

World-Class Academic/Scientific Research Institutions Rely on Schooner for Database Availability, Reliability, and Scalability

“Schooner’s MySQL database solution enabled us to achieve our goals of reducing database complexity and offering custom database solutions to our users while delivering extremely high availability, scalability, and reliability to nine very advanced scientific institutions here in Göttingen. Schooner has been a dedicated and competent technology partner who makes MySQL easy for us. We have been very pleased with this relationship.”

—Roland Groh, Network Administrator
Gesellschaft für wissenschaftliche Datenverarbeitung mbH Göttingen

Rich History of Scientific Innovation

The origins of Göttingen in Lower Saxony, Germany, date back to 953 AD. Around the year 1200, the city became a wealthy member of the medieval Hanseatic League. Today, Göttingen is home to some of the planet’s most cutting-edge academic and scientific research organizations, including four of the Max Planck Institutes for Science and History, the German Aerospace Center, the Goethe Institute, the Georg-August University of Göttingen, the University of Applied Sciences and Arts, and the German Primate Center.

Göttingen is also the location of the Gesellschaft für wissenschaftliche Datenverarbeitung mbH Göttingen (GWDG), which translates into the “Society for Scientific Data Processing at Göttingen.”

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GWDG is operated jointly by Georg-August University and the Max Planck Society. It offers a wide range of IT management and data-intensive services, including on-demand computing capacity for scientific research, IT security, modern IT provisioning structures for eScience, high-performance parallel computing, telecommunications support, project management, data backup, email, statistical software, software training, and web hosting. GWDG is chartered with delivering forward-looking academically oriented services to ensure the dependable and efficient provision of scientific IT services. These services are offered solely to government-sponsored research institutes, staff members, and students in and around Göttingen.

High Availability, Scalability, and Reliability

It is essential for GWDG to maintain extreme high-availability database services, and because of the requirements of the German government, it is absolutely vital that databases of different organizations be kept completely separate.

In late 2010, Roland Groh, one of GWDG’s network administrators, discovered Schooner Information Technology, and its highly-available, highly-scalable, highly-reliable distribution of MySQL with InnoDB. The ability of Schooner MySQL to take full advantage of modern x86 multi-core processor technology and easily manage multiple-instance databases led Groh to test and evaluate Schooner MySQL.

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Groh’s test was a success, and GWDG now uses Schooner for all database projects with a focus on MySQL solutions for scientific databases.

“Schooner helps our customers get the very best performance in a wide variety of areas,” Groh explained, “including sophisticated scientific applications like DNA analysis, medical imaging applications, magnetic spin tomography, chemistry, and other IT services like history databases, web hosting, accounting, and printing.”

Simplicity and Manageability

“Schooner’s MySQL database solution has allowed us to greatly reduce the complexity of our database hardware,” Groh said. “Before we implemented Schooner, the great variety in size of our customer databases frequently led to performance and speed problems. We could not keep the MySQL databases together on one server and had to provision separate dedicated server machines to run some of the larger ones.”

Since GWDG is required to keep government-related databases separate from others, they were often moved from one server to another, increasing cost and complexity. After implementing Schooner MySQL with multi-instance database support, that

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was no longer necessary.

“Naturally, the complexity of our data has caused us a number of challenges,” Groh offered. “Previously, when system updates were necessary, we had to completely shut down all databases and make them unavailable for several minutes. With Schooner, all databases are now available all the time, even when we are performing maintenance, thanks to a dual-server failover configuration.”

Before Schooner, GWDG was using the open-source version of MySQL and had to manage the complexity of software patches, configurations, and maintenance themselves. In contrast, Schooner MySQL is a full, high-availability, high-performance distribution of MySQL with InnoDB, optimized, managed, and periodically upgraded by Schooner. This eliminates many

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labor-intensive maintenance burdens for GWDG. Through the Schooner graphical user interface, Groh and his colleagues can easily perform hardware and software upgrades, online backups, and MySQL instance migration with a simple point-and-click command and without service interruption.

“Nearly everybody on our staff uses Schooner for something important. For example, our SharePoint database is powered by Schooner. Every employee has access to some kind of job-relevant information, so this is mission-critical infrastructure for us,” Groh said.

Cost Savings and Financial Returns

GWDG operates as a non-profit association, and thus conventional return-on-investment calculations are not part of their IT acquisition strategy. Nonetheless, using Schooner MySQL has resulted in tangible value and cost savings. GWDG was able to decommission several expensive MySQL server machines and re-deploy them into different areas, where they deliver continuing value for scientific applications.

“We calculated our costs of acquiring and maintaining our servers using Schooner MySQL and we have established a services pricing schedule for our customers that should remain unchanged for five years,” Groh revealed. “We have found the economies of operation and low cost of ownership for Schooner technology to be very advantageous.”

Groh’s department now has greater flexibility to deliver more flexible, cost-effective MySQL services.

“With Schooner, we have achieved our goal of delivering a robust, standalone MySQL solution to our users. Our previous solution required our customers to buy web hosting from us if they wanted a MySQL database solution. Now, they have the choice of a high availability, high-speed MySQL solution alone by itself, thanks to Schooner’s support for multi-instance configurations.”

Hardware Failover Configuration

Two commodity servers running Schooner MySQL are currently in operation in Göttingen – one at the Lower Saxony State and University Library and the other in the data center at GWDG. The two servers are configured in a failover mode so that if one goes

down in the master role, the secondary server automatically switches into the master role so that there's no interruption to any of the databases.

Dual servers also allow for server updating to be performed without interrupting database service, with one server providing MySQL services to all users while the other server is being updated.

"Our relationship with Schooner's technical support team has been positive, pleasant, and enjoyable," Groh added. "Before we had Schooner, we were on our own with MySQL. Now, they give us fast answers to our questions and excellent MySQL support. Partnering with Schooner as a MySQL supplier and service provider is one of the best moves we've ever made." switches into the master role so that there's no interruption to any of the databases.

Schooner MySQL Benefits to GWDG and its Customers

- Extreme high-availability MySQL database services that are reliable, scalable, and sharable across nine different academic/scientific organizations in Göttingen.
- Databases operated by each organization can easily be maintained completely separate and confidential from all of the others
- Numerous optimizations of modern x86 multi-core processor technology, DRAM, flash memory, and hard drive technology deliver very fast parallel computing performance while reducing power consumption
- Schooner's MySQL administrator GUI provides a single point for cluster-wide and per-instance management, monitoring, trouble-shooting, and tuning
- Single-click actions perform hardware and software upgrades, slave migrations, provisioning, and dynamic schema changes
- Enhanced data-intensive database processing, improved query processing, faster page loads, and major improvements in the overall user experience
- Continual data backup and increased database capacity above what had been provided previously by GWDG
- Greater flexibility and better cost effectiveness in delivering multi-instance MySQL services
- Dramatically reduced complexity and easy, streamlined administration without interruption of database access
- Expensive, dedicated MySQL server machines have been consolidated and re-deployed to different uses elsewhere on campus where they deliver continuing value performing important scientific work
- Rapid technical support response and from a dedicated and competent technology partner
- Comprehensive MySQL consulting and schema design services available through Schooner's deep relationships with leading MySQL solutions providers



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