

## Region Hovedstaden



### EMC solutions help hospitals enhance future efficiency and green IT operations

About 30 percent of Denmark's 5.5 million inhabitants are cared for by the hospitals in the Capital Region of Denmark. The 14 hospitals have more than 8,500 beds and more than 38,000 employees and include both highly specialised hospitals, such as Copenhagen University Hospital and smaller local hospitals in the region. In addition to belonging to the Capital Region of Denmark, the hospitals have one thing in common: IT is everything.

Today, all treatments—from skin abrasion and mammographies to bypass operations—are supported by a complex and advanced IT system. Quite simply, without accessible IT systems, every single one of the patients in the capital would go untreated.

#### EMC solutions at the Capital Region of Denmark include:

- Two EMC Symmetrix DMX-4 4500 systems with 543 terabytes of capacity, 4.6 terabytes of this on SSD Flash
- Two EMC Centera CAS online archives with 100 terabytes of capacity, mirrored with EMC SRDF® software
- Two Celerra® NS80 NAS for file servers
- One existing EMC Symmetrix DMX-3 2500 will be expanded during the SAN project
- Software includes EMC Ionix™ ControlCenter®, EMC Symmetrix Optimizer, and 3,000 hours of EMC Consulting assistance

#### Offshoots

There came a point, however, when the IT system was too complex. Each hospital had its own data centre packed with various storage, servers, and other IT equipment—and some simply couldn't "communicate."

"From a birds-eye view, the hospitals' information infrastructure had become too fragmented and sprawling. The operation centres' storage platforms could not share capacity, and the various license agreements and service levels were hiking up costs unnecessarily. Meanwhile, the explosive data growth left some hospitals quite literally outgrowing their data centres. Everything suggested it was time the Region got a more cohesive storage platform," says Martin Wood, operations manager, Group IT, Capital Region of Denmark.

Together, Martin Wood and Group IT's Project Manager, Niels Reichstein Larsen, are driving the extensive consolidation and modernisation of the information infrastructure that was launched in autumn 2008.

When the huge project is completed in mid-2010, all the hospital IT systems will be based on one uniform EMC® storage platform. And the 14 decentralised operations centres will be replaced by three synchronised mirrored storage environments at Copenhagen University Hospital and Hvidovre and Herlev hospital, respectively. The infrastructure will then enhance future efficiency and green IT operations at the hospitals.

#### The information lifecycle management effect

The EMC storage platform to be installed will solve both the problem of high complexity and many decentralised, diverse IT systems in one go. Combining everything in one homogenous data centre ensures that the geographically spread localities can manage their IT much better together.

For example, the new EMC Symmetrix® SAN system enables patient journals, test results, scans, and normal documents to be transferred flexibly between the various disk media in the SAN environment. The data can then be freely transferred among high-performance SSD Flash, Fibre Channel disks, and more economical SATA disks, depending on its importance. Ultimately, the data can be removed from the SAN entirely to an external EMC Centera® online archive that is also part of the information infrastructure. This is where older data is stored safely and inexpensively until the time comes when it can or should be deleted entirely.

**“We have bought exactly the right information infrastructure. That goes for scalability as well as for performance and energy efficiency.”**

**Martin Wood, IT manager**



In reality, the new information infrastructure means that the Region implements ILM, information lifecycle management, across the individual hospitals. “Before, ILM was not possible, but with the EMC platform we can now operate a joint SAN storage and content-addressed storage (CAS) archive. We can now classify data into levels across hospitals and differentiate topical, relevant data from inactive data. We save both money and disk space when older data is moved to inexpensive disks in the SAN or is put in an archive,” explains Martin Wood.

As he says, the Region operates with three service levels: platinum, gold, and silver. The highest level is supported by Fibre Channel and Flash disks. The medium level is based on SATA disks, and the online archive is for data that requires the least rapid response times, such as old e-mails or documents that are no longer in active use.

Calculations made for the SAN project show that the price of storage falls by one-third per gigabyte every time data is moved to a lower level of the storage system. And with data volumes in the region of 600 terabytes, regularly storing data on the Centera archive frees up a lot more space on the more expensive disks.

As part of the agreement, EMC Consulting and the Region’s IT staff will also be classifying all applications and calculating the costs of the applications’ “burden” on the underlying storage infrastructure. The Region will therefore be using EMC’s StorageScope™ tool to map each hospital’s precise IT service and storage needs.

**“We have had cases where an IT project couldn’t be initiated because of our old SAN infrastructure.”**

**Niels Reichstein Larsen, project manager**



### **Huge energy savings**

The storage project not only optimises the use of capacity at the operation centres, rationalises IT application, and saves money—the new EMC information infrastructure is also the foundation for an exemplary green case. The Capital Region of Denmark will be a real-life example of how public sector institutions can reduce CO<sup>2</sup> emissions, while saving money through the newest green IT technology.

“We want the Capital Region of Denmark to be a pioneer—also in terms of using green IT technology. So even though it’s a bigger investment, we have chosen energy efficient storage systems with the newest Flash technology based on built-in SSD Flash disks. On the other hand, we are counting on long-term savings from lower power consumption for operations and cooling,” says Niels Reichstein Larsen.

For more information, visit EMC healthcare solutions at [www.EMC.com/solutions/industry/healthcare-life-sciences/healthcare-providers-medical-research.htm](http://www.EMC.com/solutions/industry/healthcare-life-sciences/healthcare-providers-medical-research.htm).

As a rule of thumb, the Solid State Flash, SSD, is 30-times faster than Fibre Channel, and it consumes a total of 40 percent less energy. In the Capital Region of Denmark data centre, Flash comprises a total of 4.6 terabytes of the overall storage capacity.

According to Niels Reichstein Larsen, "The new SAN infrastructure alone gives an energy saving improvement of about 30 percent. Add to that the planned virtualisation of the Region's server park in the wake of the storage project, and the electricity consumption will be slashed by the equivalent of what 600 homes use in power every year."

## Virtual benefits

With the new EMC storage in place, Group IT is also initiating a comprehensive server virtualisation process with VMware® software. This project will be carried out in close cooperation between EMC Consulting and the Region.

According to plan, the server park will immediately shrink by 75 percent from about 1,800 to 450 servers, but then the number of virtual servers will grow in the future. "The Region gains about 100 new servers a year. In the future, in the new infrastructure, 75 of those will be virtual servers. Our virtual server park will therefore grow steadily and calmly over the years until in four years, we will have about 1,500 virtual machines running in addition to our EMC storage," explains Niels Reichstein Larsen.

The advanced virtual technology will play a central role in the new information infrastructure in the Capital Region of Denmark—also with respect to storage levels, where EMC's virtual provisioning will be a core feature.

"We are very inspired by how some private companies design their IT architectures. Virtual provisioning is especially interesting, as it enables cheaper and more efficient use of storage capacity," says Martin Wood. "With virtual provisioning, we can allocate storage capacity to our customers—the hospitals in the Region. It gives considerably higher economies of scale because the disk capacity is allocated virtually instead of physically. It all makes sense.

"By allocating virtual capacity, we don't have to allocate more physical place on the SAN than the individual projects or applications actually require. We can then divide up the storage available between the customers on an ongoing basis, while making sure that large pools of allocated storage don't remain unused," Wood says, adding, "Virtual provisioning puts far more dynamic administration within reach, so customers benefit from faster, more needs-specific IT services. We can turn the storage performance levels up or down to precisely match each project. And that optimises our use of IT."

## On target for 2010

Migrating data to the new operations centres is already under way. But implementing the new information infrastructure, virtualising the many servers, etc., takes time. EMC will help migrate a total of 300 terabytes to the new data centre, which will contain about 600 terabytes of data from the hospital treatment and administrative systems.

According to Niels Reichstein Larsen, the overall project will end in March 2010. By then, the people at the Region's Group IT, especially, will be feeling the benefit. With luck, end users shouldn't notice the new information infrastructure very much. "We hope all they notice are better performance and more flexibility when they request IT support for their projects," Niels Reichstein Larsen concludes.



**EMC Corporation**  
Hopkinton  
Massachusetts  
01748-9103  
1-508-435-1000  
In North America 1-866-464-7381  
[www.EMC.com](http://www.EMC.com)

**EMC Danmark A/S**  
Linde Allé 9A  
DK-2850 Nærum  
+45 70 10 68 78  
[www.emc2.dk](http://www.emc2.dk)  
[info\\_denmark@emc.com](mailto:info_denmark@emc.com)