

Bringing law and order in storage for Greater Manchester Police

How to meet growing storage needs and improve data resilience without adding IT complexity was the challenge for Greater Manchester Police. BAPCO Journal examines how NetApp's solution helped Greater Manchester Police's IT staff to design the system, identify and remove performance bottlenecks, and manage data migration.



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➔ *Andrew Gorton, Systems Planning Team Leader, Greater Manchester Police.*

Law enforcement is by no means immune to the trend toward more electronic storage of critical data. Greater Manchester Police (GMP) expects its data storage requirements to grow at between 10 and 20 terabytes a year over the next few years, driven by applications such as ANPR (automatic number plate recognition) and CCTV, as well as scene-of-the-crime information and other audio and video records.

In addition, the force has a tapeless backup environment and has 30- and 90-day retention windows for critical information. Users' data from the force's 7,400 desktop and 1,500 laptop PC systems are also held and managed on the central storage systems, rather than on local drives. At the same time GMP is seeing growth in the structured data produced by its central business systems. "The issue for us was capacity management and storage growth," says Andrew Gorton, systems planning team leader in IT at Greater Manchester Police. "The demand for storage, especially from applications such as ANPR and CCTV, is growing but general storage is growing too."

GMP needed to increase its immediate storage capacity as well as futureproof its systems to allow predicted storage growth. The organisation wanted to further consolidate its storage without adding additional layers of complexity to the IT department's work.

But at the same time, GMP wanted to improve its data resilience and business continuity arrangements. The

force had already made a strategic decision to use NetApp as its supplier for storage systems. So the organisation wanted to build on that, but ideally also allow systems administrators to continue to use familiar tools to manage storage capacity across both the force HQ, and the business continuity site.

However, GMP also wanted to remove some specific bottlenecks in application performance and improve both uptime and storage utilisation. As a further challenge, the organisation had both recovery time objectives and recovery point objectives that were, in effect, zero.

GMP opted to add to its existing NetApp environment by buying additional clusters. Bringing new capacity on stream allowed the organisation to make use of both high-performance Fibre Channel disks and cheaper SATA arrays within the same storage framework. In addition, NetApp's architecture allowed the IT department to mix both network-attached storage (NAS) for file-based data and a SAN (storage area network) environment for block-level access on the same physical infrastructure. Adding to the NetApp infrastructure allowed GMP to continue to use its existing SnapMirror and SnapRestore software, already familiar to IT staff, for business continuity and backup and recovery. "The infrastructure is now more resilient and more available," says Gorton. "We are moving to even tighter service-level agreements, and this will help us to do that."

The force brought in NetApp's Professional Services team, both to help design the upgrades and manage the transition. A key part of the process was transition planning and providing GMP with sufficient new capacity at the right cost. The consultants used NetApp's Performance Adviser tool, as well as trend analysis, to improve system design.

The NetApp team was also able to relieve pressure on existing systems by identifying where data could be moved to the lower-cost SATA systems, and by identifying and removing some specific application bottlenecks.

By separating the data paths for unstructured (file) and structured (block) data, overall application response times have improved. Some key operational applications, such as FIS, the Force Intelligence System, have a response time target of under two milliseconds, so even relatively small performance gains matter.

As a result of the upgrades, Greater Manchester Police has been able to improve both system performance and resilience, quickly and at an affordable cost. In addition, the upgrade was carried out with the minimum of disruption, and the new systems need little in the way of additional management tools.

Because NetApp SAN, NAS, and near-line backup systems use the same interfaces, the additional storage has not added significantly to IT staff workloads: One operator now manages some 100TB of data.

Application performance has increased, as has storage utilisation. Capacity is used more efficiently, and the uptime for the NetApp environment is at least 99%. The organisation has also been able to meet its business continuity requirements, especially the specific retention periods for each class of data.

In addition, Greater Manchester Police now has a dedicated staging environment that closely replicates the production setup. The staging environment is used to perform preproduction testing and performance benchmarking and to help new applications make the transition into the live environment.

A further benefit is that the force can use capacity on the second cluster in its business continuity site for application testing and development, improving application reliability and cutting deployment times.

Gorton says, "It has been fairly seamless, from the point of view of the end user; the outages have been minimal and we have even been able to undertake other technology refreshes at the same time."

NetApp FAS3050 clusters were augmented by FAS6040 systems to provide additional capacity, to allow a three-tier storage infrastructure, and to allow two identical systems to run across the force's primary and recovery sites. An R200 provides near-line storage.

NetApp Professional Services helped GMP's IT staff to design the system architecture, identify and remove performance bottlenecks, and manage data migration.



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