



Source: Nord Stream

## Nord Stream mirrors critical business data between Zug and greenDatacenter Zurich West

Nord Stream AG has the highest requirements when it comes to the availability of their data. This is why they decided to operate a secondary data center in greenDatacenter Zurich West. Today, the pipeline operator uses greenDatacenter Zurich West as its primary data center. Data is mirrored synchronously between Zug and Lupfig over 70 kilometers without latency issues.

“We are very pleased and proud to have found a high-security solution for our data storage requirements. Our synchronously mirrored data are now backed up far enough away from our main data center, and the connection over two fully independent data routes provides maximum redundancy.”



**David van Dyk**  
Head of IT  
Nord Stream

### The company

Zug-based Nord Stream AG is an international joint venture that was founded for the planning, building, and operation of a new gas pipeline through the Baltic Sea. Russian, German, Dutch, and French energy companies are involved in the joint project. The company was founded in 2005 with the goal of covering the increasing demand for natural gas in the EU countries.

The Nord Stream pipeline provides the shortest connection between the giant gas fields in Northern Russia and the growth markets in Northern Europe. The pipeline delivers enough natural gas to supply up to 26 million European households. The European Commission, the European Parliament, and the Council of the European Union have designated the Nord Stream project a “project of European interest”. The first of two planned pipeline sections went into operation at the beginning of November 2011.

### The challenge

Building a modern, international pipeline of this size is uncharted territory for all those involved. New IT challenges often crop up. David van Dyk, Head of IT, explains: “No one had ever built such a pipeline before. No one really knew in advance what IT solutions would be required.” Nord Stream AG, especially their IT department, and the external partners are pioneering new frontiers every day. David van Dyk is not willing to sacrifice quality. His objective: “I want to have the best IT infrastructure in the gas and oil industry.”



Europe's natural gas supply for the future: Marshalling Yard in Hauko, Finland.

“It is important that our network, our critical business applications, and our Internet connection always work,” summarized David van Dyk. This requires a redundant IT infrastructure in order to be prepared for any technical failures. The requirements are high, since critical business applications must be available again within four hours.

The problem was initially solved by setting up a secondary data center close to the primary system. The short distances made it possible to synchronously mirror data transfers on the secondary system without latency. Should the primary system fail, the secondary system could seamlessly take over. But since both systems were located in the underground levels of buildings about 300 meters apart, any flooding could have damaged both systems, causing a lengthy business interruption.

David van Dyk had long recognized Nord Stream's need for a better backup solution. The second server room needed to be far enough away from the Zug-based company – ideally dozens of kilometers – so that it could take over operations in an emergency situation. However, the conditions were

a redundant connection and that the synchronous data mirroring would function over this distance – without disruptive latency. In the first quarter of 2011, Nord Stream finally approached Green Datacenter with these high requirements.

### The solution

greenDatacenter Zurich West quickly proved to be the ideal location for the secondary system. Lupfig, in the Canton of Aargau, where Green Datacenter operates its latest, state-of-the-art data center, is sufficiently far away to meet the needs of a georedundant disaster recovery solution.

Today, Nord Stream AG operates their servers in Zug, the company base, and in a private cage in greenDatacenter Zurich West. Administrators have access to their equipment 24/7. Entry is strictly monitored by security checks. The fully redundant infrastructure of the data center offers high reliability: data lines, power feeds, emergency generators, etc. are, at a minimum, duplicated. GAS & COM dark fiber is used for the connection to the Nord Stream data center in Zug – as a redundant point-to-point connection over two separate routes.

While working on the disaster recovery solution, it became clear that it also made sense to upgrade the Internet connection. Nord Stream now has a redundant, high-bandwidth Internet connection over two completely separate routes in Zug and in Lupfig.



**Safe and environmentally friendly construction and operation of the pipeline.**

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**High availability corporate data center at the greenDatacenter Zurich West 70 kilometers away.**

Nord Stream and Green Datacenter AG mastered an exciting challenge when they set up a disaster recovery solution with synchronous mirroring over a 70 kilometer line. David van Dyk, Head of IT, is certain of one thing: “This project is unique in Switzerland, and even in Europe.” “This was also a major and unusual project for Nord Stream, one with considerable risk,” states project manager Hansruedi Röllin with justifiable pride. “Such projects demand that all participants demonstrate creativity and a pioneering spirit.” The test run for the fiber optic connection was an example of creativity: Since a 70 kilometer dark fiber was not available, testing was successfully carried out using a standard 70 kilometer fiberglass cable rolled up on cable reels.

### The advantages

The server installation in greenDatacenter Zurich West provides Nord Stream with a second data center sufficiently far away from company headquarters in Zug. As specified by Nord Stream, should a system fail, switchover to the other system takes place manually in Zug. Once this is done, the applications simply have to be started and the entire infrastructure is again available. Thanks to synchronous mirroring, all data is stored on both systems. This is possible over 70 kilometers due to the negligible latency. The storage systems used by Nord Stream require a latency of less than 2 milliseconds.

The 20 Gbit/s bandwidth between Lupfig and Zug allows Nord Stream to handle enormous data volumes with ease (Nord Stream currently mirrors around 120 terabytes). Currently, the company only uses just under ten percent of the available bandwidth.

The reality exceeded Nord Stream’s expectations to such a degree that the company subsequently decided to use the servers in greenDatacenter Zurich West as the primary system. The server room in Zug is used as the disaster recovery solution. The data center’s comprehensive certification program was one of the main factors behind this decision. “The certifications showed us that Green Datacenter takes matters seriously,” says David van Dyk. Soon, Nord Stream will also transfer its backup systems to Lupfig.

### The partnership

Green Datacenter AG and Nord Stream have a long-standing partnership. In the past, Nord Stream used an SDSL Internet connection from the green.ch group, and from its predecessor, TIC. “Our experience

Such projects demand that all participants demonstrate creativity and a pioneering spirit. ]

**Project Manager Hansruedi Röllin  
Nord Stream**

with the green.ch group, and previously TIC was consistently positive, the service was outstanding,” commented Hansruedi Röllin on the historical relationship. He especially appreciates the fast, personal contact: “Direct contact is very important to Green Datacenter AG. We can call up an expert partner at any time and don’t get lost in a trouble ticket process.”

Long-term partnerships are also important to David van Dyk – for a very good reason: “Nord Stream has a contractual agreement to operate the pipeline for 50 years.” Thus, a long-term business relationship with an IT partner is vital.

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