



## T-Systems

# T-SYSTEMS APPLIES GERMAN ENGINEERING TO MASSIVELY SCALE DATA CENTER NETWORK

### Summary

**Company:**  
T-Systems

**Industry:**  
Technology

**Business Challenges:**  
*Leverage network automation and massively scale the data center architecture to provision services faster.*

- Technology Solution:**
- QFX5100-48T, QFX5110-48S, and QFX10002 Switches
  - EX4600 and EX3400 Ethernet Switches
  - Apstra

- Business Results:**
- Built state-of-the-art data center fabric to enable rapid network automation and service orchestration
  - Migrated traditional data center networks to EVPN/VXLAN L3 clos fabric without disruption
  - Significantly increased network performance and reliability

T-Systems, one of the world’s largest independent providers of digital services, brings unparalleled expertise in information and communications technology (ICT) to 20 countries. A subsidiary of Deutsche Telekom, T-Systems operates traditional ICT systems and services, offers cloud services that conform to Germany’s strict data privacy laws, and is an innovator in new business models anchored in IoT. The company, which earned revenues of €6.9 billion in 2018, recently chose Juniper Networks as part of its dual-vendor strategy for data center networking.

### Modernize and Automate for Cloud Scale

T-Systems prides itself on using “German engineering” to solve complex ICT problems for some of the biggest businesses in the world. The top enterprises in Germany, Austria, and Switzerland, as well as many Fortune 100 businesses—including Shell, Volkswagen, Kone, and McKesson—rely on T-Systems.

With a focus on innovation, T-Systems needs modern, agile data centers to deliver its portfolio of digital transformation, application, infrastructure, mobility, connectivity, and security services.

With 45 data centers around the world, T-Systems wanted to consolidate and simplify operations. Following the consolidation, the remaining 11 data centers needed to scale massively to handle the company’s performance, availability, and scalability requirements. A traditional data center architecture would not suffice.

“We wanted to upgrade our data centers with a state-of-the-art IP fabric/SDN design,” says Thomas Wende, head of data center network engineering at T-Systems. “With a modern data center architecture from Juniper, we can implement automation to provision environments for customers faster.”

Automation and orchestration were key requirements, since they would enable T-Systems to provision services to customers and capitalize on new opportunities such as multicloud more quickly.

*“Integrating Juniper into our data center was smooth.”*

- Thomas Wende, head of data center network engineering, T-Systems

As an ICT provider, maintaining vendor independence is paramount for T-Systems, and the company considers a dual-vendor strategy as a competitive advantage. After an extensive evaluation, T-Systems selected Juniper Networks for an open and scalable data center networking solution as its second vendor.

“Juniper’s network solutions meet the requirements for our data center,” says Wende.

A Layer 3 IP fabric delivers the ideal architecture for T-Systems data centers, providing a strong foundation for an overlay network and delivering very high resiliency. Leveraging Juniper Networks® QFX Series Switches, T-Systems deployed a Layer 3 IP Clos fabric with Virtual Extensible LAN/Ethernet VPN (VXLAN/EVPN.) The IP Clos fabric increases agility, delivers predictable performance, and enables massive scalability. Using VXLAN/EVPN also supports efficient Layer 2/Layer 3 connectivity with scale, simplicity, and agility.

Junos® operating system, which runs across all Juniper routing, switching, and security platforms, delivers reliability, security, and flexibility. Junos OS automates network operations, driving greater operational efficiency. The T-Systems network’s engineering and operations teams were new to running a Juniper network, and they leveraged Juniper training and workshops to get up to speed quickly.

T-Systems first deployed the Juniper IP fabric in its Houston, Texas, data center and, based on the reliability and quality of the solution, will roll out the same architecture in its Munich, Biere, and Magdeburg data centers in Germany. The Juniper networks in the Houston and Munich data centers provide an extension to and migration from T-Systems’ other switching vendor.

“Integrating Juniper into our data center was smooth,” says Wende.

The QFX Series switches deliver deep buffering capabilities; deep buffer spines are ideal for big data, storage, and other bursty applications while enhancing application resiliency. The Houston, Munich, Biere, and Magdeburg data centers are based on deep buffer spines using Juniper Networks QFX10002 and QFX5100/QFX5110 Switches.

In the Biere and Magdeburg data centers, T-Systems plans to deploy Juniper Apstra to simplify setup and configuration of the L3 Clos fabric. Juniper Apstra also provides a framework for orchestration and automation that further reduces OpEx by simplifying operations.

Out-of-band switching is enabled through the 10GbE Juniper Networks EX4600 Ethernet Switch and the compact Juniper Networks EX3400 Ethernet Switch.

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## Greater Agility and Scalability

T-Systems delivers a broad set of application, platform, infrastructure, and collocation services. The world’s largest provider of hosted SAP solutions, T-Systems also hosts Oracle, IBM, and Microsoft applications as well as custom software tools, offering a broad portfolio of connectivity services including fixed and mobile services.

With its dual-vendor strategy for data center networking, T-Systems can deliver the most appropriate network solution to customers—for instance, proposing IP fabric and SDN solutions based on the top two network vendors, providing a competitive differentiator. In addition, T-Systems has found that a dual-vendor strategy also increases service reliability, since it can serve customers even if one vendor’s equipment presents an issue.

“Using automation allows us to deliver infrastructure faster,” says Wende. T-Systems leverages the Junos API as well as Ansible playbooks to automate the configuration of Juniper switches.

With state-of-the-art data centers, T-Systems can scale to meet customers’ digital transformation needs while ensuring service continuity. And it has room to grow, including offering new services such as multicloud.

## For More Information

To find out more about Juniper Networks products and solutions, please visit <http://www.juniper.net>.

## About Juniper Networks

At Juniper Networks, we are dedicated to dramatically simplifying network operations and driving superior experiences for end users. Our solutions deliver industry-leading insight, automation, security and AI to drive real business results. We believe that powering connections will bring us closer together while empowering us all to solve the world's greatest challenges of well-being, sustainability and equality.

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