OVERVIEW
Cancer Research UK’s (CRUK) aim is to save lives from cancer. CRUK does this through funding world-class research; providing information for patients, health professionals and the public; and influencing public policy to keep cancer at the top of the health agenda. The organisation’s groundbreaking work in finding new ways to prevent, diagnose, and treat cancer has saved millions of lives. CRUK’s fundraising operations reach out to thousands of individuals for donations, redirecting money to leading scientists to fight against some of the world’s most debilitating diseases.

BUSINESS CHALLENGES
CRUK’s IT department was facing significant performance issues. Its two legacy EMC unified storage systems were running at 85 percent utilization.

“We had half a petabyte of data and applications running on those two systems and they were groaning and wheezing due to the load,” CRUK’s Head of Infrastructure, Michael Briggs, states. “Data was growing at 30 percent per year and we didn’t have the necessary storage processing power. Complex database queries used by marketing and sales to drive fundraising took longer than necessary. Opening a simple email could take 30 seconds or more.”

Briggs notes that CRUK had also deployed a thin client solution and virtualised Windows 7, which were also putting more pressure on existing IOPS performance.

In an attempt to improve performance and fully utilize capacity, CRUK had deployed a private cloud and had virtualised 95 percent of its critical applications and data with VMware®. These include Siebel, CRM applications, Oracle and SQL databases, science-based databases, and Microsoft Exchange—a total of more than 780 Windows and Linux virtual machines. But quick access to critical data was still an issue.

“We rely on our systems to carry out CRUK’s vital fight against cancer,” says Briggs.”

To solve these challenges, CRUK engaged EMC partner, CAE, to undertake a comprehensive analysis of its infrastructure and propose solutions.

“CAE saw that we were at 85 percent storage utilization and couldn’t believe it. They recognized that what we really needed was a next-generation infrastructure that would provide quick data access,” Briggs states.

SOLUTION
CRUK and CAE decided on a comprehensive IT transformation program. CRUK deployed EMC® VNX® unified storage at both its primary and secondary data centres. The VNX deployment includes the EMC Total Protection Pack, the EMC FAST™ Suite, and flash drives.
CRUK also deployed a virtual desktop infrastructure (VDI) with 1200 thin client servers powered by Citrix XenDesktop. To enhance thin client performance on the VDI, another VNX is now dedicated to providing the necessary IOPS.

CRUK also replaced its costly, outsourced backup and recovery service with EMC Data Domain® integrated with EMC NetWorker®, located at both data centres. This design provides CRUK with an almost active-active data centre architecture through continuous replication of all block and file data and VMs between the Data Domain systems.

**SIGNIFICANTLY INCREASED PERFORMANCE AND AVAILABILITY**

Implementation of VNX has resulted in greatly increased performance.

"Our EMC VNX implementation began to pay for itself immediately thanks to faster performance," Briggs explains. "We can get more processing power spread out over a smaller number of disks, cost effectively."

CRUK has also implemented a FLASH 1st strategy as part of its VNX implementation to further improve performance and maximize storage efficiency. The FLASH 1st strategy includes VNX, flash drives, and the EMC FAST Suite—consisting of FAST Cache and FAST VP (Fully Automated Storage Tiering for Virtual Pools). The FAST Suite automatically tiers data across flash, SAS, and nearline SAS drives based on its activity level, optimizing for both performance with flash drives and cost with high-capacity nearline SAS drives.

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Michael Briggs
Head of Infrastructure at Cancer Research UK

Briggs cites impressive statistics: "IOPs from the flash drives results in a 15 percent performance increase. Add that to the high level of VNX performance and FLASH 1st, and the result is a 30 percent performance increase for many applications."

He continues, "We can set policies that allow us to manage storage tiering manually, but in most cases we let the FAST Suite do what it does best automatically. It significantly contributes to improved performance."

**XTREMSF AND XTREMSW CACHE FOR LIGHTNING-FAST CRM PERFORMANCE**

But if CRUK’s infrastructure is operating at a high performance level now, it will soon enjoy an even higher level of performance. The company has recently purchased another VNX, along with EMC XtremSF™ and EMC XtremSW™ Cache, to provide fast access to CRM data for the CRUK marketing department. Because 90 percent of IT users in the CRUK head office use thin client technology, quick access to data will increase staff effectiveness.
Together, XtremSF and XtremSW Cache supercharge the performance of read-intensive applications by an order of magnitude, cutting response time in half and increasing IOPS by five times. XtremSW Cache extends EMC FAST array-based technology into the server, creating a single, intelligent I/O path from the application to the data store. Automated intelligence puts the hottest data on the server-based PCIe card XtremSF for optimal application performance and efficiency.

Best of all, XtremSW Cache provides this performance with protection—write-through caching means writes persist to the back-end storage array to ensure high availability, data integrity, data reliability, and disaster recovery.

“We'll be using VNX and XtremSW Cache for our CRM solutions to provide high levels of data availability to our marketing teams,” Briggs explains. “We will transfer Oracle load caching and re-do logs to dedicated flash drives on the VNX. We plan to deploy XtremSW Cache in native mode with application acceleration. Working with FAST, it will promote hot data to the server, yielding near-zero latency. We have just pressed the button on XtremSW Cache, and even in early testing we are seeing significant performance improvements.”

Anticipated performance increases should translate into everyday advantages for CRUK employees and the organization as a whole. For example, CRUK marketing will be able to complete three or four complex Siebel queries a day as compared to a single query with the legacy storage.

“Prior to its release, XtremSW Cache was called 'Project Lightning' during development,” Briggs continues. “We've borrowed that moniker internally because lightning is going to strike twice. We are looking forward to performance increases as fast as lightning and just as breathtaking.”

**TOTAL DATA PROTECTION**

EMC solutions also help CRUK to better protect its data. The EMC VNX Total Protection Pack incorporates EMC SnapView™ and EMC SnapSure™ to produce data copies for instant file and block storage recovery, and expedite testing and development. EMC RecoverPoint/SE CDP, as part of this software suite, enables DVR-like roll-back of production data to any point in time, for quick data recovery.

In addition, CRUK's backup and recovery operations, using Data Domain and NetWorker, have also been dramatically improved. Accurate and reliable daily backups protect 35 TB of critical data, and data is replicated between Data Domain systems continuously. CRUK expects the EMC backup and recovery solution to pay for itself in 18 months.

**PROVIDING SERVICES TO HELP FIGHT CANCER**

The deployment of transformative EMC solutions supports the CRUK IT department’s venture into private cloud and IT as a Service.
“By partnering with CAE as a single point of contact, and leveraging the power and performance of EMC and VMware solutions, our IT department is positioning itself to offer many IT services on demand,” explains Briggs.

He continues, "We view everybody in the charity as our ‘customers.’ Our job is to provide our internal ‘customers’ with the reliable and efficient systems they need to work towards delivering Cancer Research UK’s vision to bring forward the day when all cancers are cured. We take pride in knowing this is our contribution towards saving even more lives as we continue to fight cancer. CAE and EMC are partners that support our IT department in this fight.”