Flexible ICT infrastructure for secure maintenance operations

High availability and 10-fold performance at Adullam hospitals and nursing homes

About the Adullam

The Adullam Foundation is a private, not-for-profit foundation with its head office in Basel; it operates a hospital for acute geriatrics and rehabilitation, as well as care homes for pensioners. With approximately 700 employees, the Foundation makes an important contribution to the stationary care of the aged in the canton of Basel City.

www.adullam.ch

As part of a drive to modernise its ICT infrastructure, the Adullam Foundation in Basel has implemented DataCore SANsymphony with standard hardware. The hospitals and associated nursing homes profit from a fail-safe system and a 10-fold increase in performance compared to the previously used storage system. MS SQL and Oracle databases, the telephone system, the hospital information system and the MS Navision ERP system now operate with high-availability VMware and DataCore.

The company:

The Adullam hospital is a specialised hospital for geriatric medicine. Elderly patients benefit from comprehensive medical care. Moreover, the company is the only institution in north-western Switzerland to offer a continuous treatment chain: from acute medicine to rehabilitation and long-term care in associated care centres. The care centres are home to about 300 older people in need of nursing services. Professional nursing is provided in an affectionate atmosphere with many social, cultural and creative activities.

The challange:

The four-member ICT team headed by Benjamin Borschberg is tasked with the operation of the hospitals and nursing homes. Due to their 24/7 operation, the ICT systems at the Basel site were mostly redundantly designed. With the introduction of a centralised hospital information system in 2013, the requirements for ICT infrastructure increased, accompanied by steep overall growth. While only 5 physical servers were in use in 2010, this number had grown to 72 servers by 2016, although these were virtual machines using VMware. In parallel, the number of clients had more than doubled within three years to 320, with further growth being expected in 2017.

Correspondingly, the existing four storage systems had reached their utmost limits with regard to performance and capacity (with about 6 TB mirrored), resulting in repeated downtime, partially due to the complicated administration. As various servers, storage and network hardware reached the end of their lifespan, it was decided to proceed with a complete renewal of the ICT infrastructure.

The existing storage solution was regarded as a "black box" with non-transparent administration. Consequently, ease of use was a criterion in addition to the elementary removal of capacity and performance bottlenecks. Furthermore, the future connection of the new building in Riehen was to be prepared as part of the Basel project.

Various storage systems were evaluated during the search for solutions. However, Benjamin Borschberg also consulted specialist media for alternatives and came across DataCore's software-defined storage solutions. He made use of a free download version to familiarise himself with the system. The functional scope with integrated synchronous mirroring, replication, background data migration, auto-tiering and simple operation via a centralised GUI were all convincing factors.

The solution:

In addition to a completely new network infrastructure, each computer centre section was equipped with two VMware ESX 5.5 servers with Windows Server 2012 on HP servers, thus future-proofing them to meet both acute and foreseeable future requirements. Among the most important applications running on the 72 virtual machines are MS SQL and Oracle databases, the telephone system, the hospital information system and the MS Navision ERP system.DataCore is redundantly designed, just like the server systems. At each computer centre, SANsymphony Version V10 runs on an HP DL380 G8 server with 64 GB RAM. Each section has a capacity of 20 TB of newly acquired storage hardware, which replaced the existing storage systems following interruption-free hardware migration.

DataCore SANsymphony regulates synchronous mirroring with automatic failover between the storage systems at the Basel site. The integrated replication option is to secure the second site at a later date as well. The high-speed caching of the DataCore servers is combined with DataCore's auto-tiering to ensure comprehensive performance and efficiency enhancement.

The first step was to use the various storage disks (with 15,000, 10,000 and 7,200 rpm) for automatic tiering. During this process, DataCore ensured the automatic distribution of the data blocks, depending on the performance requirements of the applications. The hardware independence and new flexibility of the solution became evident soon thereafter, when an additional two Fusion-io flash cards were integrated into the DataCore servers and thus into the centralised, high-availability storage pool to achieve further performance optimisation. This was also carried out without interruption during normal operation.

> *We were convinced by the flexibility of the DataCore solution. With SANsymphony we can use any storage hardware, thereby also managing the transition to new hardware without interruption. Moreover, the price/performance ratio is excellent.*
>
> **- Benjamin Borschberg ICT-Manager Adullam-Foundation**

> " *ITRIS has been a reliable, customer-oriented partner for infrastructure and medical systems to us for years. We also received expert support in the implementation of the DataCore sub-project, so that there were no interruptions in normal operation.*
>
> *The good planning and preparation of ITRIS resulted in our storage systems being reconfigured with SANsymphony within one day and migrated a day later.*
>
> **- Benjamin Borschberg ICT-Manager Adullam-Foundation** "

Implementation of the complete project took place in collaboration with the ITRIS systems vendor. ITRIS has been in this business for 30 years and has made a name for itself throughout Switzerland: as a leading ICT service specialist and provider of turnkey solutions in sales, as well as in the medical sphere for the past 15 years.

As the ICT manager monitored implementation himself, only about two hours of training were required in order to ensure easy and reliable operation of the systems. Implementation was also supported by numerous preliminary tests and the processing of checklists provided by DataCore.

The result:

"**Commissioning of the system was immediately followed by a perceptible improvement in performance, as was confirmed by the front-end operators. The same applies to us in the ICT division: Configuration of a virtual machine at the vCenter with DataCore storage takes about two minutes instead of 15 minutes on the old system**", says Benjamin Borschberg with delight. "**It is also possible to set up, operate, maintain and monitor the transparent DataCore software without specialist knowledge, completely unlike the old system.**"

The renewal of the infrastructure ensured that project goals were achieved and that the high availability and performance of the storage system were optimised at moderate cost. At the same time, Adullam gained increased flexibility in the future extension of its infrastructure.

Independence from hardware and manufacturers allows for rapid decision-making according to demand. DataCore's replication is to be used for the complete connection of the Riehen computer centre as a next step. In future, DataCore's parallel I/O technology could make cost-efficient implementation of a VDI (virtual desktop infrastructure) possible.

In brief:

- **DataCore has been in use for over 1 1/2 years without any unplanned downtime.**
- **Performance has improved 10-fold.**
- **Time input for routine administrative tasks was reduced by 90%.**
- **Planned downtime (data migrations, upgrades, updates) was reduced by 100%.**

About DataCore Software

DataCore is a leading provider of software-defined storage and adaptive parallel I/O software that makes use of the most efficient and cost-effective modern server platforms to solve the most urgent problem of the storage industry: I/O bottlenecks. The storage virtualisation and hyper-convergent virtual SAN solutions offered by DataCore facilitate storage management and free users from being tied to a specific manufacturer by providing hardware-independent architecture.

DataCore's software-defined storage platform revolutionises storage infrastructures while working towards a software-defined data centre of the next generation, with greater utility, better performance, higher availability and easier handling. Further information can be found at **www.datacore.com**

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