Case Study

The Sydney Harbour Bridge

Sententia keeps Sydney's Traffic Moving and its Global Icon, "The Coathanger" Running

The Sydney Harbour Bridge is a globally recognised landmark. Along with the Sydney Harbour Tunnel, these two critical elements of Sydney's road infrastructure to The Bridge and Tunnel service over 43 million vehicles per year and are vital to keeping Sydney, a global city, moving.

The Challenge

As a public utility, the Harbour Bridge and Tunnel generate an average daily revenue of over $500,000 from the tolling of vehicles using the roadways. Any downtime will have a severe impact not just on revenues and the taxpayer but just as importantly, on Sydney's road infrastructure itself.

Given the mission-critical nature of the technology used to service the Harbour Bridge and Tunnel, Sententia, a highly skilled and talented provider of information technology solutions was asked to design, implement and maintain a secure solution for Roads and Maritime Service, New South Wales for the Sydney Harbour Bridge and the Sydney Harbour Tunnel to ensure tolling systems are fully functioning and operational with no less than 99.99999% uptime.

The Considerations

The requirements presented significant challenges and only a unique practice technology solution would suffice. Sententia consulted with Veritas, an industry-leading vendor of backup and disaster recovery solutions, to collaboratively design a solution that met the high uptime requirements of the RMS.

A critical consideration was risk management, should the tolling system fail. Special consideration was placed on a more widespread failure involving the data centre or potentially even a catastrophic event at the physical site itself.

The Sententia design team looked at the requirement from the most challenging angle - how could rapid recovery and seamless control be achieved in the event of any failure or catastrophic event?

Snap Shot

INDUSTRY

Government and Transportation

CHALLENGE

The NSW Roads and Maritime services required a robust and mission critical disaster recovery (DR) solution for the Sydney Harbour Bridge and Tunnel tolling platform. Uptime was essential to Sydney's road network and public revenues.

SOLUTION

- Sententia Design, Implementation and Managed Services
- Veritas Storage Foundation High Availability
- Symantec Cyber Security
- Juniper SRX Firewall with EX Series Network Switches
- HP BLC 7000 Blade Server
- Egenera PAN Manager

CUSTOMER BENEFITS

- Innovative design ensures maximum uptime
- 100% uptime since its implementation in March 2012
- Seamless Disaster Recovery operations
- Nil revenue impacting events to date

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"Sententia has performed tremendously well in providing IT services towards the operations and maintenance of the Tolling system infrastructure. Their versatility and professionalism throughout the years has been exceptional."

Senior Executive

Roads and Maritime NSW

ABOUT SENTENTIA

Sententia is a leading Australian systems integration company with a team of highly skilled and talented experts able to solve all your IT challenges.

Sententia provides secure solutions for a vast suite of industries including finance and banking, government and defence, telecommunications, media and corporate.

Sententia's resourceful and inventive IT professionals think outside the box. We create, implement and support high performance and highly-available infrastructure to make life easier for our clients.

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Roads & Maritime

The Sydney Harbour Bridge

The Solution

The Veritas SFHA (Storage Foundation High Availablity) technology was placed at the core of the solution. In order to cater for high availability as well as redundancy, Sententia built two systems, one for production, and a mirror one for DR, in geographically diverse data centres. The solution was different, but in principle, simple – every month, the production site and the DR site would switch. This would ensure that both sites are always being rigorously serviced, monitored, tested and maintained to production standard at all times, and should the production site fail, the DR site can be activated immediately and with minimal human intervention required.

With the Veritas SFHA, Sententia was able to minimise the potential risk for the RMS to offer the business certainty and continuity it needed to ensure that the tolling system for Sydney Harbour Bridge and Sydney Harbour Tunnel would be running smoothly, efficiently and reliably at all times, and that any failures could be rapidly and effectively managed and solved. In addition, the Juniper and Symantec solutions ensure the solution offers resilient information security.

Technical Overview

- The ETCS (E-Tolling Control Systems) clusters are located at two data centres across metropolitan Sydney and Wollongong.
- The two Production Sybase/SAP ASE HA clusters function as a mutually exclusive primary site. The Active sites roles are switched each month.
- The alternate Clustered Site operates as the backup/DR site.
- The ETC ASE database is replicated from the primary to the backup site asynchronously using Sybase/SAP Replication server.
- A combination of smart cron and rsync jobs keep other non DB content in sync.
- Approximately every four weeks, an Archiving & Database Optimisation maintenance task is performed which results in the site switch operation (active DR) being initiated.
- As part of this process, the sites roles and associated production live states are switched. The primary site becomes the backup and the backup becomes the primary site for the Production Sybase/SAP ASE clusters only.
- The Juniper firewalls production and backup roles are switched and regularly patched as part of this 'pro-active' DR & maintenance task to test the infrastructures availability end to end.
- Veritas SFHA is used with corresponding Sybase/SAP and SMB agents to provide site level HA capabilities.
- The Veritas Volume Manager component is used in the ASE cluster for storage provisioning of RHEL 6.4 physical hosts on top of a SAN
- The Veritas Volume Manager and File System component operates in conjunction with a SAN array to provide mass density flexible tiered storage.
- Veritas NetBackUp is used to provide back up and extended DR capabilities (RHEL, VMWare, Windows)
- Symantec Endpoint Protection, Key Management Server and Symantec Data Center Security also form part of the overall solution.