Case Study

Charité University Hospital
Streamlining Mobile Medical Device Connectivity

Overview

Charité University Hospital has long relied on Silex Ethernet-to-Wi-Fi bridges to maintain robust network connectivity. Building on this partnership, the hospital now uses the Silex Wi-Fi bridge as a standard solution to upgrade and manage connectivity for its mobile medical devices.

Challenge: Reliability and Security in a Critical Environment

For Charité, the network is not just a utility; it is a critical component of patient care. The hospital's requirements for wireless communication are stringent:

Frequency Isolation: To ensure reliability, Charité restricts the use the 5 GHz band to medical device Wi-Fi connectivity. This separates life-critical equipment from standard office traffic (PCs and smartphones), preventing data congestion and interference.

Enterprise Security: The network demands IEEE 802.1x certificate-based authentication to ensure that only authorized devices can access sensitive hospital systems.

Seamless Roaming: As devices move between wards and rooms, they must maintain a stable connection. Client devices require fast roaming standards to switch access points without noticeable data transmission delay.

True Mobility: Medical devices must remain truly mobile. Accessories cannot rely on DC cables plugged into walls, requiring a self-sufficient power solution.

The challenge is that not every medical device of Charité meets the requirement of 5 GHz band support, most devices support only 802.11g (Wi-Fi 3), which uses 2.4 GHz band only. The next hurdle is EAP-TLS authentication. This is also often not supported by these devices.

The Silex BR-500AC was selected because it uniquely fulfills all these technical requisites while ensuring the devices remain portable, and the communication stability was proven with a proof-of-concept test. Silex BR-330AC-LP, a low power Wi-Fi Bridge, is also used when a power efficient solution is required and the high data throughput of the BR-500AC is not necessary.

Operational Hurdle: Managing Scale and Geography

Beyond technical specs, the hospital faced significant management challenges. Charité's IT environment is massive, consisting of *over 35,000 connected devices*, (3,000 of which are medical), the network is managed by a lean team of *only 9 Network IT Managers*.

Organizational Fragmentation: Unlike standard IT assets (Windows PCs, iPads), medical devices at Charité are managed by a subsidiary, CFM (Charité Facility Management). Doctors and CFM select equipment based primarily on medical function, not necessarily on Wi-Fi capability. This translates into challenges that the IT team has to find a Wi-Fi solution for the devices not fulfilling the connectivity requirements, and it has to conduct the maintenance works that transcends organizational boundaries.

Geographical Logistics: The hospital is spread across four campuses. Traveling between Charité Campus Mitte (CCM) and Charité Campus Benjamin Franklin (CBF) can take 30 minutes by car or over an hour via public transport. On-site troubleshooting is costly. Consequently, the IT team prioritizes remote management and automation to maintain efficiency and error-proof operations.

Solution: Standardization and Remote Management

Charité currently utilizes **over 300 Silex bridges** coupled with medical devices. Standardizing on the Silex solution has mitigated the logistical and technical challenges, delivering four key advantages:

1. **Cost & Time Efficiency**: The hospital bypasses time-consuming OEM Wi-Fi module upgrades. Manufacturer technician fees often exceed **1,000 EUR** per visit and require appointment scheduling. The Silex bridge of around 300 EUR, eliminates this cost and wait time.

2. **Simplified Workflows**: Instead of learning unique setup and maintenance procedures for dozens of different medical devices, IT staff use a single Wi-Fi setup procedure for the Silex bridge. This drastically reduces training requirements, and human error.

3. **Remote Monitoring**: Using the AMC Manager remote management system, IT managers can check network status without leaving their desks, solving the geographic challenge of the four campuses, and are able to support medical workers quickly.

4. **Security Updates**: The AMC Manager allows the team to remotely apply and update 802.1x certificates. This capability is vital for maintaining security compliance without requiring physical access to devices spread across the city of Berlin.

"By utilizing a single Wi-Fi interface to connect various medical devices, the need for managing device-specific user interfaces is eliminated. This streamlines maintenance, saving both time and costs. Additionally, I was able to remotely update certificates on the Silex bridges using AMC Manager, bypassing the need for the infamous 'sneaker net' approach."

Hendrik Claus, Network Expert of Charité

Conclusion

By implementing the Silex BR-500AC, Charité University Hospital has successfully bridged the gap between advanced medical technology and rigorous IT network infrastructure requirements. The solution has allowed a small team of network managers to effectively support thousands of devices across multiple campuses, ensuring that medical personnel have reliable, secure, and mobile connectivity. Ultimately, this standardization has saved the hospital significant costs in OEM upgrades while modernizing their operational workflow through remote management.

About Silex

Silex Technology is a global provider of reliable and secure wireless connectivity solutions. With over 20 years of expertise in healthcare connectivity, the company specializes in providing solutions for mission-critical applications. Silex focuses on delivering high-quality, always-on connectivity, embodied in their philosophy "When It Absolutely Must Connect". Their product portfolio includes a wide range of embedded wireless modules, platform & SOMs, and network system solutions. Silex Technology has established strong partnerships with leading technology providers such as Qualcomm and NXP. Their NetSys business focus is centered on providing secure and reliable wireless connectivity for medical devices and hospital IT infrastructure.

Silex Global Sales & Support Locations

US Office
Silex technology america, Inc.
+1-657-218-5199
www.silextechnology.com
sales@silexamerica.com

Europe Office
Silex technology europe, GmbH
+49-2154-88967-0
Germany toll free 0800-7453938
www.silextechnology.com
sales@silexeurope.com

China
Silex technology China, Inc.
+86-10-64403958/57
www.silex.com.cn
support@silex.com.cn

Corporate Headquarters
Silex technology, Inc.
+81-774-98-3781
www.silex.jp
support@silex.jp