient throughput in high-density environments
- Always-on network capability for growing number of educational apps
- Saving of time and money in maintenance costs by minimizing interference

Challenge

Founded in 1927, Tilburg University in the southern Netherlands, acquired university status in 1986. Today it has more than 13,000 students, studying communication, digital media, economics, law, information management, organizational studies, marketing techniques, and more. The university aims to impart the highest standards of professional practice in an inspirational, open-minded way, coupled with a strong emphasis on ethics and social responsibility and a broad international perspective.

A key element in its approach is to deliver state of the art IT services. The intention is to acclimatize alumni to a rapidly evolving working world, while also providing an efficient information and communications technology (ICT) infrastructure for its academic, operational, and administrative needs. Located on a semi-rural campus, extending to some 11 hectares, the university has 15 departmental buildings, with a Wi-Fi network designed to reach every part of the site.

A Wi-Fi network had been in place at Tilburg for about a decade, but in that time, major changes have occurred both to bandwidth requirements and the range of chosen access devices. According to Arjan Broos, Tilburg University network administrator, “Fast take-up of new devices (smart phones, PDAs, web-connected tablets, and so on) demand an always-on wireless environment better suited to today’s bring-your-own-device user preference.”

In addition, the ICT department had created custom apps for i-Phone, Android and Blackberry operating systems. These apps enable students to locate the nearest unused PC, study results, consult university materials, or locate cafeterias and restrooms. The teaching staff also wished to expand the range of study materials available over wireless. Yet both types of applications were available only as Short Message Service (SMS) text messages, transmitted via mobile networks.

Interference on wavebands used in the wireless network had also become a challenge for Tilburg. The issue was especially acute in high-density environments, such as lecture halls and classrooms, where the university authorities wanted student access to wireless applications to be as smooth and uninterrupted as possible. In these locations and surrounding areas, up to 400 students might be trying to access the network simultaneously.

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Martin van der Walle
Team Networking & Telephony Manager
Tilburg University

"With more and more education-related apps coming in, we believe this functionality has to be migrated to the wireless network, so our students can make use of it at no extra charge," says Martin van der Walle, team networking and telephony manager at Tilburg University. "We also have to be prepared for the future, where large numbers of students in large classrooms use their mobile device to participate in lectures."

Solution

Having reviewed potential solutions, the university chose the newest Cisco wireless solution, just after the technology was announced. The university thus became the very first European organization to implement the solution, either within the academic community or outside it.

Based on the latest 802.11n wireless local area networking standard, the Cisco Aironet® 3600 access points offer 4x4 radio links, enabling three spatial streams, and are equipped with Client Link 2.0 for fast Internet connections. The solution also brings the unique benefits of Cisco CleanAir™ technology, an innovative solution to the difficulties faced by many wireless network operators in resolving interference issues quickly.

Cisco® CleanAir technology provides continual, system wide discovery without affecting performance. Its built-in self-healing capability accurately identifies the source and location of radio interference, and takes automatic action to avoid disruption. The new access points were coupled with the flexibility and high scalability of new Cisco CT-5500 Series Wireless Controllers. "Cisco has very sophisticated wireless access points with a specially developed chipset," says van der Walle. "The latest Cisco CleanAir technology with network self-healing means more data throughput, along with multicast capabilities too. This is supplemented by full management, reporting, and analytical facilities."

After calling in a Cisco systems integrator to conduct a spectrum analysis across the campus, Tilburg began implementing the solution early in 2012. It started by replacing 350 existing access points before adding a further 150, mainly in classrooms and other areas with a high user density. The longer-term aim is to shift users from the 2.4 GHz waveband to 5 GHz, where the ICT team anticipates being able to create more nonoverlapping channels.

Results

The Cisco solution is bringing benefits to users, both staff and students, and to the Tilburg network team. Cisco CleanAir technology and its network self-healing mechanism are especially useful when looking for sources of interference somewhere on the campus, which until now had been a costly and time-consuming exercise.

"For instance, we have equipment in some buildings that produces low-level microwave radiation, which disturbs the wireless signal in surrounding rooms," says Broos. "It's easier to pinpoint the exact nature of a problem when users complain of intermittent connectivity. CleanAir makes it possible to work around the source of interference, so it costs us less time to find out where the interference is located and how to prevent it." Tilburg University will also achieve more cost savings by helping enable voice over IP (VoIP) on smart phones or laptops equipped with soft phones. Downloading Session Initiation Protocol (SIP) software to such end user devices will allow calls to be made over the university's infrastructure rather than mobile networks.

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For campus users, the high throughput of the new access points promises connection speeds of up to 1 Mbps, even in areas where hundreds of students may be seeking simultaneous access. The network now has ample capacity to handle a growing number of bandwidth-hungry educational applications, accessed over multiple personal devices. The Tilburg network team has also helped ensure that the system will be compatible with future versions of technology for up to five years.

"We have a small team, so we don't have much time for troubleshooting," says van der Walle. "We'd rather spend money now than lose more on maintenance over the network's lifetime. So the wireless solution has to be really good, as fast and trouble-free as possible. And with Cisco, it is."

For More Information

To learn more about Cisco Wireless solutions and CleanAir technology, please click these links:

Access Points

Wireless Controller

Clean Air technology

Product List

- Cisco Aironet Series 3600 Wireless Access Points
- Cisco Series CT-5500 Wireless Controllers
- Cisco CleanAir technology

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