"Mein Schiff" Fleet Stays on Course With SANsymphony

TUI Cruises enjoys (fail-)safe travel with DataCore's software-defined storage:

July 2016 saw the launch of Mein Schiff 5, the newest cruise ship in the TUI Cruises fleet. The IT infrastructure for the first five members of the fleet was designed on land by BSH IT Solutions, implemented on board within a very narrow time frame, and maintained at sea via the BSH data centers in Greven. DataCore's software-defined SANsymphony™ storage platform delivers highly available and high-performance storage capacity for VMware, SQL and Exchange, among others.

The company: TUI Cruises

TUI Cruises, headquartered in Hamburg, was founded in April 2008. The company is a joint venture between TUI AG from Hanover and Royal Caribbean Cruises Ltd., the world's second-largest cruise company. The cruise brand TUI Cruises, which combines the features of a shipping company and a tour operator under one roof, is primarily aimed at the German market. The first member of the TUI Cruises fleet, Mein Schiff 1, was acquired and put into operation in May 2009. Mein Schiff 2 followed in May 2011. After that, the first new ship was Mein Schiff 3, built three years later, followed by Mein Schiff 4 in June 2015 and Mein Schiff 5 in July 2016. Mein Schiff 6 will be put into operation in June 2017. There will be two more new ships by 2019, which are being built at the Meyer Turku shipyard in Finland. With growth rates of more than ten percent annually, cruises are the fastest-growing market in the tourism industry. The TUI Cruises concept uses its own ships, which offer a wide range of options, high standards and first-class service. The company hopes this approach will finally bridge the gap between traditional cruise ships and club ships. In planning its routes, TUI Cruises prioritizes diversity and individuality – in addition to trips to the western and eastern Mediterranean and various routes along the Canary Islands, the Caribbean and Central America, these comfortable ships also explore the Baltic Sea, the Nordic region, Great Britain and Iceland. Other travel areas include the Arabian Gulf, Asia, and beginning in the fall of 2017 also North America, departing from New York.

About TUI Cruises

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www.tuicruises.com

The starting situation

"Everything works differently when you're on the ship," reports Niels Heider, the responsible Project Manager at BSH IT Solutions. A high level of availability and security are essential for IT systems at sea, and also pose a special challenge. Very fast and expensive shipyard time slots are needed for installation and maintenance. A consistent internet connection cannot always be guaranteed during remote maintenance at sea. Because of the monthly costs of about $50,000 for a 4-Mbit line, larger data transactions are not possible in any case.

"Once you're at sea, the IT systems need to be absolutely reliable. That's why we only work with providers and products that we trust 100%. That includes DataCore and SANsymphony," explains Niels Heider. BSH IT Solutions has adapted especially well to these circumstances as a provider of IT infrastructure solutions. Seven certified DCIEs (DataCore Certified Implementation Engineers) demonstrate the company's correspondingly high DataCore expertise. As a result, the cruise company hired BSH IT Solutions to implement the server and storage infrastructure on the newly built Mein Schiff 3, Mein Schiff 4, Mein Schiff 5 and Mein Schiff 6 as well as replacing the IT systems on the two earlier ships.

The solution: precise planning

Planning, preparation and implementation took about a year for each new construction project. Each process involved the following phases, in coordination with the complex overall organization at TUI Cruises:

1. **First "staging" in Hamburg: about nine months before the launch, suppliers and service providers gathered to assemble the IT infrastructure components, install the systems and perform acceptance tests.**

2. **Second "staging" in Turku: during this three-to-four-month phase, followed by a "sea trial," large parts of the IT infrastructure were once again assembled and underwent as many practical tests as possible on the premises of the Finnish shipyard Meyer Turku Oy.**

3. **Because of the tight timeline, the engineers only have a few days for final implementation on board. On the ship, systems are installed in separate fire and water zones, on different decks, and in the data centers located at the bow and stern.**

The entire IT infrastructure is designed redundantly, and is synchronously mirrored using the DataCore software. Mein Schiff 3 is equipped with a 10-Gbit fiber channel infrastructure, which is redundantly connected to a DataCore node for each side with the latest version of SANsymphony, V10, on HP Proliant DL380 as well as an HP D2700 disk shelf with SAS disk capacity of 20 TB for each side. For the more recent Mein Schiff 4, a Dell PowerEdge R720XD with a PowerVault MD1200 extension was chosen as a hardware platform for the DataCore nodes, using a similar structure.

> *BSH impressed us both with its skills in server and storage virtualization as well as its clear implementation concept. SANsymphony offers an outstanding price-performance ratio. The numerous integrated technologies helped us successfully migrate the data centers; they solve our current storage problems and give us a high level of flexibility and investment security for the future.*
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> **- Matthias Fahrner, Director IT Competence Center & Strategy, TUI Cruises**

> *DataCore's scalability in terms of capacity, performance and functionality gives us the flexibility we need to respond to further challenges, whether it is on the ships or for the entire fleet. In addition, SANsymphony has demonstrated its absolute reliability. We plan to keep expanding our "Mein Schiff" fleet, and we will continue to rely on BSH IT Solutions and SANsymphony.*

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The storage environment is connected to four VMware ESXi hosts on HP or Dell hardware as well as two Veeam backup servers to back up the 50 virtual machines. Separately from the navigation infrastructure, these run all of the systems needed for the cruise, tourism and administrative operations. In particular, Exchange, SQL, file services and Active Directory play an important role here. Completely redundant virtual structures using VMware and DataCore were also implemented in the existing infrastructures of the first two cruise ships.

For Mein Schiff 2, the solution was installed on an existing HP C3000 Bladecenter with P2000 storage expansion. Mein Schiff 1, by contrast, is constructed analogously to Mein Schiff 3. This demanded a logistical tour de force from the specialists at BSH IT Solutions, since there was only a ten-day window available at the shipyard to replace all of the hardware, implement the software components and migrate the data.

The benefits: scalability in terms of capacity, performance and functionality

DataCore SANsymphony synchronously mirrors data, regardless of the manufacturer, model or technology of the connected storage hardware (disk, SSD), in order to ensure a high level of availability for systems on the ships. New and existing storage hardware can be easily integrated, and its lifespan is extended. If a section of a data center fails, the other side automatically takes over (transparent auto failover) and resynchs the system when it is restarted (auto failback). In fact, one of the ships did experience a hardware-related failure in a section of the data center. But thanks to the DataCore technology, there were no consequences. The DataCore nodes resynched afterward. "We didn't notice the DataCore failover and failback until that point, but the safety mechanisms had already kicked in early on and protected the customer from any downtime, data loss or noticeable performance slowdowns.

The DataCore software proved that it is 100% worthy of our trust and that of the customer," comments Project Manager Niels Heider.SANsymphony also offers additional fully developed storage services that can be used for data management and backup. Well-engineered caching technology optimizes the performance of the underlying hardware, which means no SSDs are needed at this point. Together with the integrated auto tiering, however, even better performance can be achieved in the future if needed. The experts from BSH IT Solutions believe it is too risky to use thin provisioning on a ship. Like auto tiering, snapshots and continuous data protection (CDP) are already in place to back up important systems if necessary.

The benefits at a glance:

- **High level of availability thanks to synchronous mirroring**
- **Transparent failover**
- **Scalable in terms of capacity, output and performance**
- **Easy to use on site, with worldwide remote management by the partner**

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About BSH IT Solutions:

BSH IT Solutions GmbH is a service provider specializing in integrated IT solutions. Our core business areas are ICT infrastructure, Microsoft & Allgeier applications as well as IT services. Our service offerings range from consulting, implementation, maintenance & support to managed services, hosting & cloud solutions. Our qualified employees work in the business units of "Infrastructure Solutions & Services" and "Telecommunications & Unified Communications." BSH IT Solutions GmbH is a 100% subsidiary of Allgeier IT Solutions GmbH and thus part of Allgeier SE. Allgeier SE, headquartered in Munich, is one of the leading IT companies for business performance. With more than 6,000 permanent employees and about 1,500 freelance IT experts, Allgeier guarantees its customers a full-service approach – from concept to implementation to operating their IT landscapes. The fast-growing group has more than 90 locations in Europe, Asia and America.

About DataCore:

DataCore, the Data Infrastructure Software company, is the leading provider of Software-Defined Storage and Adaptive Parallel I/O Software – harnessing today's powerful and cost-efficient server platforms with Parallel I/O to overcome the IT industry's biggest problem, the I/O bottleneck, in order to deliver unsurpassed performance, hyper-consolidation efficiencies and cost savings. The company's comprehensive and flexible storage virtualization and hyper-converged virtual SAN solutions free users from the pain of labor-intensive storage management and provide true independence from solutions that cannot offer a hardware agnostic architecture. DataCore's Software-Defined and Parallel I/O powered platforms revolutionize data infrastructure and serve as the cornerstone of the next-generation, software-defined data center – delivering greater value, industry-best performance, availability and simplicity. Visit www.datacore.com or call (877) 780-5111 for more information.

For additional information, please visit **datacore.com** or email **info@datacore.com**

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