



Germany | Healthcare

# Network modernization readies Schwarzwald-Baar Klinikum for Hospital 4.0

## Client profile

The Schwarzwald-Baar Klinikum is an academic teaching hospital of the University of Freiburg. With 1,000 beds at two locations, it is one of the largest central healthcare providers in southern Baden-Württemberg. The hospital has 25 highly specialized departments, and 3,300 employees care for almost 50,000 inpatients and around 160,000 outpatients every year. It includes a midwifery school, a nursing school with pediatric nursing and a nursing school.

**“A special requirement for the network modernization was the integration of our existing network access control solution.**

In particular, a migration during ongoing hospital operations with the parallel operation of the old and new infrastructure is a challenge.”

**Sascha-Niko Streicher,**  
Director IT and Central  
Project Management,  
Schwarzwald-Baar Klinikum

## Summary

Schwarzwald-Baar Klinikum (Clinic) has two locations that had different IT and security structures which no longer met their stringent requirements. To increase security and provide a single framework for future applications, a single, standardized architecture was needed. The separate networks were replaced with a software-defined solution that can reliably support current network requirements and serve as a base for Hospital 4.0.

## Vision

### A uniform network creates the basis for innovative digital applications

Over the past 20 years, the Schwarzwald-Baar Klinikum had consolidated six locations into two: a new building in Villingen-Schwenningen and an existing hospital in Donaueschingen, each with their own network. The clinic group’s small IT department was tasked with manual configuration and operations, setting up network switches individually, and managing the wired and wireless networks.

As part of their Hospital 4.0 modernization program, Schwarzwald-Baar Klinikum wanted to automate these functions. They also wanted to standardize the networks across the two locations so they could use one telephony and wireless local area network (WLAN) structure across the organization.

They also wanted to implement processes to increase overall efficiency and improve the patient and employee experience. Becoming a smart hospital – with mobile services such as tracking medical devices and beds, digital wayfinding systems and self-service for hospital visitors and employees – would double the number of mobile devices in use (from 2,000 to 4,000), which the hospital’s existing infrastructure wouldn’t be able to support.

Because hospitals are critical infrastructure, they must meet strict regulations for data security, including network separation as an additional barrier in the event of cyberattack. The existing network access control solution also had to be integrated, automated and expanded.

Taking all these factors into account, it was clear that the project would involve more than network modernization – and Schwarzwald-Baar Klinikum would need more than just a service provider. To lay the technological foundation for Hospital 4.0, and the network to support it, they required an experienced partner.



### Which technologies?

- SD-Access
- Firewall
- ACI environment

### Which services?

- Project management,
- Implementation services,
- 24x7 support

### Which partners?

- Cisco

**“We didn’t want to create a bottleneck that would inhibit our future development. Thanks to NTT’s SD-Access solution, we are now very well prepared to gradually roll out further digital applications and position the hospital well for the future.”**

**Björn Bechtold**, Stv. Director  
IT and zPM, Schwarzwald-Baar  
Klinikum

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## Transformation

### 1,500 new access points ensure a fail-safe IT infrastructure

A hospital’s systems must be extremely reliable as any downtime can negatively affect patient treatment and health outcomes. By automating network configuration and updates using software-defined networking, we gave Schwarzwald-Baar Klinikum a single management system to monitor the network and quickly address issues before they impact on performance. The system also enables them to roll out changes, using software-defined access and implement enhanced security policies.

Combining this system with application-centric infrastructure that supports rule-based configuration and administration also optimizes their data center network, taking pressure off the IT team.

Cost had initially prevented the clinic from using a central firewall to provide effective network separation, but with our SD-Access solution, they now have a secure network structure.

We not only provided the technology for network modernization, but also a plan for migration, so users do not have to worry about downtime during the deployment process. A staged process ensures that any issues are identified before the full deployment – including 250 switches and 1,500 access points – commenced.

## Results

### Migration consolidates networks and relieves the burden on IT

Integrating SD-Access and an application-centric architecture into their existing network provides a unified solution for both of Schwarzwald-Baar Klinikum’s locations. Their new network structure automates the delivery of end-to-end services and simplifies network management. It also serves as the base for future mobile applications. Network separation, leveraging a central firewall, also meets the high security requirements that the German Federal Office for Information Security (BSI) sets for critical infrastructure.

### Relieving pressure on the IT department

The new network automates and standardizes processes that were previously carried out manually. The network fabric automates user and device policies across wired and wireless infrastructures, which means a significant reduction in the need for manual configuration. In addition, the application-centric architecture allows changes to be implemented more easily.

### Increasing network security

The network separation using a firewall provides an additional barrier in the event of cyberattacks. This ensures greater data security and supports compliance with the requirements of regular BSI audits.

### Preparing for Hospital 4.0

Future applications, such as location-based services, are already catered for as part of the clinic’s core architecture. This will allow mobile and digital applications to be implemented later without additional effort or increasing the number of access points in the area.

