

ŠKODA

Executive Summary

Challenges

- As ŠKODA car sales grew, the legacy network became complex — difficult to manage and troubleshoot.
- A focus to improve security led to a corporate mandate to adopt Network Access Control (NAC).
- Legacy network required downtime and out-of-hours staffing to apply upgrades and deploy new services.

Value Created

- Fully virtualized architecture with simpler topology and configuration, enabling easier deployment of new manufacturing services to increase car production.
- Factory guests now able to access specified internal networks with authentication, even from their own devices, while companywide security is strengthened via NAC.
- Better network performance and stability, improving staff productivity and vehicle manufacturing operations.
- Significantly shorter downtime for network upgrades and maintenance, so IT specialists can focus on strategic management, analysis and network planning, to help accelerate business expansion.
- Improved performance of business-critical applications, including manufacturing management software and enterprise resource planning platform, essential for optimizing vehicle production.



ŠKODA AUTO Accelerates with Double-Digit Growth

Network Virtualization Drives Stability, Scalability

ŠKODA AUTO, based in Mladá Boleslav, is one of the leading industrial companies in the Czech Republic, and one of the oldest auto makers in the world. The company dates back to 1895, when Václav Laurin and Václav Klement established the enterprise and laid the foundation for more than a century of Czech car production. Currently, ŠKODA AUTO employs over 25,900 people. The ŠKODA brand has been part of the Volkswagen Group for almost 30 years. During this time, ŠKODA AUTO deliveries have increased substantially, and its product portfolio has expanded significantly. The company's business activities are chiefly the development, production and sale of ŠKODA cars, components, original parts, accessories and services.

In recent years, due to double-digit growth, the company outgrew its existing network infrastructure. The aging network was suffering 1-2 unplanned outages per year, risking production line shutdown, and impacting staff productivity. In addition, the ŠKODA IT team was increasingly frustrated with its weak network management capabilities. Software upgrades required entire network restarts, necessitating considerable planning and downtime, halting production during business hours, and forcing IT staff to work during weekends and company holidays. Lastly, ŠKODA was requested — as part of the Volkswagen Group — to implement Network Access Control (NAC) technology, in order to increase security via improved management of all connections on the network.

To address all these issues, ŠKODA implemented Extreme Fabric Connect and Identity Engines, upgrading its network to a virtualized structure, with an eye towards increased stability and simplified network administration, while optimizing networking security with NAC.

“Extreme’s virtualization solution has brought much-needed stability of infrastructure, and enabled us to rapidly implement Network Access Control and deploy new services when and where we like. We have not experienced a single outage since the implementation. The network is much easier to manage, and we have greatly increased security by knowing at all times exactly who is connected to our network, where, and which devices they are using,” says Martin Polak, Coordinator for Network Planning, ŠKODA AUTO.

ŠKODA selected Extreme particularly for its NAC capabilities, and for the flexibility and compatibility of the virtualized network solution, delivered at a low total cost of ownership through a trusted Extreme partner in the Czech Republic.

“Extreme presents a robust, cost-efficient, scalable solution that has enabled us to increase our efficiency and security across our entire network infrastructure,” Polak comments.

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Phased Deployment with Off-Site Staging

ŠKODA kicked off its network enhancement project in 2013, with the upgrade of the backbone network at its headquarters and a simultaneous migration to virtualization. In 2014, ŠKODA grew the cloud solution across the backbone network for car production facilities in Mladá Boleslav and Kvasiny, and across access layer switches in its data centers. In 2017 ŠKODA interconnected SPB clouds into one “super-cloud” covering all ŠKODA locations in the Czech Republic.

The implementation was facilitated by support from Extreme, in which the infrastructure was built and tested before the first phase migration.

The vendor also provided on-site consultation services to ŠKODA’s networking specialists to help determine the optimum migration process, and ensure a smooth installation.

Virtual Networking Infrastructure

ŠKODA has a complex network infrastructure, with operations spread across its main manufacturing base at Mladá Boleslav, additional assembly plants in Kvasiny and Vrchlabi, and various remote branches and office locations. To cover all sites, ŠKODA deployed several Extreme Fabric Connect networks. The results were visible immediately:

- Faster network performance increasing staff and manufacturing line productivity
- An increase in networking operational efficiency, freeing IT staff for strategic tasks
- Better availability of the manufacturing management software used throughout the Volkswagen Group — essential for producing a high volume of vehicles per day
- Enhanced performance of SAP enterprise resource planning (ERP) software, which supports ŠKODA’s entire business operations

“Thanks to the new generation of Extreme switches, we have eliminated the strain on our network which was hindering the speed and direction of our business growth and the performance of our software applications,” says Polak. “The effectively-balanced communication infrastructure helps to optimize staff performance across all areas of the business.”

Multiple Improvements

Continual improvements in business and car manufacturing efficiency are essential to remaining competitive in the car production industry. ŠKODA’s IT department receives frequent requests for adding new services for car production plants, expanding the infrastructure, or improving performance—often with short deadlines.

Benefits of the new network include the ability to:

- Manage equipment remotely, to improve efficiency and drive down operations costs
- Gather data from sensors and software, for real-time insight into production bottlenecks, pending maintenance issues, and other issues
- Extract performance data from machines and plants in real-time to minimize errors and waste during production

With the legacy infrastructure, it was difficult to implement new services to meet short deadlines, delaying the optimization of ŠKODA's operations and undermining its competitiveness.

Using Extreme's virtualization solution, ŠKODA reduces time to market for new business applications, as it can upgrade or implement new services with everything connected and without requiring maintenance windows. IT staff can easily perform changes during business hours, enjoying a healthier work-life balance, and saving ŠKODA employee overtime costs.

"Now we simply install the new software, test it, restart the switch and move on to the next — with no system restarts required. With this model, we have minimized provisioning errors and reduced the amount of network downtime required for configuration changes and upgrades to the infrastructure by 80%," says Polak.

With rapid business growth putting pressure on ŠKODA's network, IT networking specialists had been spending the majority of their time on troubleshooting and maintaining operation of the existing network.

Thanks to the simplified maintenance, ŠKODA's IT staff now focuses on value-add strategic tasks to facilitate the company's continued growth while keeping the network fine-tuned. Headquarters, research and development, manufacturing plants, logistic sites, and parts warehouses can take their mind off network issues and deliver innovation to the business.

"Now we manage everything online and without service outages. We have optimized the performance and morale of our IT staff, which no longer need to work out of hours to perform upgrades," Polak observes.

Improved Security with Network Access Control

Each ŠKODA office, production site, and subsidiary entity wants to protect its data against external attacks.

ŠKODA's infrastructure includes dedicated independent networks for printers, employee computers, energy, telephones, emergency power supplies, and various technologies, including climate control and closed circuit television cameras. Historically, it was difficult for ŠKODA to manage the different types of access that users required. Guests visiting its factories and offices were not able to connect to ŠKODA's network through their own devices, for example, to use the Internet.

"Little things, like having a partner on site to give a presentation, were complicated. They always had to prepare extremely well, anticipate questions, and make sure all components of their pitch were available offline, sent ahead by email, or even printed. Any unforeseen questions could bring the discussion to a halt and prolong business negotiations by weeks," Polak says.

Thanks to the deployment of Extreme Identity Engines, guests can now request and receive access to the Internet or printers within a matter of minutes, and physically or wirelessly connect their own devices without gaining unauthorized access to other parts of the network. ŠKODA's independent virtual networks cannot see each other but are connected through firewalls and controlled centrally with managed access to the data according to corporate rules, helping to increase security while providing convenience for network users.

"With Extreme Fabric Connect and Identity Engines, we can rapidly create new virtual networks for different types of devices with various access levels when our guests want to use printers, the Internet, or the phone," comments Polak.

Stability, Business Continuity

A service disruption of the network infrastructure could cause problems on production lines, even temporarily halting car production. Just a couple of hours of network downtime on ŠKODA's manufacturing operations would have financial consequences running into millions of Euros, as well as impact orders from car distribution partners and negatively affect delivery commitments made to customers. ŠKODA was experiencing such outages in the past and the troubleshooting was a complex, time-consuming process.

By upgrading to Fabric Connect and migrating to the SPB cloud, ŠKODA's network infrastructure is now significantly more robust against failures, experiencing not a single outage since deployment in 2013.

"Extreme's virtualization solution and Shortest Path Bridging provides us with a robust infrastructure, and gives us the flexibility to cope with any networking problems. If there is an outage or heavy network traffic in a data center, we can rapidly reconfigure our network and migrate half the data centre from one location to another to ease the network strain and ensure business continuity," Polak says.

Key Metrics to Date

- Eliminated unplanned outages
- Virtual networks can be created and configured in one hour instead of one day, with zero configuration mistakes
- Time required for service outages due to configuration changes and infrastructure upgrades reduced by 80%
- Mitigated financial risks associated with outages which could run into millions of Euros in operational and missed-opportunity costs

Driving on the Road to Virtualization

A key attraction of Extreme Fabric Connect' for the ŠKODA team was its virtualization capabilities.

"We have already created 20 virtual networks," comments Polak. "Using Fabric Connect, we can create and configure a virtual network from one side of the company to another in one hour, with zero configuration mistakes."

"Before the implementation this would take up the whole day, and errors were easy to make."

Thanks to Extreme's virtualization solution, ŠKODA is no longer dependent on a fixed physical topology.

"Virtualization makes it easy for us to develop and expand our network in line with our growth in car sales, and gives us the flexibility to relocate networks anywhere throughout the organization," says Polak.

About ŠKODA AUTO

ŠKODA AUTO is one of the longest-established vehicle production companies in the world. In 1895, the Czech headquarters in Mladá Boleslav began producing bicycles, followed by the production of motorbikes and cars. ŠKODA currently offers the following models: Citigo, Fabia, Rapid, Octavia, Karoq, Kodiaq and Superb. In 2017, ŠKODA AUTO delivered more than 1,2 million vehicles to customers worldwide. Since 1991, ŠKODA has been a subsidiary of Volkswagen Group, one of the most successful automotive groups in the world. ŠKODA, in association with the Group, independently manufactures and develops vehicles, as well as components, engines and gear transmissions. ŠKODA AUTO operates at three locations in the Czech Republic, and produces products in China, Russia, Slovakia and India, mainly through Group partnerships, as well as in Ukraine and Kazakhstan through local partners. ŠKODA employs over 30,000 people globally, and is active in more than 100 countries.

The ŠKODA AUTO network infrastructure currently consists of 92 backbone and distribution switches (Extreme VSP 9000, VSP 8000, ERS 8800) and 2800 Accessswitches (Extreme ERS 5000 series, ERS 4000 series, ERS 3000 series, VSP 7000, VSP 4000) - 133,000 ports in total.



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