FIRE & RESCUE NSW

Moving Forward to GovDC
Fire & Rescue NSW's Infrastructure Transformation

A Case Study on the Data Centre Relocation to GovDC for Fire & Rescue NSW.

Abstract
With the opening of the NSW Government Data Centres (GovDC) in 2013 came the realisation that the future of the in-house data centres of government agencies is limited. Opening GovDC to agencies provides opportunity – how agencies take this opportunity and address the risks and issues associated with moving into GovDC is the challenge.

This case study describes the Fire & Rescue NSW (FRNSW) project through the inception, planning and early design phase of their move to GovDC and explains some of the obstacles faced, before explaining how these challenges were addressed and how FRNSW is "Moving Forward to GovDC".

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This document has been co-authored by Richard Host and Matt Carroll from the IT Directorate of Fire & Rescue NSW who jointly assert their right to be recognised as the authors of this work.

FOREWORD

By Richard Host, CIO Fire & Rescue NSW and Sponsor of Data Centre Relocation Program

Fire & Rescue NSW (FRNSW) is a progressive IT organisation that supports 100,000 staff and volunteers across five agencies within the Police & Justice Cluster.

As we lead the business transformation within these agencies, the demands on infrastructure are increasing rapidly. The demands on the people supporting these systems are also increasing in terms of complexity and round-the-clock support.

Moving to Infrastructure as a Service from the NSW GovDC data centres ticks all the boxes:

- It provides a powerful, scalable and on-demand platform that is many times more powerful than we could afford to procure the old way;
- It helps us in our quest to be one of the lowest cost providers in Government, by leveraging the scale of large vendors and only paying for what we use;
- It solves the issue of business-as-usual support, with the vendor providing highly skilled personnel 24x7;
- It provides an easy way to on-charge our customers, because they only pay for what they use.
- It provides a world-class facility based in NSW.
- It supports the principle of sharing infrastructure and systems across agencies.

Being first presents challenges, but continuing to do things the old way is not acceptable.

We continue to seek the best way to do business, to build the best systems, to make our community the safest it can be.

EXECUTIVE SUMMARY

This case study shows how FRNSW started its project to move to GovDC and identified an opportunity within the move to GovDC as a means of transforming to a new and better operating model and at the same time future-proofing its infrastructure investment.

Like most agencies FRNSW had a number of reasons to commence their move to GovDC, however rather than simply "lift and shift" their existing infrastructure into the new data centres, FRNSW considered the capabilities being offered in GovDC and looked at the opportunity to transform their infrastructure as part of the move.

With a range of operating models available and an understanding of some of the future drivers for FRNSW IT, the design phase took a different approach to a standard relocation project. Instead of defining what infrastructure was required, FRNSW took a more holistic approach and produced a set of Design Principles. These principles were matched to business requirements, resulting in an outcome-based or Service Level Agreement (SLA) driven design. This meant FRNSW could be vendor agnostic in its choice of infrastructure and instead focus on the benefits and not the technology.

Moving into GovDC provides agencies with the opportunity to totally transform their current infrastructure environment and as FRNSW's experience has shown, if an agency can build an infrastructure design that will support its current and future needs and pick the right partner to provide this within GovDC, then the move to GovDC can offer a range of benefits into the future.

This paper is intended for both non-technical and technical staff within an agency and gives a recent example of how FRNSW achieved a transformation approach as part of its move forward into GovDC.

IDENTIFYING THE TRIGGERS FOR MOVE

The initial GovDC site at Silverwater in the west of Sydney was opened in July 2013 and shortly after this the second site at Unanderra on the outskirts of Wollongong opened. NSW Government agencies now have two world class (Tier III) data centres to move into and no longer will they need or be encouraged, to maintain an in-house infrastructure capability.

But why should an agency move into GovDC and what are the triggers that best drive the timing of a move?

FRNSW had a number of triggers that all came into focus at the same time, making the choice of when to move a relatively simple one. However rather than simply "lift and shift" their existing infrastructure into the new data centres, FRNSW took the opportunity to consider the capabilities being offered in GovDC through both the Marketplace and the Managed Services Backbone (MSB). This investigation and the potential capability that GovDC provides led FRNSW to embark on a transformation exercise that moves their IT infrastructure into the future.
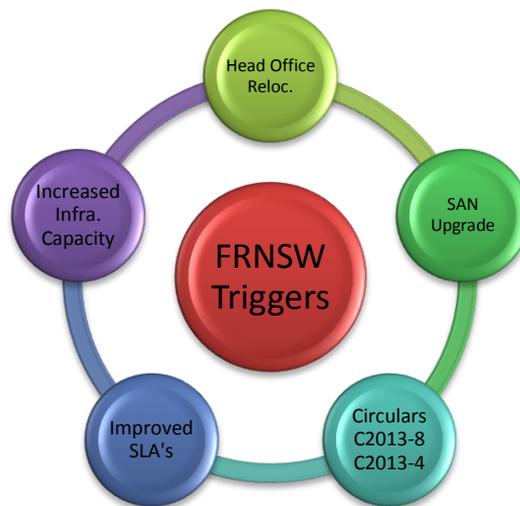
Head Office Relocation

FRNSW maintain 2 data centres for their enterprise applications and infrastructure. One is a co-location arrangement with AC3 at Eveleigh in Sydney and is used predominately for production systems. The other is within the FRNSW Corporate Head Office (CHO) building in the Sydney CBD. The CHO data centre is mainly used to house disaster recovery (DR), development and test environments however there are also a small amount of production services provided from there.

In December 2014 the lease of all FRNSW floor space in head office expires and plans are underway to relocate head office staff to other FRNSW premises in Greenacre, a suburb in the southwest of Sydney.

The timing of this relocation and the availability of GovDC during 2014 makes the move from CHO into GovDC a logical one. It was determined early on that it would make sense to move the AC3 production capability into GovDC at the same time, thus minimising the number of moves and associated project costs.

Refresh of End of Life Storage Arrays

FRNSW currently operate with both an EMC Clarion and Dell Compellent storage arrays across both data centres. The EMC Clarion has reached end of life and at present is experiencing performance issues, with limited capacity to support both current and future workloads.

In mid-2013 a project was initiated to replace the current storage arrays however this was put on hold when the Data Centre Relocation (DCR) project was initiated and the responsibility for providing replacement storage capability was given to the DCR project.

Pressure for increased infrastructure capacity

Like most organisations in both the private and the public sectors the IT Directorate within FRNSW face increasing demands from their business groups and users for bigger, faster and better capacity, performance and availability across all of their infrastructure and platforms.

Whilst it is possible to build and deploy infrastructure capable of handling linear growth, balancing a workload that also has unplanned seasonal fluctuations that need on-demand availability requires a significant investment in capital and introduces the risk of either having too much or too little infrastructure when needed.

Moving into GovDC will provide FRNSW with the opportunity to introduce more easily scalable infrastructure across compute, storage and network elements without the need for high capital outlay, utilising either a Private Cloud or Infrastructure as a Service (IaaS) model.

OFS Circulars C2013-8 and C2013-4

Following the issue of the original Data Centre Reform Strategy circular (C2012-1) in 2012, FRNSW IT determined to move into GovDC during 2014 (in time for its Head Office relocation).

Initial thinking centred around a simple "lift and shift" approach for existing infrastructure, supplanted with new equipment where needed (such as new storage) however as both Silverwater and then Unanderra GovDC sites opened and with the issue of *OFS Circular 2013-8 Data Centre Reform Strategy* and *OFS Circular 2013-4 NSW Government Cloud Services Policy and Guidelines,* alternatives to moving into a private cloud model were given more traction.

The opportunity provided by the development of a community or government cloud environment in GovDC via the Marketplace and the MSB meant that the focus for FRNSW shifted to consider IaaS as an effective alternative for any future end-to-end infrastructure design.

Improved SLA's required by business

FRNSW IT Directorate provides enterprise applications to both their internal organisation as well as other agencies, through a shared services model. Increasingly these other agencies are looking at FRNSW IT as a Software as a Service (SaaS) provider and are expecting them to meet committed Service Levels for both availability and performance. This commitment includes more 'always available' applications and is driving towards a 24/7 support model in the future.

The triggers that drove FRNSW to commence their DCR project would be familiar to any other agency and the timing of GovDC availability simply made it easier to choose when to start planning their move.

FIRE & RESCUE NSW APPROACH

Like most agencies with in-house data centres, FRNSW has provided infrastructure services to its business and customers in an on-demand, as needs basis, with very little long-term planning and design taken into account.

The Infrastructure Services team completed server virtualisation where possible and provided storage and network capacity through the deployment of 'best available' solutions that have been added to the existing infrastructure environment.

This has worked to deliver, for the most part, a suitable operating environment, albeit one with an increasing number of performance issues and appreciating cost of maintenance. And moving into GovDC with the same approach is likely to simply transfer the problems and challenges already faced into a new location.

Therefore before deciding what was needed in the new GovDC environment, FRNSW IT adopted a proven Data Centre Relocation methodology with 5 distinct phases.

Data Centre Relocation Project Phases

The primary purpose of the Discovery phase was to clearly identify and document the current Data Centre infrastructure within FRNSW. This included the compute, storage, network, and backup capabilities for production, DR and development/test environments. Added to this was the discovery of the application environment, particularly in the areas of SLA's and business expectations for performance and availability of the applications.

The Discovery phase also resulted in a better understanding of what facilities and capabilities would be available within GovDC. The result of this discovery provided FRNSW IT with 5 options to consider for their future operating model:

Infrastructure	Management	Operating Model
FRNSW owned	FRNSW managed	Self-Managed Co-Location
FRNSW owned	Service Provider managed	Outsourced Private Cloud
Service Provider owned	Service Provider managed	Infrastructure as a Service
Part FRNSW/Part SP	FRNSW managed	Self-Managed Hybrid
Part FRNSW/Part SP	Service Provider managed	Outsourced Hybrid

Operating Model alternatives for FRNSW in GovDC

With these options and with an understanding of some of the future drivers for FRNSW IT, **the Design phase took an approach somewhat different to a standard relocation project.** Instead of defining what infrastructure was required, designing how it would look and simply documenting the design so that procurement and build could commence, FRNSW took a more holistic approach and produced a set of Design Principles.

These principles focused on the key drivers and key considerations to be used when designing a future-proof end-to-end Data Centre infrastructure environment and matched these to the high-level business requirements. In following this approach FRNSW developed an outcome-based or SLA driven design. This meant FRNSW could remain vendor agnostic and keep the business outcomes as the driver for change and not the technology.

The switch to an outcome based approach and the options for the future operating model added complexity to selecting the right solution. FRNSW's Project Steering Committee agreed on a 2 stage procurement process and an Expression of Interest (EOI) was issued to selected members of the ICT Services Scheme (SCM0020). From the EOI responses a short-list of respondents was then selected to participate in a more detailed Request for Proposal (RFP).

During the evaluation of the RFP, it became apparent that deploying an outsourced private-cloud model, with a later move to IaaS could be by-passed and the choice of going direct to an IaaS option was made. As there will be some FRNSW owned infrastructure remaining, predominately in the SAP environment, this will initially be a hybrid model.

Activity	Phase	Dates (To – From)
Project Mgr starts	Inception	Late July 2013
Project Team formed	Discovery	October 2013
Current Infra. doc	Discovery	Mid-October 2013 to Mid-November 2013
Design Principles doc	Design	Mid-November 2013
Expressions of Interest	Design	18 November 2013 to 27 November 2013
High Level Design doc	Design	Mid-December 2013
Request for Proposal	Design	16 December 2013 to 2 February 2014
RFP Evaluation	Design	3 February 2014 to 7 March 2014
Vendor Recommendation	Design	14 March 2014

Timetable of Key Activities to date

As the above timetable shows there was quite an aggressive approach to both the Discovery and Design phases for FRNSW. This was made possible by the engagement of a dedicated and experienced team for this project and through the focus provided by the sponsor and executive team within FRNSW IT.

CHALLENGES FACED

Planning and designing the move from an established in-house data centre into a new state-of-the-art shared data centre provides sufficient challenges in itself. Doing this while maintaining business-as-usual (BAU) support for an emergency services department in the lead-up to their peak season (summer) increases the complexity and challenges three-fold.

Limited Intellectual Property Available

As with most agencies, the FRNSW IT Infrastructure team is resourced to provide operations support for standard BAU activities. The team can provide infrastructure support to most projects however when the project is as large as planning a new data centre, using existing operations staff has a direct impact on BAU. To resolve this, FRNSW took the approach of engaging a number of key resources exclusively for this project. These resources were experienced in the design of data centre infrastructure, yet had no previous exposure to the FRNSW infrastructure environment. This mix was able to minimise the time needed by the BAU team to support the project.

Understanding What Exists

FRNSW's infrastructure has been deployed over the years to address the needs of individual projects and as a result there was not an adequately documented view of the current environment and it was imperative that this view be obtained in order to understand what needed to be migrated. This involved internal scanning, deployment of online discovery tools and a physical audit and bar-coding activity for all infrastructure within both Data Centres.

The outcome of this was that detailed application mapping, network topology diagrams and an accurate asset register were available.

Discovering the GovDC

The Metronode GovDC facilities had not officially opened when FRNSW commenced their discovery activities. The Office of Finance & Services (OFS) were actively working to identify the capabilities that were going to be provided. However, at the time, there were no Marketplace providers and no service descriptions available for the MSB.

This meant that the FRNSW project team had to work closely with the OFS team to understand, and where possible, influence the services and timing of various aspects of GovDC. The FRNSW Network team worked closely with SecureLogic in particular to determine how some of the key MSB capabilities would be designed and offered to agencies and this information is now readily available on the GovDC website.

Balancing BAU Performance

One of the triggers for the migration to GovDC was the ongoing performance degradation of some components of the current FRNSW infrastructure.

The longer it took to finalise the design of the post-transformation infrastructure, the more challenging it was to keep the existing environment available. During the Discovery and Design phases additional infrastructure was deployed and had to be carefully managed to minimise the impact on the final design solution.

WHAT'S AHEAD?

In mid-March 2014 FRNSW finalised the design for GovDC. The outcome of this is that FRNSW will operate in a hybrid environment with the majority of infrastructure being provided by an IaaS Marketplace vendor and the balance being managed by the same partner, but with FRNSW maintaining ownership. FRNSW will have a Memorandum of Understanding (MoU) with OFS for the managed service infrastructure only and when this equipment reaches end-of-life, it will be migrated to the IaaS model.

One key to making this decision was the opportunity to move into an IaaS model without having to carry the cost of the infrastructure themselves. FRNSW and their selected partner have agreed to a pricing model that is based on usage/allocated units, including a ceiling and a floor to allow for bursting and future rationalisation.

Once all commercial aspects of the partner engagement have been finalised, FRNSW's partner will complete detailed design with the aim to finish all migrations before the end of 2014.

CONCLUSION

FRNSW were able to achieve a successful outcome in the selection of a market place Iaas provider however this was not done without a number of challenges being faced and addressed along the way. These challenges included being the first agency to use the Procure IT "as a service" module which meant spending more time finalising commercial agreements as this module was amended accordingly. In fact co-creating a new market place provider within the scope of the FRNSW project was seen as both risky and rewarding and the ability to use the ICT Services Scheme to find a pre-qualified vendor enabled FRNSW to take this risk and to achieve the rewards.

The FRNSW project shows that moving into GovDC can provide agencies with the opportunity to either "lift and shift" or to totally transform their current infrastructure. For an agency following a transformation path, it is important that the pre-requisite amount of effort is spent on the Discovery and Design phases as these are critical to understanding where an agency is today and where it wants to be in the future.

The facilities offered within GovDC are continually expanding and as more service providers enter the market place, the range of services are expected to increase and the cost of these services reduce. The savings this will provide to the NSW government will continue to accumulate and, in order to capitalise on this possibility, FRNSW have negotiated that within their contract term, prices for services cannot move higher but can only decrease. This is an opportunity available to all agencies as they move to GovDC.

As FRNSW's experience has shown, if you can balance the resource constraints of your existing team, use knowledge and experience to build an infrastructure design that will support your agencies current and future needs and pick the right partner to provide this within GovDC, then the move into GovDC and the advantages it offers will benefit you long into the future.

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