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Case Study Nightfreight

SQL Server 2012 Private Cloud



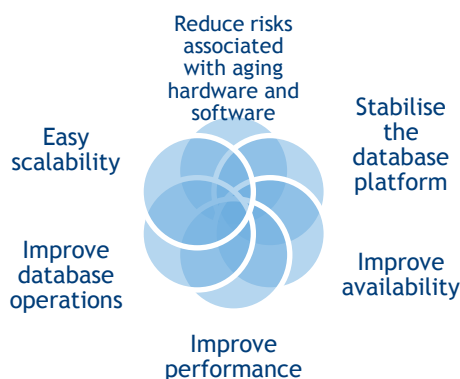
dsp provides Nightfreight with resilience, performance, supportability and modernisation all within one solution

Client Profile

Nightfreight is a British overnight delivery and logistics company founded in 1984. It was listed on the London Stock Exchange from 1994 to 2001, when it was put back into private ownership. The company then developed a niche in irregular dimension and weight or IDW freight, and soon became the market leader in that area. Nightfreight currently operate a fleet of over 1000 vehicles and employs over 2500 people. It spans three hubs and 52 depots around the United Kingdom. The annual turnover is £120m.

The Problem

dsp was engaged by Nightfreight to review their Microsoft SQL Server estate and provide a solution to meet the following requirements:



There has historically been a low level of investment in the current systems environment and whilst the IT team was able to keep the systems operational, unfortunately the original configuration of the clustered environment was no longer acting as a resilient and highly available system.

This exposed the business to inherent risk as in the event of an outage the business critical applications would not be available to either the user community, or more importantly the clients who need access the system and applications.

As well as the resilience, there were also performance bottle necks that slowed down response at key times during day. This system was also linked

to one of Nightfreight's main current projects (Project Scribe) to deploy in-cab systems to circa 750 drivers. This resulted in extra demand on back end systems.

The hardware and software on the existing estate was out of date and out of support, so a key requirement was to standardise the hardware, OS, and SQL Server to a supported and best practice standard.

There was also a requirement to reduce operational costs, reduce the server sprawl and to have a solution that could scale when required. This in turn would provide the benefit of easier day to day managing of the estate.

The prioritised approach

Priority 1: establish resilience to the tier 1 (NFCSQL & CLSQL) instances of SQL Server

Priority 2: eradicate the performance issues that were causing the tier 1 servers immediate issues.

Priority 3: modernize the OLTP server to a supported build of OS and SQL Server.

Priority 4: modernize the BI servers to a supported build of OS and SQL Server.

The solution

dsp carried out an assessment of the existing SQL workload requirements and recommended a SQL Server 2012 Private cloud solution, which would incorporate a refresh of server hardware as well as perform a SQL 2012 upgrade simultaneously.

dsp proposed for the current SQL Server estate to be consolidated and migrated onto a Windows Hyper Visor platform that supports all instances of Windows 2012 running SQL Server 2012. The solution consolidated 7 servers down to 2, one acting a primary server and a HA secondary, thus reducing the licensing costs for both Windows and SQL Server.

The solution secondary server provides a HA solution for tier 1 databases using SQL Server 2012 AlwaysOn. This gave automatic failover of the tier 1 databases in the most critical of situations.



Within SQL Server 2012's AlwaysOn, you can replicate multiple databases within one availability group, thus if one database fails within the collection of application databases then all database will failover. During a failure, the application is seamlessly redirected to the secondary the SQL Server Listener's IP address, brining disruption of failure from hours to minutes.

The virtualized servers were specified so that the SQL Server estate will have the appropriate level of resources while maximising scalability potential.

Consolidation

dsp has a proven track record with its consolidation approach to return the customer with a strong and valuable ROI. Consolidation can provide the benefit of reducing server sprawl, standardising hardware and software, thus aligning the support and manageability of the estate. Costs are reduced by decreasing the amount of hardware that you need to purchase (capex) and subsequently through lower rack space required, opex can also be reduced.

Due to the consolidation of CPU cores, Nightfreight were able to purchase and take advantage of SQL Server 2012 Enterprise Edition. This provides them with all the features required to meet the business' needs, without having to purchase third party tools, which would add an additional cost and complexity to their estate.

Using virtualised technology dsp consolidated the physical server count as illustrated in the table below:

	Current	New	Consolidation %
Physical Servers	7	2	71

Jonathan Davies, IT Manager at Nightfreight says; *'dsp have delivered us a private SQL 2012 cloud solution that not only is realising cost savings made through consolidation and reduced management overheads, but also vastly improved performance and high availability.'*

Business Benefits

The benefits of the SQL Server 2012 solution have given Nightfreight an estate that they can have confidence in.

Joe Cody, Technical Analyst at Nightfreight, says; *'the solution has made our SQL estate feel incredibly stable and robust. The performance of the SQL estate is now at a level where it is delivering upon our key business objectives. A batch job which was running over night taking more than 8 hours to complete which was becoming intrusive on the business day; now the same job takes less than 25 minutes to complete.'*

Key Business Deliverables

- Reduce server count from 7 physical machines down to 2 physical machines - 71% consolidation
- Virtualized technology gives the benefit of isolated OS and SQL Server instance
- Supported OS and database platform
- Modern OS and database platform
- Reduced licensing costs and as a result all instances benefit from Enterprise licenses
- Topology gives the required resilience and creates a Highly Available SQL Server estate
 - 100% Availability
 - Zero data loss
- Proposed hardware and resources gives required performance metrics
- Scalability is available when the customer's business grows
- Standardised SQL Server to provide the operational staff with a robust, but manageable estate.

Cost Savings

When considering a project such as a Data platform modernisation, the business benefits are often the key to the success. However it is also paramount to consider the fiscal aspects to the project.

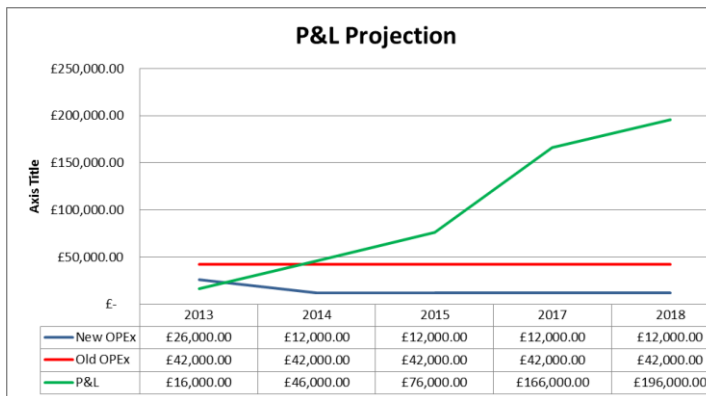
It's an Operational thing

For Nightfreight, there was a clear direction on the project should deliver a return on the investment



(ROI) - especially in reducing the overall Operational Expenditure (OpEx) every month.

As the server count was being reduced by 71%, the savings made from the administration, storage and hosting of the servers offers a compelling ROI on OpEx as shown below:



The duration of the project was 4 months, in which the existing and new SQL 2012 platforms are run in parallel. This is to allow for a controlled migration of each application. This does however affect the OpEx during the months where the environments are run in parallel while the migration project completes.

After the migration phases, the old environment is shut down and a clear difference in OpEx is shown. Costs per year are reduced from £42,000 a year to £12,000, realising an overall operational saving of £196,000 over 5 years.

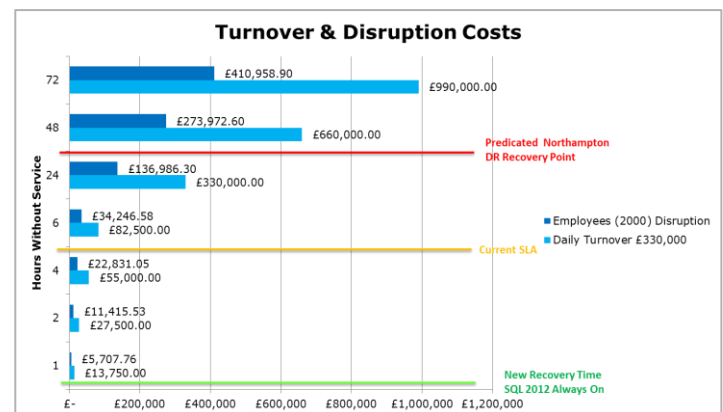
Counting Cores

There is also a Capital Expenditure to consider. For this solution, SQL Enterprise Licenses costs had to be optimised to avoid high overly high investment costs. Without the SQL Private Cloud solution, the potential License investment based on CPU Cores would have been in excess of £162,000.

With the SQL Cloud solution, the number of CPU cores was reduced from 36 to 16, reducing the overall investment required to £72,000 a saving of 55%.

Delivery Night and Day

The key business requirement for Nightfreight is a 24 x 7 operations. Their data platform could not afford any disruptions that would affect their 1000 vehicles, website or depots as the potential loss of revenue and disruption costs could be disastrous.



As shown in the graph above, the potential for serious fiscal impact of a loss of the database platform was extremely high. The current SLA was set at 4 hours and because of the disparate nature of systems, it was unlikely this would be met in a serious server outage as no working HA solution was employed. The 4 hours SLA of loss would cost £23,000 in lost productivity (disruption) and potentially £55,000 in lost revenue. However, it was likely the recoverability would escalate into 24 hours which would result in a much higher disruption and revenue loss.

The SQL 2012 Server Private Cloud solution with Always On would reduce the potential downtime from 4 hours to < 1 minute with 0% data loss. This would reduce potential losses to around £300 for server outage and a 99.58% reduction in potential loss.

Jonathan Davies summarises with; 'SQL Server 2012 has given us the resilience that is required for our critical systems. We are now in a position to scale to business requirements which is vital to the future success of our business. Everyday IT department activities have become more efficient and simple due to the standardised environment.'