



Modern Optical Backbone and Network Operations Center (NOC) for DB Systel

A Flexible and Robust Optical Backbone

To support continuously rising telecommunications traffic from digitalization of their services and operations, Deutsche Bahn, Germany's national railway system, needed to modernize their optical backbone network. They placed a premium on flexibility in routing services across the network, scalability to handle future growth, and resiliency to address problems quickly when they occur.

Ribbon is meeting all these criteria by supplying DB Systel, the digital partner to Deutsche Bahn, with a modern DWDM optical network – featuring a multi-degree ROADM mesh with dynamic wavelength restoration, augmented with OTN switching for flexible service routing – all monitored and supported continuously by a 24/7/365 NOC. Ribbon's optical network solution handles DB Systel's backbone traffic effortlessly today, and is architected to scale smoothly as connectivity needs and traffic volumes increase.

“We are very proud that we were able to quickly build a complete optical backbone network. With Ribbon, we have a highly competent partner who knows how to best implement the diverse requirements of a railway company, and we can now meet all the requirements of advanced digital networking within Deutsche Bahn and with our partners to the external market.”

Jens Liebel
Head of Network Services at DB Systel

Deutsche Bahn Highlights

- Largest railway operator in Europe
- 33,000 km of track
- Over 5500 stations
- 4 billion+ passengers annually



DB Systel GmbH

*The digitalization partner
of DB AG*



Deutsche Bahn Needs

DB Systel needed to modernize the optical backbone network spanning Deutsche Bahn's extensive railway operations to support a sharp rise in traffic resulting from various business initiatives. These included upgrading hundreds of train stations for WiFi, CCTV, and infotainment, as well as offering wholesale capacity and connectivity to other operators.

Important criteria for the network were software-controlled reconfigurability for continuously changing connectivity needs, smooth scalability for increasing traffic volumes, and high availability to guarantee services.

Ribbon's Flexible Optical Network Solution

Ribbon is equipping DB Systel with a modern optical DWDM network that combines performance, economy, flexibility, and high availability. Key capabilities include:

- Economical low speed services aggregation into 100G wavelengths, easily upgradeable to 200G or 400G as needed.
- Protection switching for automatic recovery in the event of fiber breaks or other failures.
- Colorless-directionless-contentionless ROADM nodes for ultimate wavelength routing flexibility.
- Strategic use of OTN switching at major hubs for maximum services-to-wavelengths grooming and routing flexibility.

Ribbon also provides DB Systel with a NOC-as-a-Service for round-the-clock monitoring and administration of the network. This includes a centralized Optical Time Domain Reflectometry (OTDR) capability to monitor fiber health and to pinpoint fiber breaks to within meters, if these occur.



Ribbon 24/7/365 NOC-as-a-Service for DB Systel

Benefits

The new optical network provides virtually unlimited bandwidth. It enables DB Systel to guarantee highly flexible and secure operations communications, to provide employees and customers with high bandwidth streaming and infotainment services, to support CCTV monitoring, and to generate new revenues from supplying other operators with bandwidth services, all with complete confidence.



Economical
service transport with
smooth scalability



Flexible
service and wave-
length routing



Resilient
for high
availability



Peace of Mind
24/7/365 operational
coverage

Contact Ribbon to learn more about building Railway Communications Networks