
# Case Study: Manukau Institute of Technology

**New Zealand Technical Institute Graduates to 10 Gigabit Ethernet Network**

## Summary

As one of the largest tertiary institutions in New Zealand, Manukau Institute of Technology (MIT) offers more than 1,500 courses to over 32,000 students on four campuses and 10 free computing classrooms throughout the Auckland region.

Like many large organisations, MIT was experiencing the growing pains and limitations of its existing network environment. "We were running out of bandwidth among our campuses and our needs were getting beyond the 1 Gigabit Ethernet backbone that we had originally provisioned," says Kylie Clark, MIT's network administrator. "This was due mainly to the applications running on the network and increased use by students."

## Objective

For years, MIT's campuses had relied on a network based on Foundry equipment. Originally designed as a single 1 Gigabit Ethernet environment anchored by a pair of BigIron® 8000 backbone switches, MIT ran into the classic problem of an escalating environment that was growing beyond network capacity.

While the network had served MIT very well, over time the institute wanted to move to next-generation technologies and a 10 Gigabit Ethernet infrastructure to accommodate a variety of applications, including CAD, software used in simulations for maritime training, and eventually VoIP, video conferencing, and video streaming.

The institute also had security concerns, which is natural with the thousands of potential users that are spread across multiple sites.

Other challenges included building a new computer room and connecting multiple sites into something akin to a metro area network. "A lot of our needs have to do with prioritization for specific applications," Clark says. "Video streaming has low latency requirements, for example."

## Solution

Since MIT was extremely pleased with the initial Foundry implementation, the institute decided to deploy additional Foundry solutions to create a network that would take MIT into the future.

Improvements included deploying Foundry's SuperX™ and FastIron® Edge X series switches that support Foundry's 10 Gigabit Ethernet metro ring protocol (MRP). MIT is also using Foundry's ServerIron® switches for load balancing website and directory services traffic.

One of the most important improvements to MIT's network is in the area of security. To improve access control and visibility over the network, the school relies on IronView® Network Manager (INM), which applies Snort open source network intrusion and detection system, the most widely deployed such technology in the world.

http://www.manukau.ac.nz/

### Industry

Education

### Company Description

Manukau Institute of Technology (MIT) is one of the largest tertiary institutes in New Zealand, offering more than 1,500 courses from certificate to degree level qualifications in a number of fields, including Business, Engineering, Teaching, Computing and Information Technology, Visual Arts and Nursing. MIT comprises three campuses in Counties Manukau and the New Zealand Maritime School located opposite the Ports of Auckland.

### Objective

- Maintain reputation for network excellence and ranking as one of the top educational networks in New Zealand
- Migrate from a 1 Gigabit Ethernet network based on Foundry Network products to a 10 Gigabit Ethernet network and next-generation technologies such as video streaming and VoIP
- Beef up security for the network, which supports 15,000 students and 1,000 faculty and staff
- Connect multiple sites into a cohesive metropolitan area network

### Solution

- Deploy additional Foundry products, including SuperX and FastIron Edge X switches to support the creation of a 10 Gigabit metro ring
- Foundry network supports 120 servers and more than 3,500 nodes
- Improve network security with Foundry's IronView Network Manager with sFlow and Snort open source network detection and intrusion system
- Foundry ServerIron switches for load balancing

### Results

- Users experience significant performance improvement in terms of being able to send/receive multi-gigabyte files at faster speeds
- A fully secured network environment that provides the ability to track activity and pinpoint if a machine is under attack
- IronView Network Manager reports deliver detailed information for reprioritising traffic to maintain network performance
- Foundry Metro Ring Protocol introduces sub-second failover response, preventing network disruption
- IronView Network Manager allows MIT to implement policy changes in under a minute; rather than a half-hour

INM helps network administrators manage and configure the Foundry line of equipment, as well as network devices from other manufacturers. It features integrated sFlow technology to deliver hardware-based and real-time network monitoring and accounting capabilities for all network traffic, including heterogeneous traffic from Sun Solaris and Mac G5 servers.

## Results

MIT's upgraded network has led to significant performance improvements for users. "If you ask our students, they'll say it's better in terms of the speed at which they can download files," Clark says. "Also, the size of the files that they can transfer is much larger now. Our visual arts students have 3GB to 4GB files, and it would not be possible to support these applications if we were running less than a 10 Gigabit Ethernet environment."

Probably the biggest benefits have come from the security side, according to Clark. "We have the network so severely locked down that we are able to prevent students who try to jump into places they shouldn't," he says. "With INM, we have the ability to track activity and pinpoint what machine on the network is under attack and locate where the machine is."

The ability for INM to convert sFlow packets into a readable packet format enables the IT staff to look at specific client or server traffic with no disruption to the service.

"Snort lets me know if students are sniffing around in places that they shouldn't, and INM lets me have a closer look at servers," Clark says. "If we're having a problem, we can do a packet capture without taking the server down. We don't have to move the server out of the normal environment or add equipment into the infrastructure."

INM also helps MIT better monitor and manage network traffic, giving it a clear understanding of network traffic. INM reports provide information on what applications are utilised at what specific times and days. "I can see if there is over utilisation in a VLAN or network section."

The INM reports alert administrators when they need to reprioritise traffic. "It keeps us a half step ahead of whatever anyone needs to do," Clark says. "We have a very fluid environment, and INM allows us to respond quickly to changes."

As an example, Clark says a policy change that might have taken a half-hour to implement now takes under one minute.

With the addition of services such as VoIP and streaming video, the ability to closely analyse traffic streams will become even more important to MIT's network administrators.

MRP will also help MIT support the new services and enhance overall network reliability. The protocol allows MIT to provision redundant and robust communications between the two primary campuses and the diverse buildings contained within them. With MRP, MIT adds redundancy into its network.

"If we used a spanning tree solution, during a network interruption traffic would roll over to the backup devices in about 30 to 35 seconds, disconnecting the user," explains Clark. "With MRP, we have sub-second rollover and service is not interrupted."

Overall, Clark is extremely happy with the new and improved network based on Foundry's equipment. "Right now, our network traffic is quite clean," he says. "It's good to know that the network is running as we expected with no hidden surprises."



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>
> — Kylie Clark
> Network Administrator
> Manukau Institute of Technology

## Foundry Networks



Foundry Networks, Inc. (Nasdaq: FDRY) is a leading provider of high-performance enterprise and service provider switching, routing and Web traffic management solutions including Layer 2/3 LAN switches, Layer 3 Backbone switches, Layer 4–7 Web switches, wireless LAN and access points, access routers and Metro routers. Foundry's 10,000 customers include the world's premier ISPs, Metro service providers, and enterprises including e-commerce sites, universities, entertainment, health and wellness, government, financial, and manufacturing companies. For more information about the company and its products, call 1.888.TURBOLAN or visit www.foundrynetworks.com.

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