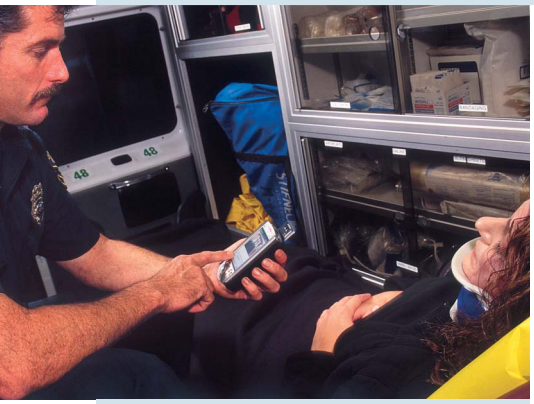
Austria pioneers electronic health administration system and citizen card running on Cisco infrastructure



Executive Summary

Organisation Name

- The Main Association of Austrian Social Security Institutions (Hauptverband), Austria

Industry

- Public sector – healthcare

Business Challenges

- Introduce an electronic healthcard for all Austrian citizens that would reduce bureaucracy, cut costs and improve citizens' access to healthcare services
- Provide an e-health infrastructure and a platform for more widespread e-government and commercial applications, as part of the introduction of the healthcard system

Solution

- A secure, reliable and scalable network using Cisco switches and routers from end to end
- Virtual private networks (VPNs) on the multi-protocol label switching (MPLS) infrastructure, and VPN Routing and Forwarding – a unique Cisco feature – provide critically important security functionality

Business Results

- Strategic platform for Connected Health on which to link hospitals, pharmacies and all healthcare partners to further improve services and efficiency
- A gateway to broader e-government and commercial services

Replacing some 42 million paper vouchers each year with e-cards is only the first step in achieving Austria's far-reaching goals – and this innovative approach to Connected Health runs on Cisco technology.

Business Challenges

All social insurance institutions in Austria belong to the Main Association of Austrian Social Security Institutions (Hauptverband). This umbrella organisation is responsible for safeguarding general social security interests and for representing the social security institutions in matters of common concern (for example, concluding contracts with physicians, hospitals, and so on). It also represents the Austrian social security system in dealings with similar organisations abroad and, in an international context, acts as a liaison body in matters of health, accident and pension insurance.

The structure of the Austrian social security system has the advantage of customer-oriented service. The disadvantages of the decentralised structure are counter-balanced by the co-ordinating function of the Hauptverband. The competent supervisory authorities of the Hauptverband are the Ministry of Health and the Ministry of Social Affairs.

In 1999 the Austrian government passed a General Law on Social Insurance that included provision for a national signature card (e-card) for all Austrian citizens and gave responsibility for its implementation to the Hauptverband. Although it had wider applications, the card would initially be used as the key to an electronic administration system for healthcare.

The Hauptverband faced numerous challenges in scoping such a far-reaching and innovative project. "In designing the e-card together with its networking, security and support systems, we built an IT infrastructure on which we can potentially run numerous applications. Our ultimate goal for healthcare is to be able to move information, not patients," says Volker Schoerghofer, Management Board of the Hauptverband.

Solution

This long-term vision of Connected Health involves the creation of effective digital links between healthcare providers and insurers, resources and patients (both potential and actual) that help to control costs and enhance efficiency by improving the flow of information. In line with this vision, the mission for the new card was to provide an infrastructure for the whole of Austria on which to build those links.

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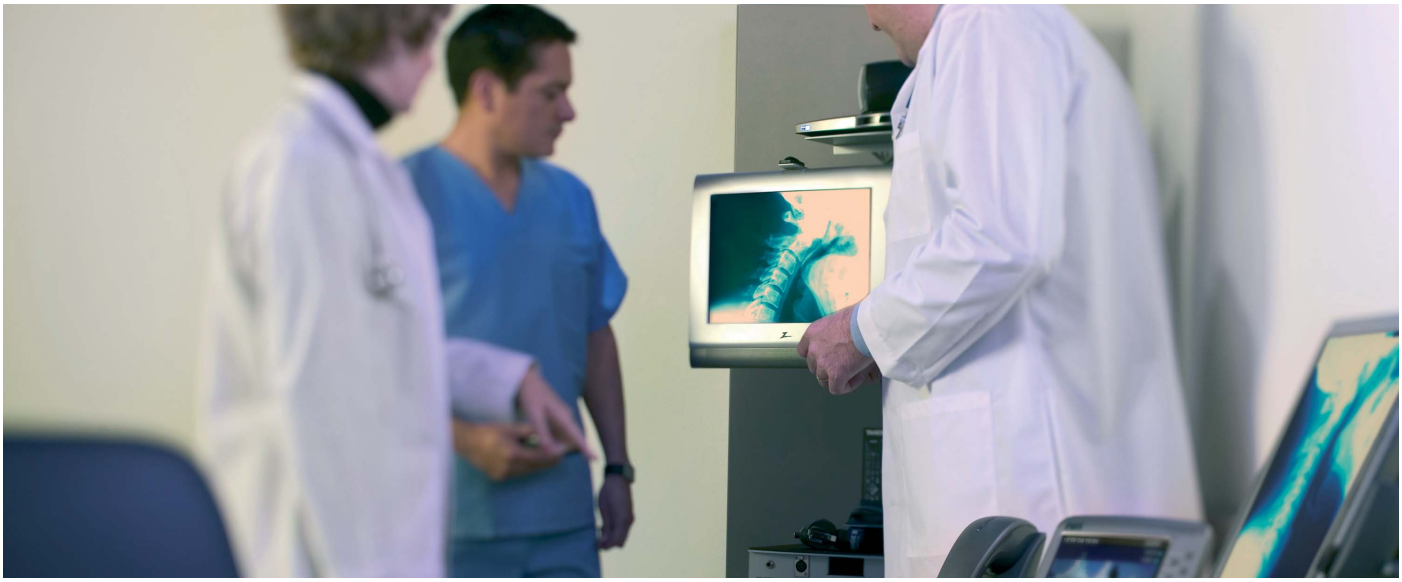

As an important first step, it was decided that the e-card would replace the paper-based vouchers that Austrian citizens required for every visit to a doctor or dentist, in order to provide proof of health insurance prior to treatment. Each voucher was only valid for three months and an estimated 42 million were issued every year, at great cost and inconvenience to all parties involved.

The idea was to transfer this bureaucratic process online by providing all citizens with a smart card that can be inserted into a LAN chip card reader, which is connected to the so-called Medical Practice Unit (MPU). The MPU contains the application software that helps to handle the business processes associated with a doctor's clinical consultations.

A router located at the doctor's office then connects to a server centre containing health insurance data for over eight million Austrian citizens. Once a secure connection to the server centre has been made, doctors can check that patients have the appropriate health insurance before treating them. Importantly, the e-card is a keycard that does not carry any personal data except what is required for purposes of identifying the cardholder. Instead it provides access to relevant data for authorised professionals.

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> SVC

In mid 2003 the Hauptverband started to launch Requests for Proposals (RFPs) for each element of the system that would deliver this functionality. The 'communications services' element called for a high-speed network that would securely connect 12,000 doctors' and dentists' offices to the server centre. The requirements for the Health Information Network (HIC) were developed together with Telekom Austria and Tele2UTA.

During this process, Cisco was able to provide input based on its technical expertise and experience of helping to deliver large-scale Connected Health projects around the world.

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The Cisco-based design complied fully with the Hauptverband's high-level requirements for a scalable, reliable system based on open industry standards. Cisco also met other key criteria such as the ability to support the wide range of features, traffic types and access technologies that would be required on this national network. The ability to manage such a diverse network from end to end was also important, for financial as well as operational efficiency.

Security was a critical concern because, in the words of Volker Schoerghofer, "even one misuse of confidential data would be unacceptable". The network design uses multi-protocol label switching (MPLS) virtual private network (VPN) technology to create a completely private network for all e-card traffic. Unlike any other vendor at the time, Cisco was able to offer this functionality on a router that would still be affordable for doctors and dentists.

As importantly, Cisco was able to offer a unique feature – VPN Routing and Forwarding (VRF) – which enhances the network's security still further. VRF makes it possible to separate one single Cisco device – the Cisco 800 Series integrated services router – into different logical devices which function independently, thus ensuring complete privacy. This allowed the Hauptverband to separate e-card access from all other applications that are available on the system. At the start of the project, for example, two logical devices were created in each doctor's office: one for the e-card applications and another for Internet access and all other applications.

Other key requirements were ease of use, to help this radically new approach gain acceptance among Austria's doctors, and high network reliability.

"It is of high importance for us that the service is based on reliable and scalable products," Thomas Ochsenbauer explains. "We needed a solution that would serve us well now, and continue to grow with us by allowing us to add new types of traffic, applications and other capabilities. We are confident that an end-to-end Cisco network meets all those requirements."

Business Results

The e-card system was introduced in the last seven months of 2005, following six months of stringent testing in the field. The reason for this challenging schedule was to avoid running the old and new systems in parallel. By delivering the e-card system on time, on budget and with more than the original functionality, the Hauptverband succeeded in achieving all its targets for the implementation and roll-out.

Many parties have benefited from the introduction of the e-card system, and its advantages range from administrative and financial to medical and personal. Austrian citizens have a much more convenient and affordable system which gives them improved access to healthcare and greater privacy. Instead of vouchers that were only valid for three months, they now have an e-card that might be valid for up to ten years.

With no further need to process 42 million vouchers by hand each year, Social Insurance Organisations are saving large amounts per year on administration alone. As a result, it has been possible to re-assign many employees to more valuable tasks. It is also much easier to maintain accurate records, which further cuts costs by helping to reduce errors.

Doctors, too, are enjoying the reduced bureaucracy. A recent 'before and after' study by the Vienna University of Economics and Business Administration found that doctors save a minimum of five hours per quarter thanks to the e-card. Invoicing and billing are now both cheaper and easier because this functionality is integrated into the system, and doctors receive instant confirmation that payment will be made for a particular treatment. In addition, employers no longer have the financial and administrative burden of issuing some 42 million vouchers per year.

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Doctors will also be able to use the Health Information Network (HIC) to access information more readily on subjects such as new drugs, for example. The Hauptverband expects that other paid-for services such as e-learning, once introduced, will support doctors in their professional development and help to enhance the quality of care offered to patients.

At the national level, the e-card supports the transparency of medical services and costs, as required by law. In doing so, it brings many advantages, such as providing the Austrian health service with more complete and accurate information for planning purposes.

Fast track to Connected Health

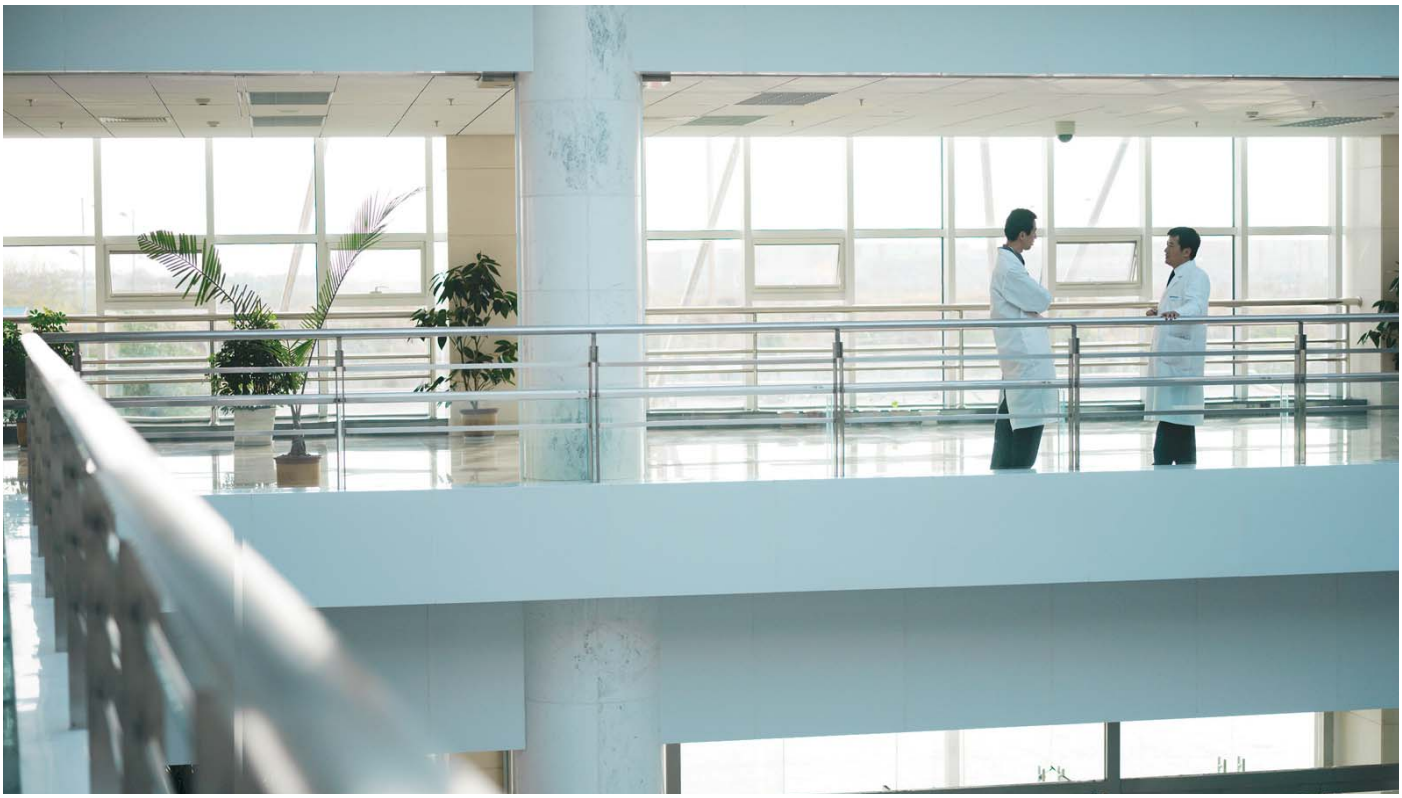
A public audit has shown that the e-card project will pay for itself in just 2.6 years. Impressive though this is, it should not overshadow the strategic benefits of the system which Austria is now beginning to exploit fully. Plans are underway to include every healthcare partner in the e-card scheme, starting with hospital out-patient departments, pharmacies and the ambulance service.

In the longer term, the Hauptverband hopes that the e-card will eliminate all paperwork from the Austrian healthcare sector, as well as offering a gateway to many new applications. The e-card could, for example, provide secure access to lifelong electronic patient records, if these are introduced. It already functions as a European Health Insurance Card, replacing the E111 form and providing Austrian citizens with cover throughout the European Economic Area and Switzerland.

Austria is also participating in the NETC@RDS consortium with the Czech Republic, Finland, France, Germany, Greece, Hungary, Italy, the Slovak Republic and Slovenia. Partly EU funded, the project's goal is to improve the access of mobile citizens to trans-European health services by using advanced Web-based applications.

The e-card has multiple applications outside the health arena because it acts as an electronic ID and signature card. This functionality gives the e-card huge potential as an e-government enabler, allowing people to 'sign' electronic forms or access their personal tax accounts online, for example, and numerous other services. Its use could also extend to applications outside the realm of government such as online purchasing and commerce.

As the first country in Europe to achieve full coverage of electronic signatures for its citizens, Austria has a head-start in an important objective. "The e-card is successfully driving demand for new applications, new processes and new thinking," Volker Schoerghofer concludes. "It is our goal to become number one in the EU ranking for e-government readiness."



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Technology Blueprint

The network core consists of four Cisco Catalyst 6500 Series Switches and an additional four identical switches located in a second, fully redundant data centre. All eight core switches include a Content Switching Module for load balancing, a Firewall Services Module and an Intrusion Detection System Module. This modularity of design is a distinct advantage to the Hauptverband, as it reduces maintenance costs and limits the amount of space required to house the equipment.

One Cisco 800 Series integrated service router is located in every doctor’s office, providing a secure, encrypted connection to the e-card network as well as separate, high-speed access to the Internet and other resources.

The Cisco-based solution uses multi-protocol label switching (MPLS) to create numerous logical networks (MPLS VPNs) over one physical infrastructure. This feature offers built-in security by ensuring that the e-card network remains entirely separate from others that are used for different applications.

For example, four different service providers are running services related to the e-card because doctors are able to choose which provider they wish to use for network access from their offices. All of these networks operate entirely separately without sharing a routing table with any of the others.

Ageing populations, particularly in developed countries, and spiralling costs mean that advanced technologies have a central role to play in helping to connect all the major components of a healthcare service in an intelligent way that improves both clinical and administrative efficiency. The inherently secure, reliable and flexible infrastructure designed for the e-card is an important example of how Cisco Systems is using its technologies and expertise to help healthcare providers and governments around the world achieve their visions of Connected Health.

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