

Case Study

Volkswagen



Volkswagen certificates successfully managed by Nexus Software



“We are confident that we have chosen the right technology, and having been something of a pioneer means that we have been able to specify what we want from Nexus.”

Uwe-Jens Hofmann,
head of PKI at VW

As one of the biggest global players in the automotive industry and No.1 in Europe, VW naturally sees security as an important issue. A PKI solution was to be established to effectively protect sensitive company information and to control access to mission-critical applications. The requirements to be met were a substantial level of security for access control and authentication, but also advanced flexibility to allow integration with the company's existing IT infrastructure. Usability and cost-efficiency were other factors to consider.

About Volkswagen

The Volkswagen Group, headquartered in Wolfsburg, is one of the world's leading automobile manufacturers and the largest carmaker in Europe. The Group operates 60 production sites in fifteen European countries and six other countries in the Americas, Asia and Africa with almost 370,000 employees worldwide. Volkswagen vehicles are sold in more than 150 countries.

The requirements

The PKI solution to be deployed should produce secure personalised smart cards for authentication. Features should include smart card-based Windows logon, access to the intranet and applications, and even encryption functionality to secure network transfers over external providers. Secure and efficient distribution and final personalisation of the smart cards in VW's distributed organisation should also be achieved.

The solution

After an extensive evaluation process, Nexus Origo Certificate Manager was chosen as the central application for the VW PKI back in 2001. Uwe-Jens Hoffmann, head of PKI at Volkswagen, explains: “Volkswagen chose Nexus because of the company's documented experience, and Certificate Manager offered the best price-performance mix.”

Nexus Origo was a natural choice to meet VW's demands on flexibility and security. The flexible architecture has been crucial for the development of custom modules to fulfil VW's requirements down to the letter. Clusters and load balancers support high availability for 24/7 operation. And in order to guarantee high-security, Hardware Security Modules (HSMs) are used for key generation and storage.





Products in service

Nexus Origo Certificate Manager

Nexus Origo handles the issuance and the life cycle management of all certificates for the Volkswagen employee smart cards.

Nexus Origo's security has been evaluated and approved for compliance with Common Criteria EAL3+ in accordance with the German Signature Law (SigG).

General Purpose Input View supports the import of requested records not only from CSV files, but also from an LDAP directory.

Nexus Origo's flexible architecture enables the development of custom modules to meet virtually all requirements.

Nexus Servant OCSP Responder

Nexus Servant delivers revocation status information according to policies and the German Signature Law (SigG).

Nexus Personal Security Client

Nexus Personal is middleware used to access computer applications using the smart card's electronic security functions.

Smart cards: rollout and management

A highly-customised smart card profile was created to meet VW's strict security policies. The cards contain three key pairs used for authentication, data encryption and non-repudiation. The encryption keys are securely generated centrally and archived in an encrypted state in the CM Database.

VW's specific requirements demanded a certification authority that operates in a single central location where the cards are produced pre-personalised. The cards are locked using transport certificates for secure transport. Final personalisation takes place at the local registration authorities (RAs), where users have to identify themselves in person to receive their cards. To prevent any input errors, the RA client uses an input view developed specifically for VW with an LDAP interface to enable the retrieval of personal data directly from VW's internal directory. The cards can be used for:

- Windows logon
- E-Mail encryption and signatures
- Web application authentication in-browser
- Login to SAP R/3 applications
- Authentication for mainframes

Integration with the directory and status information systems ensures user card and certificate status is automatically updated.

Further developments

After the installation in 2001, a major update project followed in 2003. A specially-developed 'Self-revocation Portal' allowed end users to revoke their cards via a web browser almost from the start. After the first complete certificate-lifecycle experience, a self-service 'Self-renewal Portal' for users was ordered and built in 2006. Both portals were built using the CM-SDK.

Satisfied with the solution

With Nexus Origo to manage all parts of the VW PKI, Volkswagen found a reliable and comfortable solution. "It helps us run this large distributed company with tight security and allows remote users to access applications in a way that is convenient for them," says Uwe-Jens Hofmann.

Since the system came into operation, Nexus has periodically conducted upgrade projects to ensure that VW has the latest software versions. The projects have been carried out in close collaboration with VW. Development work at Nexus, onsite visits and training sessions have been conducted many times, and will continue in order to secure the convenient deployment of Nexus solutions both today and in the future.

