IT and Telecom Solutions Provider Enables a New MPLS Carrier Grade Network

Deutsche Bahn Systel adds solutions, boosts services while reducing operational costs with Cisco network.

EXECUTIVE SUMMARY

Customer Name: Deutsche Bahn (DB) Systel

Industry: IT and telecommunications solutions for the transport, logistics, and travel industries

Location: Headquartered in Germany; operates worldwide

Number of employees: 2000 plus

BUSINESS CHALLENGE

- Meet new, higher quality of service and availability requirements of diverse customers
- Help enable VoIP for 190,000 parent company employees across Germany

NETWORK SOLUTION

- Cisco 1000-series Aggregation Services Routers (ASRs) at provider and customer edges
- Cisco 1861 Integrated Services routers (ISRs), also deployed on customer edge

BUSINESS RESULTS

- High-performance, resilient, versatile platform offering concurrent deployment of multiple services
- Customer edge-based unified communications, including voice gateway, call processing, automated attendant, voicemail, conferencing, and security capabilities

Business Challenge

Founded in 1994, Deutsche Bahn Aktiengesellschaft (AG), or the DB Group, is now one of the world's leading passenger and freight transport and logistics companies, operating in more than 130 countries worldwide. In and around Germany, where it operates the longest railway system in Europe, the company's passenger trains and busses carry some 10 million passengers daily. Its European network transports more than 415 million tons of freight annually, with additional tonnage carried by its air and ocean freight operations. Its Schenker Logistics business unit ranks consistently among the top five transport logistics service providers in the world.

Another business unit, DB Systel, operates as a full-service provider of IT and telecommunications solutions for the DB Group and its customers in the travel, transport, and logistics markets. DB Systel's portfolio of products and services spans the entire IT value chain, from consulting and conception to development, testing, and implementation, 24-hour network operations, field service coordination, and support. In addition to its "customers" within DB Group, primarily Deutsche Bahn railways and transport logistics, DB Systel also provides solutions to third-party mobile telephone network and landline carriers, DSL providers, and cable network operators. DB Systel's infrastructure includes two data centers in Berlin and a network of some 300,000 IP ports, from DSL to optical fiber. It delivers a total of 500 or more applications and services, including:

- Ticketing, sales, invoicing, and purchasing tools and services
- Line/track management, control, and safety systems
- Cross-platform desktop office applications and services, including email and centralized data storage
- Communication platforms, including voice ports and VoIP service-level agreements, call center functions, and conferencing services
- Business planning and performance management
- Human resource management, planning, and training
- Mobile switching and services
- Digital radio networks for mobile railway communications and control

In 2008, DB Systel undertook a renewal of DB Group's IP network in Germany. Comprising some 12,000 switches (with 300,000 installed switch ports), routers, and other components, with more than 700,000 devices connected, the network at that time served most of DB Group's 190,000 Germany-based employees as well as thousands more employees of various external DB Systel customers at some 2200 locations.

Even so, the network infrastructure was limited to providing only Layer 3-level service: beyond providing an IP connection for every device and location, DB Systel depended on, and paid for, various third-party carriers to provide the core aggregation and transport services that made up the backbone of the network. "The goal was to build a next-generation WAN of leased lines and proprietary Layer 2 carrier services, which would allow us to operate our own backbone and take charge of DB Group's entire IT and telecommunications infrastructure," says Dennis Kuchenbecker, chief IT architect at DB Systel. "We wanted to meet new, higher quality of service and availability requirements and enable VoIP for DB Group across Germany."

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Network Solution

Extending a partnership that goes back a decade or more, DB Systel called on Cisco to help it sort out its challenges and options for building a next-generation network that would not only meet its current requirements but would also accommodate the additional services and capabilities that it will add in the future. Together, the partners settled on a solution that combines Cisco® 1000 Series Aggregation Services Routers (ASRs) and 1861 Integrated Services Routers (ISRs).

Cisco 1006 ASRs are deployed at the provider edge of the network in various regions, where a point-to-multipoint Virtual Private LAN Service (VPLS) connects them all, via various protocols, to a full mesh network. The whole set-up supports more than 20 active Multiprotocol Label Switching (MPLS)-VPNs. The provider edge routers connect at the customer edge to Cisco 1002 ASRs running Border Gateway Protocol (BGP) and Open Shortest Path First (OSPF) as routing protocols, while H-QoS helps ensure adequate bandwidth for forwarding customer traffic.

PRODUCT LIST

- Cisco 1002 and 1006 Aggregation Services Routers
- Cisco 1861 Integrated Services Routers

Altogether, the integrated routers combine services within a single high-performance, resilient, versatile platform that offers concurrent deployment of multiple services, simplified single-point management and monitoring, transparent service integration with routing, and easy in-service software upgrades.

Meanwhile, the Cisco 1861 ISRs, also deployed on the customer edge, deliver a unified communications solution that integrates a voice gateway, call-processing, voicemail, automated attendant, conferencing, transcoding, and security capabilities.

Following trunk testing in 2009, DB Systel began deploying the new network in 2010. About 70 percent complete as of late 2011, the deployment, including the provision of voice over IP (VoIP) telephones on the desks of all DB Group workers, will be finished in 2012. Meanwhile, DB Systel is already in the planning stages for upgrading the core of the MPLS network (P-layer) with carrier-class Cisco ASR 9000 hardware in 2013.

Business Results

DB Systel's new Layer 2 network has benefited not only the subsidiary company but also its chief customer, Deutsche Bahn. The transportation and logistics giant has taken over management of its Layer 3 IP network. This arrangement allows it to offer more specialized solutions to its customers and end users, including virtual private networks, with assured quality of service (QoS) levels for all applications, all at reduced operational cost and *without* the need for additional resources to manage and operate the network. Meanwhile, DB Systel now enjoys much greater production depth by virtue of controlling both the provider and customer edges of its Layer 2 network, also at reduced operational costs.

For More Information

To find out more about Cisco Aggregation Services Routers and Integrated Services Routers, go to: http://www.cisco.com/go/asr and http://www.cisco.com/go/isrg2.

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