Ensuring Access to Vital Caregiver Information in the Bay of Plenty

Customer Case Study

District Health Board provides clinicians and healthcare staff continuous access to healthcare systems with Cisco load balancing technology.

EXECUTIVE SUMMARY

BAY OF PLENTY DISTRICT HEALTH BOARD HAUORA A TOI

Customer Name: Bay of Plenty District Health Board

Industry: Healthcare

Location: New Zealand

Challenge

- Require 24/7 access to critical imaging and lab information systems to maintain quality of care
- Server upgrades resulting in application downtime
- Long hours spent on maintenance, causing resource burden

Solution

Cisco® Application Control Engine (ACE)

Results

- High availability for healthcare applications
- Reduced risk of service disruption due to system failure or maintenance
- Room to accommodate further applications, sites, or users

Business Challenge

The Bay of Plenty District Health Board (BOPDHB) is one of 20 district health boards in New Zealand. The health board serves a population of 200,000 on the northern area of New Zealand's North Island. It's activities range from delivering health, disability, community and mental health services, through to support functions such as the clinical directorate, corporate services, and information management services, as well as planning health service development, funding and purchasing both public and non-government organisation health services for the region, and Maori health.

To maintain the quality of care, the health board needs to ensure that clinicians have access to critical imaging and lab information systems. Important information such as X-ray images, CT scans, and blood tests must be easily accessible and instantly available, especially in emergencies. "It's critical that such information be available to staff in the emergency department and operating theatres to help them make the best medical decisions," said Grant Ardern, Chief Technologist, Bay of Plenty District Health Board.

The BOPDHB also needed to make sure that IT services were available round the clock. "We have a total of about 180 server instances; physical and virtual, running about 300 different healthcare systems, and supporting about 3,000 users. When the underlying hardware needs to repaired or replaced, or if the applications and middleware needed to be upgraded or patched, it could result in hours of downtime. This is something clinicians dread to hear," said Grant.

" In accident and emergency, there's really no off-peak period. If a patient was brought in with life-threatening internal injuries, doctors and nurses should be able to access the information systems whenever they need to, in order to save lives."

Grant Ardern, Chief Technologist, Bay of Plenty District Health Board

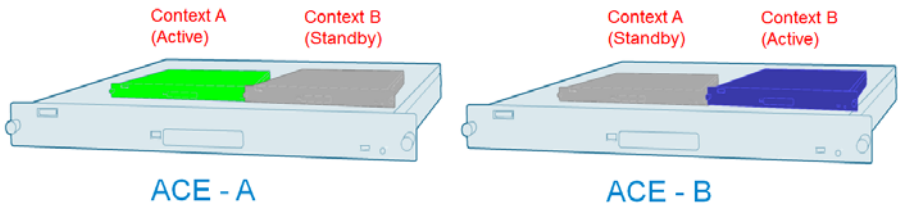
The maintenance burden was also stressful for IT staff. Any repairs or upgrades had to be carried out after-hours or on weekends. This strict time window meant that staff needed to work under severe time pressure and at odd hours of the night. Even with this schedule, it would invariably impact some departments that needed to function round the clock. "In accident and emergency, for example, there's really no off-peak period. If a patient was brought in with life-threatening internal injuries, doctors and nurses should be able to access the information systems whenever they need to, in order to save lives," he added.

Solution

In 2008, the organisation decided to introduce Cisco application load balancing technology into its network. As the organisation upgraded their core network to Cisco Catalyst Switches, two units of the Cisco Application Control Engine (ACE) service modules were also deployed. Cisco ACE delivers intelligent load-balancing and content-switching technologies integrated with acceleration and security capabilities. By load balancing application traffic among the clustered servers that delivered key applications, BOPDHB would ensure that vital applications remained responsive and continuously available.

"We experimented with software-based load balancing before this, but without much success. Then, we learnt about Cisco ACE technology at a Cisco Networkers Conference. After the event, I worked with our system integrators to procure and deploy Cisco ACE right away. We first used it to load balance network traffic to our Intranet servers as a pilot project. Once we were convinced of its capabilities, we added our lab information systems, and it just kept growing from there," said Grant.

Today, BOPDHB runs over a dozen IT services on the Cisco ACE modules, including email and scheduling, Intranet, payroll systems, lab information systems, picture archiving and communications system (PACS), web proxies, business reporting servers, as well as their public website. "In fact, anything that requires fast response times and high availability, we've put under Cisco ACE," said Grant. These services are delivered from a regional data centre in Hamilton (which also supports other health districts) and another data centre in Tauranga.



Above: The Cisco ACE modules in BOPDHB's network, running two active-active virtual contexts each

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Grant Ardern, Chief Technologist, Bay of Plenty District Health Board

Results

High availability for healthcare applications

Since the Cisco ACE modules were deployed, the organisation has dramatically increased the availability of key healthcare applications, particularly the ones that require 24/7 operation, such as Exchange, lab and PACS systems. "It's been a revolutionary change for us. Before Cisco ACE, we had to have planned outages practically every three months. Since the implementation, some of our applications have been up and running without interruption for years," said Grant. "Now, whenever we have to deliver a service without interruption, the first I do is put it on Cisco ACE," he added.

Above: Healthcare staff enjoying uninterrupted access to applications

Reduced risk of service disruption due to system failure or maintenance

With Cisco ACE, BOPDHB IT staff can detect and respond to network faults more quickly. Using the Cisco Application Networking Manager, health monitoring can be achieved by verifying the server response or checking for any network problems that can prevent a request to reach a server. "We also make use of virtual contexts on the Cisco ACE to isolate different groups of applications. This improves manageability, and also means that any faults in one application won't affect any others, even though they run on the same ACE module," he added.

The Cisco Application Networking Manager has also improved manageability by providing web-based delegation of tasks to IT administrators, such as service activation and suspension. "This means we can assign areas of responsibility and access according to roles," said Grant.

Above: Cisco Application Networking Manager (ANM) provides centralised management capabilities for Cisco ACE.

PRODUCT LIST

Data Center

- Cisco ACE (Application Control Engine) Module

During regular maintenance, services are also unaffected. "Our people can simply take a server offline from the cluster, patch it, maintain it, or even move it to another location without worrying about extended service outages. Thanks to the Cisco ACE ability to abstract IPs, even if a particular IT service was delivered from a single server, we could bring a spare box online to replace the current server without anyone noticing," said Grant.

Ability to scale to accommodate more applications or users

With Cisco ACE, costly upgrades are not necessary to accommodate growth. Using a "pay-as-you-grow" model, the Cisco ACE enables scaling from 4 Gbps to 8 Gbps to 16 Gbps throughput on a single Cisco ACE module using only a software license upgrade. In addition, up to four Cisco ACE modules can be deployed in a single Cisco Catalyst Switch chassis to deliver up to 64 Gbps throughput. "Such performance and scale means that we have plenty of room to grow. At the moment, we are licensed on a 4gbps throughput, and experiencing around 1000 transactions per second. There's nothing stopping us from adding more applications when the need arises," said Grant.

Next Steps

"Our plan is to have every critical application on the ACE," said Grant. "The Cisco load balancing solution that we have implemented has been extremely successful and definitely something other organisations could benefit from. In fact, we regularly review network designs and provide thought leadership to other districts. The support we've received from the Cisco team, and the technical leadership of the company has a whole, has contributed to our success in a big way," he concluded.

For More Information

For more information on the Bay of Plenty District Health Board, visit www.bopdhb.govt.nz
For more information on Cisco ACE Application Control Engine, visit http://www.cisco.com/go/ace

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