At The Garvan Institute, Upgraded Storage Solutions Support The Latest Advances in Medical Research

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Jim McBride,
Garvan, Information Technology Manager

Summary

Equipment used by medical researchers has become much more sophisticated during the past few years and is capable of generating hundreds of times more data than in the past. As one of the leading medical research facilities in the world, the Garvan Institute prides itself on its success in generating breakthrough research in a variety of diseases. In order to enable its scientists to keep up with the latest innovations in areas such as deep sequencing in human genome research or in gene chips, Garvan needed a storage management solution that offered high capacity, high performance, flexibility and scalability. Since partnering with BlueArc last year, Garvan has been able to provide significantly more capacity for its researchers and is able to support the latest technological advances required by its scientists. In addition, the organization has a clear path to scale up and easily add more capacity as its needs grow.

The Customer

The Garvan Institute of Medical Research is one of Australia's largest and most prestigious medical research institutions. It employs more than 500 scientists, students and support staff and does groundbreaking work in molecular research, particularly for diseases that impact an aging population such as cancer, obesity, osteoporosis, diabetes, neurodegenerative disorders and immune disorders. The Institute began operations more than 40 years ago as a research department of St. Vincent's Hospital in Sydney and today is a member of the St. Vincent's and Mater Health Campus and is also affiliated with the University of New South Wales.

The Challenge

Jim McBride is the Information Technology Manager at Garvan and has been there for about 15 years. While medical research has always generated large amounts of data, McBride began seeing significant increases in demand over the past two or three years. Two factors were driving these increases: (1) the type of research being conducted at the institute — such as deep sequencing and gene chips — was becoming more sophisticated, and (2) the equipment being used by the researchers was also becoming more sophisticated and automated. The result: Researchers were generating hundreds of times more information. These put a significant strain on the institute's IT infrastructure.

"Capacity was evaporating right before our very eyes," McBride recalls. "A cancer researcher might have been connected to a server and would see that he had 40 or 50 gigabytes available. This would limit the ability of our scientists to do certain research — or whether they could even conduct a specific experiment. A single human genome experiment, for example, could generate terabytes of data. Without the disk space, they felt hindered. Some of the researchers were getting desperate and they would wind up buying a three-terabyte disk for their desktop. This disk had no backup, no security. We knew we were starting to go in the wrong direction and we had to get that under control."

BLUEARC®

The Solution

While Garvan was able to get by with its existing technology solution, the need for a long-term solution was apparent. "We could see what was coming and we started looking at different technologies," McBride says. Last year McBride was in the United States and visited two research facilities, both of which had data storage challenges similar to the ones facing Garvan. And both of those facilities were using BlueArc solutions with great success.

Garvan eventually evaluated several vendors and decided to go with BlueArc. Today, Garvan is using a Mercury 100 network storage platform from BlueArc with SAS drives. The total capacity of the solution is 80 terabytes, with 31 terabytes addressing the institute's day-to-day production requirements and an additional 49 terabytes at the backup and disaster recovery site.

The first users went live on the BlueArc system in December of 2009. "We have five major research groups and we went to one initially and said, 'You are going to be the first test,'" McBride says. "We gave them access to that server and for the users it was a very simple rollout. We were able to do it in a way that integrated with our existing solutions so we didn't have to shut anything down. It was, basically, here's this new server on the network, here's access via your usual network password and start using it. It was an immediate success. Those researchers who were looking at having gigabytes for experiments on the old server could now see that they would potentially have 27 terabytes. They could put their experiments right on the server without having to worry about it." Now more than 400 people have access to the BlueArc servers.

The bulk of the data supported by the BlueArc solution is generated by machines and not generated by people. It supports the researchers, while there is a separate file server that supports non-research operations such as email, word processing, human resources and other business functions. Eventually everything will be running on the Mercury, but for now having the high-performance storage solution for the researchers is critical.

Microscopy, for example, is an important part of the work done at Garvan. Having the BlueArc solution is enabling the institute to purchase and utilize more sophisticated microscopy technology. With today's microscopes a researcher can mount 100 slides and each slide could generate hundreds of images. Each image has to be saved and the process has to be unattended and automatic. Each image could be several megabytes and a single microscope could be generating hundreds of gigabytes overnight.

"This is a body of data that can quickly accumulate into terabytes," McBride says. "We must also keep it and access it. Sometimes we've done an analysis and it gets published 12 months later and we need to go back to the original research to shine a brighter light on it. We have to be able to pull that out and analyze it. There was a time where people even suggested that it might even be more economical to actually rerun an experiment rather than keep the image file because it was so expensive to retain the image. But we've been able to address this with the BlueArc Mercury."

Ajaya Sharma, Garvan's Systems Administrator, notes that one of the advantages of having the BlueArc solution is that it is highly scalable. "We generally think of ourselves as needing 100 terabytes," Sharma says. "We'd be comfortable and relaxed if we had that available. The Mercury will be able to take us to two petabytes, so we feel very comfortable." In addition, the BlueArc system can support file transfer speeds of 10 gigabits per second, so Sharma says Garvan is also prepared to support increases in volume as well.

The Results

Australia is taking part in the International Cancer Genome Consortium, a worldwide effort to understand, at the DNA sequence level, various types of cancers. Garvan will be involved in doing research in the analysis of pancreatic cancer and will need terabytes worth of storage to conduct its analysis. "A year ago we wouldn't have been able to do that," McBride says. "The scope of what our research departments can engage in is different because we have the BlueArc system. The thing about research is that it has a genuine effect on the global human health condition. We help to provide a body of knowledge that will give people more hope and hopefully can lead to more targeted treatment of people who suffer from these diseases, plus we can provide hope for earlier detection and perhaps someday the eradication of the disease."

The Conclusion

When it began searching for a vendor to solve its storage management challenges, Garvan was looking for a partner for the next five to 10 years, at least. McBride was happy that Garvan was not the first BlueArc customer in Australia: There were already BlueArc users in animation, geophysics and oil exploration. The fact that there was a local presence made him comfortable, and the fact that his peers in the U.S. were using BlueArc was also important. "We wanted someone to take this journey with," McBride says. "At no point did we wonder whether we should have gone with someone else. Now we have 400 happy researchers here. I like to think of IT as a referee in rugby. If it's a good game, you don't even notice that he's doing his job well. That's what we try to do in IT. We want our researchers to be using all of their brain cells for cancer and diabetes rather than for administration. In the old days they had to worry about cleaning up files and server capacity. They don't have to do that anymore."

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