

INFRABEL AND SIEMENS

Keeping Belgian railways operational and safe

Keeping commuters safe and on time is crucial for railways all over the world. A signal, level crossing or track change failing could cost lives. All railways' infrastructures need to be maintained and sometimes upgraded. Allowing any downtime whatsoever though, could cost more than just money. Railways need uptime assurance.

Together, Infrabel (the manager of the Belgian railway infrastructure), Siemens (who provide the application and platform support to Infrabel) and Stratus Technologies project managed upgrading Belgium's entire railway network to state of art technology within one hour planned downtime per location.

Business objectives

Maintenance of any country's railway system calls for technological upgrades from time to time. With new fault-tolerant server technology offering major safety and maintenance benefits, the time had come for Belgium to upgrade its infrastructure.

The railway company's objectives were to upgrade the infrastructure to meet future safety standards without compromising availability at any point of the process. The suppliers—Infrabel and Siemens – were required to find a way to implement such an upgrade at minimal cost and maximum speed.

They did, as senior consultant with Siemens industry solutions division, Erik Devriendt, explains:

“Like most developed countries, Belgium's railway network is controlled from computer-based control centers. The safety of the entire country's train traffic depends on the electronic interlockings in these control centers being fit for purpose.

Key benefits

Solution profile

- Upgrade of complete operation and control system for Belgian railway infrastructure
- Siemens project management ensured each server upgraded within one hour with zero downtime

Products

- 31 x Stratus® V Series servers
- 31 x operation and control systems, custom built by Siemens
- 62 x UPS

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Erik Devriendt

Senior Consultant
Siemens Industry Solutions Division



“Siemens works with Belgium Rail’s national infrastructure management organization, Infrabel, to ensure this. We provide a purpose- built operations and control system called EBP, which connects to these interlockings, presenting a human interface to the operators at the control centre. The EBP presents graphical layouts updated in real time with the status of all signals, points and tracks, as well as the position of each train. The operator can create and change planned train trajectories via the EBP, which updates the corresponding signals automatically. If any element of the infrastructure malfunctions, the system guides the operator through the actions necessary to keep the system safe, no matter what.

“There are 27 of these EBPs located around the country to date, each hosted on a Stratus Continuum® server. With newer, faster, easier to maintain technology now available, the time had come to upgrade and increase the total number of systems to 31. Doing so with zero impact on the running of the railway network at minimal cost and maximum speed was the brief.”



Passengers have been able to obtain comprehensive information using the interactive information terminals located in Brussels-Central and Brussels-Midi.

Business impact

Stratus project manager Brent Thomas explains more:

“Upgrading an entire country’s railway infrastructure, causing zero impact to its customers is a tall order. Siemens, together with Infrabel, achieved this thanks to their careful choice of technology and meticulous planning, testing and project management.”

Erik continues, “Although we reviewed other new fault tolerant infrastructures, such as HP NonStop® and Stratus Linux-based ftServer systems, Infrabel chose to stick with Stratus and to go with the top range V Series.” They knew Stratus service level agreement and 100 percent uptime assurance was reliable. Going with V Series meant easy porting of the existing VOS EBP application and provided additional reliability.

Replacing 27 and adding five new systems scattered throughout a country takes time. Project managing this task meant taking into account:

- the need for extra power and cables
- the need to perform the updates during ninety minute slots available only two
- nights a week
- the need to use already overburdened
- system administrators’ resources

“The extra system performance of the V Series, compared to the Continuum system was very useful here. It will also be used for additional EBP functionality and supporting larger EBP zones in the future,” adds Erik.

“This migration pattern works very smoothly and we now have it down to under 60 minutes per server.”

Erik Devriendt

Senior Consultant
Siemens Industry Solutions Division

So how do they manage the switchovers?

“We install and boot the new V Series with the Continuum system still in operation. We install the necessary software and read-only configuration data on the machine before switchover. During preparations the V Series machine has a different IP address, so that it is reachable via the network but does not interfere with the operational system. On the switchover moment we stop the application on the Continuum system and copy log-files and critical data over to the V Series. New log-files are created each month, so when the switchover happens at the beginning of the month we limit the amount of data to be copied to less than 100 Mbytes. We then disconnect the Continuum system and shut it down, changing the V Series IP address to the former address of the Continuum system and rebooting the V Series automatically and performing the necessary tests.”

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About Siemens Industry sector—Mobility division

The Siemens Industry Sector (Erlangen, Germany) is the worldwide leading supplier of environmentally friendly production, transportation and building technologies. With integrated automation technologies and comprehensive industry-specific solutions, Siemens increases the productivity, efficiency and flexibility of its customers in the fields of industry and infrastructure. Further information is available on the Internet at: www.siemens.com/industry

The Siemens Mobility Division (Berlin, Germany) is the internationally leading provider of transportation and logistics solutions. With “Complete mobility”, the Division is focused on networking the various modes of transportation in order to ensure the efficient and environmentally compatible transport of people and goods. “Complete mobility” targets the goal of sustainability and combines the company’s competence in operations control systems for railways and traffic control systems for roadways together with solutions for airport and postal logistics, railway electrification, rolling stock for mass transit, regional and mainline services, as well as turnkey systems and forward-looking service concepts.

www.siemens.com/mobility

About Infrabel

Infrabel manages, maintains and develops railway infrastructure in Belgium. It is in charge of the organization and the control of railway traffic. Next to this, it also offers equal opportunities to all railway enterprises that wish to make use of its network in the centre of Europe.

About Stratus

Stratus delivers uptime assurance for the applications its customers depend on most for their success. With its resilient software and hardware, backed by proactive availability management services, Stratus products help to save lives and to protect the business and reputations of companies, institutions, and governments the world over.

To learn more about worry-free computing, visit www.stratus.com

