

## Rapid Wireless WAN Deployment Lowers Costs at Construction Sites

Cisco 3G interface card lets Balfour Beatty Rail quickly establish secure, mobile, high-speed Internet connection.



### EXECUTIVE SUMMARY

#### Balfour Beatty Rail GmbH

- Railway Infrastructure—Design, Revamping, and Construction
- Munich, Germany
- 1100 employees

#### Business Challenge

- Reduce time needed to provide network access to new construction sites
- Increase communications efficiency at construction sites
- Support network communication needs as construction sites move along rails

#### Network Solution

- Cisco 3G HWIC in Cisco Integrated Service Routers provides rapid, cost-effective wireless network deployment using terrestrial cellular technology

#### Business Results

- Faster network deployment lets crews at new construction sites meet shorter schedules
- Ability to rapidly provide Internet access to small job sites improves productivity and enables faster time to profitability
- Exchange of information between headquarters and remote sites helps maintain schedules

### Business Challenge

Balfour Beatty Rail was founded in 1909 by George Balfour, a Scots mechanical engineer, and Andrew Beatty, an English chartered accountant. The company's first contract was to lay track and lighting cables and install a generating plant at the power house for a new tramway system in Dunfermline, Scotland. Almost 100 years later, the company still has deep roots in the rail industry with nine separate rail operations as well as businesses for building, engineering, and investments.

Although rails have not changed much since 1909, the technology for powering trains has. Today's electric trains require an electrification system that supplies power to the railway traction units and must be installed along the complete length of track. Balfour Beatty Rail GmbH is a leading supplier of railway electrification systems, with many major contracts such as a € 20 m order for the traction power supply system of the Marmaray commuter project now under construction in Istanbul, Turkey.

Such massive projects require the best possible networking and information technology to operate efficiently, and the mobile nature of the construction operation presents some unusual challenges. Much of the construction takes place in remote areas where obtaining a wired Internet connection is a lengthy and expensive process. Backup systems for these connections are typically low-bandwidth ISDN solutions that can provide only limited business support. And as the construction operation moves forward along the rails, moving the networking equipment requires an intensive IT effort.

Network operations are critical in this challenging environment. “Even though our business is more than 100 years old and rail electrification is not rocket science, our field people are very demanding about having network access on site,” says Ali Inci, manager of information and communications technology for Balfour Beatty Rail GmbH and Balfour Beatty Rail International. “They all need a connection. No one can work well without it.”

With hard-wired network access in remote and mobile locations time-consuming and expensive to achieve, and backup options limited, Inci went looking for alternatives.

**“IT doesn’t come behind the project—the IT comes with the project. We have communications up and running on the site within a week.”**

— Ali Inci, Manager of Information and Communications Technology for Balfour Beatty Rail Germany and Balfour Beatty Rail International, Balfour Beatty Rail GmbH

### Network Solution

Inci was aware that a 3G wireless WAN solution could address the many challenging IT issues related to rail electrification projects. A 3G wireless WAN provides Internet connectivity using terrestrial cellular technology, so a wireless WAN can be established in a matter of hours as long as the site is within range of a cellular tower.

Although 3G wireless WANs are commonly used as backup systems in case a wired system fails, this technology is also useful as a primary network in cases where traditional wired solutions are unavailable, infeasible, or costly. In the case of rail electrification, a 3G solution can also provide the advantage of extremely rapid deployment and the mobility to move up the rails as construction progresses.

Inci knew that he wanted a single-box, mobile 3G wireless WAN solution without complex switchovers or roaming costs. After researching several solutions, Inci had not found any that met his needs. The answer came when Inci approached his Cisco® account manager, who described the Cisco 3G solution. The Cisco 3G high-speed WAN interface card (HWIC), coupled with a service provider wireless data plan, provides a cost-effective, rapidly deployable, reliable, and secure solution for remote sites and branch offices. Cisco 3G HWICs are supported on the Cisco 1841 Integrated Services Router, Cisco 2800 Series Integrated Services Routers, and Cisco 3800 Series Integrated Services Routers. The Cisco 3G HWIC automatically selects the best available service on the operator’s network. Dynamic routing eliminates many provisioning requirements, easing the installation and decommissioning processes.



After watching a demonstration of the technology, Balfour Beatty Rail GmbH knew that it had found the answer. The company enlisted a large system integrator to help design a 3G solution based on the Cisco technology. The resulting rack-based system holds a Cisco 1841 Integrated Services Router with a Cisco 3G HWIC, a mobile fax solution with a GSM SIM card, and an uninterruptible power supply (UPS). A single rack provides communications for an entire site, and is readily movable as construction proceeds. The system integrator stages the racks and ships them to the construction sites.

For very large, multi-year projects, the 3G wireless WAN provides immediate network connectivity and supports the team until a higher capacity wired network can be established. At that point, the 3G wireless WAN becomes a backup system. For shorter projects, the 3G wireless WAN provides the sole connectivity channel because the project is completed before a wired WAN could be installed. In these cases, the rack can be moved to another location once the project is complete.

### **Business Results**

Controlling costs is critical to Balfour Beatty Rail GmbH. “As you can imagine, we are in a very tight margin business. While cautious of quality and safety, people are also looking at every cent,” says Inci. The Cisco 3G solution helps Balfour Beatty Rail GmbH establish reliable network communications faster and manage site operations more efficiently, resulting in a faster time to profitability and lower ongoing costs.

The company can establish communications very quickly because the network access equipment is shipped in the same container as the construction equipment. “IT doesn’t come behind the project—the IT comes with the project. We have communications up and running on the site within a week,” says Inci.

Once communications are established, a Cisco SMARTnet agreement helps Balfour Beatty Rail GmbH maintain business continuity by providing equipment replacement the next business day. “If something breaks, someone just comes over and swaps the box,” says Inci.

The Cisco solution also helps Balfour Beatty Rail GmbH increase its operational efficiency by supporting fast, easy communication between headquarters and the remote sites. Project managers use the 3G network to send and receive critical communications and documents that help them maintain timetables. With numerous projects ongoing, keeping workers on schedule and construction moving along the rails is critical.

The 3G technology also brings IT communications to smaller jobs, for which the time and expense of network connectivity was not justified in the past. “They would find out that a network connection would take three months, but the project would be over in two,” says Inci. “We had hundreds of small project sites that the IT department didn’t even know about because the people just assumed they couldn’t get IT.” Now these sites can easily establish a 3G network that is cost-effective even if the project will last only one month. The 3G rack system can then remain onsite or be moved to another site as needed.

For larger jobs that eventually get a wired network solution, the Cisco 3G wireless WAN solution provides a backup alternative to ISDN that is as robust as a wired connection. The 3G HWIC provides the bandwidth to support the communications needed to keep projects moving efficiently.

### Next Steps

Balfour Beatty Rail GmbH now uses 3G for all its sites in Germany, either as a primary or a backup connection. By the end of 2008, 3G connectivity will provide 2 Mb download and 4 Mb upload to support even higher productivity. “We will be using this technology a lot over the next few years,” says Inci.

### For More Information

To find out more about Cisco 3G wireless WAN technology, visit: <http://www.cisco.com/go/3g>.



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