

CASE STUDY

"We have critical systems that need protection, coupled with 24/7 public services we must deliver. It is imperative that we have a solid business continuity plan at a time when our data is growing rapidly. Our requirement and specification was demanding, but FalconStor's IPStor was able to meet our long-term objectives."

– Peter Harper, ICT manager, Fareham Borough Council

Fareham Borough Council, UK

Borough of Fareham deploys IPStor-based iSCSI SAN and NAS solution for storage consolidation and disaster recovery

About Fareham Borough Council

The Borough of Fareham has a population of over 100,000 inhabitants and covers nearly 30 square miles of southern Hampshire, England, roughly midway between Portsmouth and Southampton. With the town of Fareham at its centre, the borough covers the wards of Fareham, Portchester, Stubbington, Hill Head, Titchfield, Park Gate, Warsash, Locks Heath and Sarisbury.

The Council is governed by Councillors from each ward who work with specific Council departments dealing with a wide range of local services and issues. The responsibilities of the Council include planning and development control, health and regulatory services, housing, leisure, the environment, and transport.

Business Need

The Fareham Borough Council's objectives for this project were to achieve storage consolidation and business continuity/disaster recovery for their IT environment. The list of requirements also stated that the solution it chose must also provide guaranteed expandability for the next five years, as well as the capability to cope with a rapidly growing storage requirement to in excess of 12 terabytes. Currently, about 6 terabytes of data are managed, but this is set to increase significantly in the coming five years.

In 1999, the UK Government published a white paper, "Modernising Government" which set the City, County and Borough councils a deadline of 2005 to implement "e-Government" by harnessing new technologies such as the World Wide Web to make information and services more accessible to the public. Fareham Borough Council set itself a target of 2005 to achieve 100% electronic delivery for services where such delivery is possible.

The Council's e-Governance model has four strands, comprising:

- e-Service: making the Council's services more accessible, improving services, and developing new service options;
- e-Democracy: supporting new political processes and embracing "joined-up" electronic government at local, regional, and national levels;
- e-Community; leading strategies to ensure the economic, environmental, and social well-being of the Borough's communities;
- e-Business: contributing to the local economy by attracting inward investment, supporting local businesses, and developing the local infrastructure

The four strands of Fareham's e-Governance model have given rise to many new interfaces such as the Council's public website, a 24/7 contact centre, e-voting, and a Councillor extranet, together with a growing backend IT infrastructure.

Like many organizations experiencing "e-growth," managing the resulting data boom, ensuring data accessibility, security and backup, and implementing disaster recovery and business continuity technology has been a major part of the work of Fareham Borough Council's ICT department.

Industry

Local government

Applications

Microsoft® Exchange, Microsoft SQL, and Oracle® databases; file and print servers

IT Challenges

- Deploy a storage infrastructure that meets a central government imposed deadline for e-delivery of services to the public
- Efficiently manage a rapidly growing amount of data
- Eliminate the difficulties caused by direct attached storage on 40+ servers
- Ensure current and future scalability of the company's storage and storage services
- Provide a simplified backup solution
- Ensure business continuity and disaster recovery (DR)

FalconStor Solution

FalconStor and Redstor teamed up to design a highly available environment to deliver reliable, readily accessible data across all Council departments and services, with centralized backup and restore, and a secondary site to ensure DR capabilities.

IPStor Software Deployed

3 IPStor® base software
IPStor SAN clients for IP
IPStor Active-Active Failover
IPStor Remote Replication
IPStor TimeMark®
IPStor Snapshot Agents for Microsoft SQL Server, Microsoft Exchange, and Oracle
HyperTrac Backup Accelerator Option

Benefits

- High availability and accelerated data recovery satisfied UK Government's disaster recovery mandate
- Highly scalable solution able to easily manage in excess of 12TBs of data, meeting IT requirements
- Provides networked storage (SAN and NAS) access over iSCSI/IP, replacing previous DAS infrastructure
- Management costs reduced and workforce productivity optimized through centralized storage management
- Lower total cost of ownership through:
 - Use of existing resources
 - Improved operational efficiency
 - Eliminating need for multiple software licenses and individual management of storage software for each server

FalconStor Solution

Fareham Borough Council's ICT department approached a FalconStor partner, Redstor— a vendor-independent storage services and solution provider—to design a solution to meet its needs. Redstor produced a proposal based around FalconStor's flagship IPStor® software solution that enabled the Council to achieve several objectives in one hit, of which the management element was one part and the disaster recovery objective was another part. As Jon Ashley, Redstor's UK marketing manager, said: "They chose a solution that cured a whole load of headaches in one swoop."

The IPStor solution has enabled Fareham Borough Council (Fareham BC) to employ:

- a storage network infrastructure providing SAN and NAS access to data storage over iSCSI/IP
- a suite of enterprise-class storage services including virtualization, storage consolidation and data replication
- backup acceleration technology such as zero-impact backup and server-less backup

The deployment of IPStor has enabled a shift to SAN storage provisioned to application servers via iSCSI over IP, superseding the direct attached storage associated with the Council's more than 40 servers. The implementation consists of a total of three IPStor appliances across two sites: the primary site and the disaster recovery location. The two IPStor appliances at the primary location are configured in an **Active-Active Failover** mode for high availability, ensuring uninterrupted access to data at all times and allowing for planned maintenance without downtime.

In the Active-Active Failover mode, if one IPStor appliance should fail for any reason, or if the path to it is disrupted, the other appliance immediately and transparently takes over the workload. There is no disruption to users, and neither processing nor activities-in-progress will be interrupted, satisfying a critical uptime requirement for the Council. Once the primary IPStor appliance is back online, failback occurs automatically without disruption, and the primary appliance takes over its own workload again.

The primary site and the disaster recovery location are linked through an IP-based wide area connection, or WAN, and IPStor made the implementation of the disaster recovery solution straightforward. IPStor **Remote Replication**, in conjunction with IPStor **Snapshot Agents for Oracle, Microsoft SQL Server, and Microsoft Exchange**, allows the transparent movement of critical data between the two sites over IP, ensuring there is always a consistent point-in-time data copy available for use in both locations. In the event that a disaster renders either site inoperable, there will be little or minimal data loss, and the contingency plan will swing into immediate operation, enabling data to be restored from the undamaged site to the other.

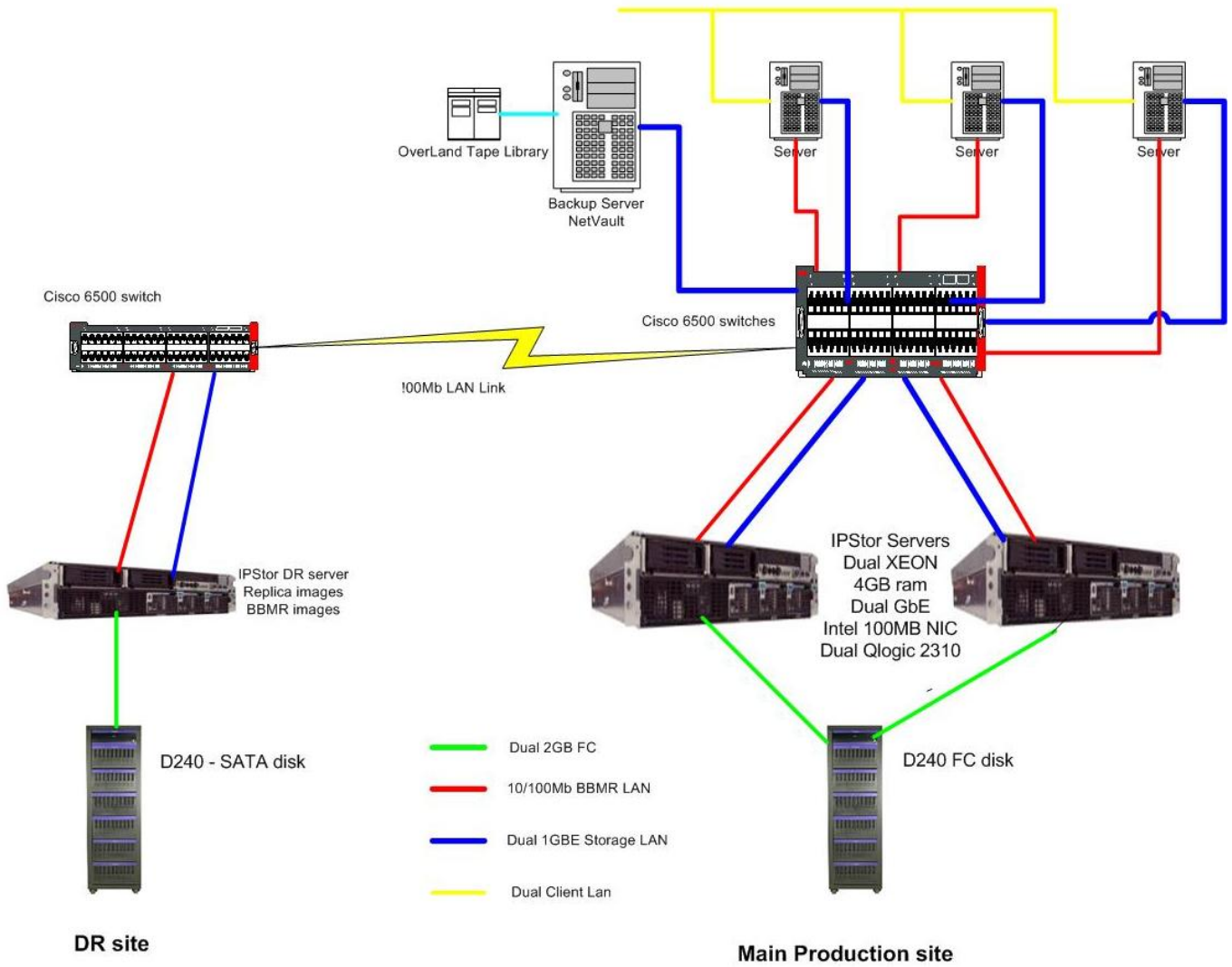
The IPStor **TimeMark** option has enabled Fareham BC's IT staff to create periodic, scheduled or on-demand point-in-time delta snapshot copies of its SQL Server and Exchange data volumes, allowing administrators to instantly recover a single file or an entire volume back to a known good point-in-time in the event of accidental deletion, virus, or data corruption. The TimeMark option works in conjunction with the IPStor **HyperTrac Backup Accelerator** agent acquired by the Council to allow their existing dedicated backup server to obtain a delta snapshot image of a volume— which can be concurrently in use by an application server – and back it up to tape, rapidly and without producing downtime of the production environment. The HyperTrac Backup Accelerator automates the whole process, enabling the dedicated backup server to backup/restore each application server's IPStor-managed disk at the speed of the SAN.

Storage management is now administered from the single, Java-based **IPStor Console**, which means there's no longer a need to take the time and energy to manage storage and backup at each of the forty-plus servers at each site – operations that had been causing increasing headaches for the Council's IT managers.

Deployment Details

Hardware configuration	
Primary Location 2 IPStor appliances ION appliances RedHat Linux 7.3 4GB RAM 6 PCI slots Intel GbE NICs QLogic 2342 HBAs Switches Cisco 6500	12 application servers Dell servers Windows 2000, Windows 2003 Intel NICs Applications: Oracle, SQL, Exchange Storage StorageTek D 240 disk arrays (3TB) Backup software BakBone NetVault
Secondary Location (Disaster Recovery site) 1 IPStor appliance ION appliance RedHat Linux 7.3 4GB RAM 6 PCI slots Intel GbE NICs QLogic 2342 HBAs	Switches Cisco Storage STK SATA D240 [3TB]

Site diagram



Summary

For almost five years, Fareham Borough Council faced the 2005 deadline for implementing “e-Government.” Like many commercial organizations, this also coincided with huge growth in the volume of electronic data that would have been generated regardless. The Council, therefore, faced a double-edged sword of challenges with respect to its IT infrastructure, and needed to update the way it structures and manages its storage to meet these challenges.

Through its IPStor-based storage management and business continuity solution, Fareham BC has not only acquired a storage infrastructure that enabled it to meet the Government-imposed deadline, but has done so in a way that reduces its total cost of ownership for storage: operational efficiency has been improved; use of existing equipment has been maximized; and the need for multiple software licenses and individual management of each server has been eliminated. At the same time, Fareham BC can rest assured that its many Terabytes of mission-critical data are protected in the event of disasters big and small, ensuring that the Council’s important work is never interrupted.