### ST JOHN WHITEPAPER



# BACKUP AND DISASTER RECOVERY

Infrastructure review and re-architecture for operational efficiency and reduced business risk.



This Whitepaper is targeted to and designed for semi technical IT professionals, to understand both the business drivers and high level technical architecture of the solution.

#### Contents

Overview	3
Situation	3
Solution	5
Results	6

### BACKUP AND DISASTER RECOVERY:

Infrastructure review and re-architecture for operational efficiency and reduced business risk.

A public Infrastructure as a Service (IaaS) environment can be prescriptive and costly, and New Zealand based emergency service provider, St John soon found that they had limited operational control, visibility and flexibility of their IT environment, which exposed the business to risk.

St John's expectations as a business had moved on. The existing IaaS environment could no longer meet these expectations, especially where the backup and disaster recovery solution was concerned. Failed backups occured and recovery times did not meet required expectations, and the existing solution was no longer fit for purpose without significantly increasing costs.

Lexel was engaged to re-architect the environment and deliver a more flexible, cost-effective hyper-converged solution that was fit for purpose and put control back into the hands of the business.

In this whitepaper, we discuss the review and implementation of a new backup and disaster recovery solution for St John, specifically written for architects or semi-technnical managers, providing learnings from the St John journey and achievements.







#### Lexel Systems and Veeam: Bringing certainty to St John's data assets

Lexel Systems has delivered a fully integrated backup and recovery solution to St John, providing peace of mind that all data is thoroughly protected, while reducing the overall operational cost of this crucial function. Using technology from Veeam, the solution covers all aspects of St John's infrastructure, including multiple cloud and on-premise data sources.

St John has existed in New Zealand since 1885 and is part of a global organisation known as the Order of St John, which is active in more than 40 countries. St John is run and staffed by people who are passionate about serving their communities and caring for fellow New Zealanders, with more than 3,000 paid and 9,000 volunteer members working side by side nationwide.



# "

Prior to engaging with Lexel Systems, we had an outsourced backup and disaster recovery solution, which was no longer fit for purpose. We had limited operational visibility, that included failed backups that left the business exposed to risk.

#### Situation

St John Solution Architect, Gareth Stone says that despite the importance of sound backup and recovery systems to any business, over time the organisation found itself with an outdated system and an outsourced model that was no longer fit for purpose for the business. What St John needed was a more modern solution and something that provided St John with stronger operational visibility.

"Prior to engaging with Lexel Systems, we had an outsourced backup and disaster recovery solution, which was no longer fit for purpose We had limited operational visibility, that included failed backups that left the business exposed to risk."



St John's data is distributed in a typically heterogenous environment. The organisation combines multiple application clouds and physical infrastructure located across geographically dispersed sites, including:

- 5 physical sites across Auckland, Christchurch, and Wellington.
- 26 VMware ESXi Hosts.
- 8 Nimble All Flash storage cluster arrays.
- Over 1000 virtual workloads.
- 13,000 Microsoft 365 users.

The production environment runs call centre critical applications interacting with a variety of SQL database clusters and web interfaces. Veeam Backup and Replication protects all virtual workloads in the production environment, while Veeam Backup for Office 365 protects user data resident on the Microsoft 365 platform. This includes OneDrive, SharePoint Online and Exchange Online data.



Appreciating the importance of its intellectual property, St John maintains an 'owned' copy of its data outside the Microsoft Office 365 platform. This serves as a failsafe as the 30 day retention offered by Microsoft does not address protection against corruption and infection by malicious software. Furthermore, data retrieval by Microsoft does not have an associated SLA.

Stone says the previous service protecting the data was based on legacy technology, with limited functionality. "And if we were to get what we wanted from our backup and recovery environment, unaffordable charges were involved."

Issues with the legacy system included:

- Failed backups weren't notified or noticed.
- An absence of prior testing meant recovery times were unknown and almost inevitably outside reasonable or desired specifications.
- While 'Recovery Operations' were recognised as a risk, there was no certainty in the restoration of business-critical systems.

The practical implication of this outsourced solution included long or simply unknown recovery times.

"The Recovery Point Objectives were OK, but the Recovery Time Objectives were below expectation. Our expectations as a business had moved on and this service couldn't meet those expectations without substantially increasing operational costs."



#### Solution

Stone says that in the process of working on a broader private cloud strategy, St John tested the market by evaluating vendors and solution providers.

"We wanted to know which vendors were easiest to work with, who had deep expertise in the relevant areas, which engaged best through local service providers, and in a service provider, we wanted to establish a partnership which could build knowledge of our environment, and augment our capabilities as and when required. So, this went wider than just the backup and restore capability, as we recognise that there is an ongoing services engagement."

Both Veeam and Lexel were selected as the preferred providers; "We got to a point where we were clear on the technical solution required, and Veeam, as recommended by Lexel, emerged as an easy to use, set and forget solution which doesn't have a high training overhead. It's intuitive for IT people to pick up," Stone explains, "And the vendor integrations meant it fits easily with our wider HPE and Nimble environment."

That's not all. "Commercially, the combination of Lexel services with Veeam is very good," Stone notes.

Stone says considerable time was invested between Lexel and St John's respective teams in pursuit of a full

understanding of St John's environment and backup and recovery requirements. "However, the actual implementation of Veaam was surprisingly rapid. It took just a few days to set up."

Veeam Backup and Replication Enterprise Plus Edition has been deployed for production data backups, copying backup data offsite and also replicating changed data to offline replicas on disaster recovery infrastructure. This includes all Veeam ONE architectural components (Veeam ONE Server, Veeam ONE Web UI, and Veeam ONE Monitor Client) installed on a single machine. Veeam ONE monitors virtual infrastructure in all locations and produces reports supporting proactive decision making, resource planning, day to day monitoring and issue resolution.

A Veeam Backup Proxy is implemented in each location of the key locations environment. These are loaded on virtual servers, each residing on a different VMWare Datacenter. The amount of Veeam Backup Proxies required for specific situations is accurately determined on the basis of Veeam ONE monitoring 'in situ'. The infrastructure performance, resource availability and the amount of VMs required for backup and backup frequencies further define the amount of proxies required and their optimal placement.

Veeam proxies are generally physical servers with connectivity to the customer's storage solution, though they can also be configured as cloud laaS, feeding into online storage resources such as AWS S3, Microsoft Azure Cloud Storage or other services.





The proxies use "Direct from Storage" transport during backup operations with minimal impact to production workloads.

Each St John site is configured to use a physical Veeam proxy with access to the storage fabric, allowing snapshots of virtual workloads to occur at the storage level rather than the VMWare infrastructure level. These backups are faster and less impactful on VMware infrastructure, delivering high frequency critical workload backups during business hours.

Each site has backup repositories configured to hold backups for short to mid-term retention (up to 90 days). Backup copies can be replicated between Auckland and Christchurch at scheduled intervals providing redundancy and meeting longer term retention goals of monthly and yearly restore points for designated workloads.



Backup data replicated between sites is encrypted using 256 AES encryption.

Backup repositories are hosted on Nimble storage arrays featuring deduplication for optimised storage. The arrays allow booting workloads directly from a backup file (Veeam Instant VM Recovery), negating the requirement to restore the workload then have it available for production use. This configuration achieves a sub 5-minute RTO.

Due to the nature of St John's business, critical applications in the emergency environment are configured for geographical high availability at the application layer, with Veeam meeting RTOs of less than 10 minutes for workloads in the tier below. Second-tier workloads have an RTO of less than 1 hour and RPO of 24 hours, easily met with Veeam. Retention of restore points are different for different workloads types; Veeam manages these requirements in all sites with the use of backup copy jobs with associated retention configured for each location.

The storage and virtualisation infrastructure uses Veeam replication for full disaster recovery failover. Veeam replication sends blocks of changed data to an offline virtual machine housed in the disaster recovery environment, ready to be started in the event of a disaster. This virtual machine can fail back from the disaster recovery to the production environment, capturing all data transacted on the secondary infrastructure. This configuration minimises or eliminates data loss.

Backup jobs are configured to minimise administrative overhead required to add new virtual workloads as an environment grows.

## 

### Results

"The initial implementation," Stone relates, "met our short and mid-term requirements by bringing basic backup and recovery to the organisation at an affordable cost." Ongoing work with Lexel continues as St John and its needs evolve, and as further applications for data protection using Veaam are identified. "Effectively, our engineering teams work together and evolve and explore the full capabilities offered by the solution. But standing Veeam up, initially? That's the easy part and it's done really quickly."

And that's delivered a key benefit to St John and in contrast to the legacy solution, in terms of both cost and features. "The real advantage of Veaam is that it makes backup and recovery invisible. It just happens, and because of this our people have full confidence in the solution."

This has operational benefits. "For example, if something goes wrong with patching, it's not a problem, - we just roll back. If we deploy a new server, we know it's automatically backed up. What would previously have taken 6 or 8 hours because of careful contingency planning is now achieved in 15 minutes. Great backup changes the way technical people operate."

The solution also gives St John the ability to improve internal Service Level Agreements and specify its own RPO and RTOs, while knowing that all data – whether in the cloud or on premise – is backed up to a single, organisation-wide standard.

"Above all, Lexel has given us a solution which greatly reduces business risk, and which also supports our wider cyber strategy and cyber response. And because it costs far less, there's also more money in the business for other things."

#### Contact us

#### Head Office

72 Paul Matthews Road, Albany Auckland 0632, New Zealand

Tel: +64 9 414 1777

#### lexel.co.nz

### VeeaM





Lexel is a New Zealand owned provider of ICT services and solutions to business. We focus on maximising business performance by using industry leading expertise and solutions to streamline IT infrastructure. Thirty years in the IT business, Lexel is a known and trusted partner.

Lexel specialise in providing solution consulting, infrastructure design, implementation, project management, outsourcing, support services and procurement. To deliver this wide range of services, Lexel Systems has partnered with the main technology providers in NZ and have secured the highest level of certifications possible with each of these partners. VeeaM