



# WORLD'S BEST DATA PROTECTION FOR WORLD'S BEST RESEARCHERS



murdoch  
children's  
research  
institute

## MCRI LEADS CHILDREN'S HEALTH RESEARCH IN AUSTRALIA

The Murdoch Children's Research Institute (MCRI) is an Australian pediatric medical research institute located in Melbourne, Victoria, affiliated with the Royal Children's Hospital and the University of Melbourne. Founded in 1986, MCRI is the largest child health research institute in Australia and one of the top three worldwide for research quality and impact.

The IT team supports MCRI's 1200 researchers, who work across five key areas of clinical research: Infection and immunity, cell biology, clinical sciences, genetics, and population health. Across all these areas advances in instruments and research tools have been enabling researchers to drive their research further, but this has also placed exponentially growing demands on the IT infrastructure. Additionally, new software and new processes allow new insights to be gained from older research data, requiring data to be both saved "forever" and to be easily accessible.

## CURRENT INFRASTRUCTURE STRETCHED TO LIMITS

MCRI's existing data protection solution was working, but required a lot of manual intervention. The existing infrastructure included a single LTO tape library, with LTO6 drives. The continually increasing volumes of data being backed up would soon have required the swapping of tapes to complete the job. Air gapped second copies were kept separately outside the tape library – with some onsite and some at a remote location.

Nick Evans, Infrastructure Manager, noted that "previously, instrument developments matched Moore's Law doubling output roughly every 18 months. Now instruments are producing more and more data, often increasing their data output by 4x in 12 months. Storage requirements and data protection requirements are now growing at 2x or 3x greater than the rate of IT change across the organization." Nick called out DNA sequencing as a prime example, "where a machine would previously generate 10TB in 10 days, it now generates



Dr. Dave Elliot, Team Leader

15TB in 8 days”. Data visualisation has also increased, with many instruments now taking high resolution images at high frequencies – basically creating high resolution videos. Further developments in research instruments and software tools are set to continue in coming years, providing MCRI with an ever growing forecast demand for storage.

### QUICKLY GROWING STORAGE REQUIREMENTS

In 2019, MCRI went to market to update their backup infrastructure to accommodate this growing amount of data, and to refresh their backup storage and software stack. MCRI was looking for a world class, best-of-breed solution which would protect over

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**Nick Evans**  
Infrastructure Manager

4.5PB of data across both structured and unstructured data sets including a large pool of virtual machines. They also required a backup solution

### MCRI'S CHALLENGES

- Automate data protection and active archive across 4.5PB of data which is a mix of structured and unstructured data, and virtual machines.
- Plan for exponential growth of storage and backup into the near future, free of bottlenecks and tight backup windows.
- Minimise overall total cost of ownership (TCO).

### SOLUTION IMPLEMENTED BY XENON

- Arcitecta's Mediaflux for backing up the unstructured data.
- Veeam Availability Suite for backing up the virtual machines and structured data.
- XENON Radon servers for Mediaflux, configured in a failover cluster. XENON Radon servers for Veeam backup and proxy repositories.
- Storage target for all backup data is SpectraLogic Black Pearl appliances in front of SpectraLogic tape libraries for redundant data protection and failover.

that facilitated easy off-site storage, easy to activate fail-over, and an accessible archive tier.

The scale of MCRI's data and the fact that every bit has unique value makes backup a key part of their IT strategy. MCRI is a world class organization, and their growth over the last 5 years and forecast growth into the future demanded a fresh approach to data protection.

### BEST OF BREED DATA PROTECTION

Keeping an open mind, MCRI looked at all options including the incumbent providers. This included cloud options, “but when you factor in the costs to push data to the cloud, costs to store cold data there, and then the costs to pull it back – it really doesn't compare to the cost of having a tape sitting in a library or on a shelf consuming no power, and very little in data centre costs”, said Nick.



MCRI, Melbourne, VIC. Image courtesy of John Gollings.

In the end, MCRI selected a best of breed solution from XENON which included:

- Arcitecta's Mediaflux platform for the management of unstructured data.
- Veeam Availability Suite for backing up VMs and structured data.
- Two XENON Radon servers in a fail-over configuration to run Mediaflux and a second set of XENON Radon servers at each site for the Veeam backup and proxy servers.
- Two SpectraLogic Tape libraries for replicated storage, with two Black Pearl appliances to convert backup data to objects and manage storage in the libraries.

By combining these platforms, XENON was able to deliver a comprehensive stack that hit all of MCRI's requirements within their budget. Key benefits of the solution are:

- Two tape libraries which satisfied the requirements for off-site, replication

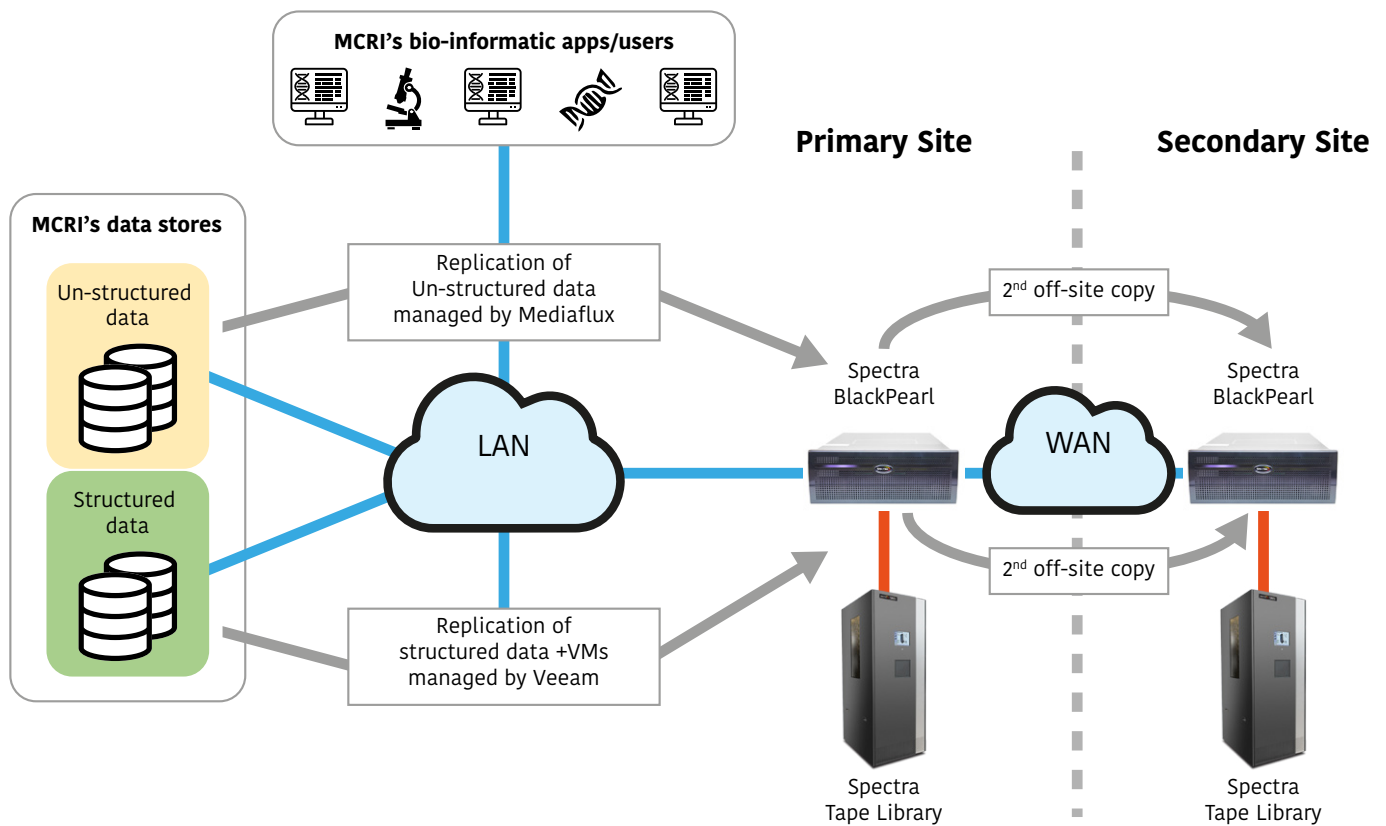
and fail-over. They are easily expandable as storage requirements will continue to grow very quickly.

- Two libraries provided better reliability and fail-over options – and much easier management. There is no need to swap tapes to complete back-up jobs and no need to move tapes for off-site storage etc. Removing tape handling increases reliability – lowers failure rate of tapes – and obviously saves a lot of time.
- Dividing the backup workload between Veeam and Arcitecta allows for tuning of the dataflow and storage targets, and each tool works best with the data it is managing. This results in faster backup processing and quicker recovery times.
- Using object storage on tape provides a high level of inherent protection and the object format is an open standard leaving future options open.

*"XENON really went above and beyond. We always knew there were going to be unknown unknowns in the project, but XENON embraced these with us and worked to come up with solutions."*

**Nick Evans**  
Infrastructure Manager

## MCRI - HIGH LEVEL DATA MANAGEMENT SOLUTION



### SOLUTION PARTNERS



### CONSULTATIVE PROJECT

The project was more than just delivery of the components. XENON worked closely with MCRI throughout the entire process to optimise the new backup solution and integrate it into their current infrastructure. As Nick noted, this “was a major reworking of the infrastructure, and XENON assisted us to manage this transition with minimum downtime to research operations”. A key part of the initial stages of the project was a complete data analysis, especially useful to identify any duplicate or redundant data. Findings from this analysis gave the team a deeper insight into their data and shaped the new backup strategy and procedure.

The new solution pushed the existing infrastructure, and allowed MCRI to examine their existing storage and network upstream of the backup solution. This enabled the XENON MCRI team to optimise the existing storage network to help it feed the backup infrastructure most efficiently.

### TEAMWORK TACKLES UNKNOWN UNKNOWN

This project with MCRI demonstrates XENON’s collaborative approach to projects. Detailed analysis, diagnostics, and careful planning and execution are all foundations. However, in large complex infrastructure projects, unexpected issues are bound to arise. Nick said “XENON really went above and beyond. We always knew there were going to be unknown unknowns in the project, but XENON embraced these with us and worked to come up with solutions. It was clear that XENON was focused on delivering a great solution, not just a project.” XENON’s collaborative approach and unrelenting focus on delivering great solutions serves both MCRI’s IT team and their 1200+ researchers, who can continue to expand their scientific endeavors knowing the IT infrastructure will always be ready to capture and preserve the results.

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