



# APNIC Utilizes Nominum ANS to Serve the Asia Pacific Internet Infrastructure

## CASE STUDY

### CUSTOMER PROFILE

Regional Internet registry for the Asia Pacific region

### BUSINESS SITUATION

- Critical role in Internet infrastructure
- Need for operational stability
- IPv6 adoption

### SOLUTION

- Nominum ANS

### KEY BENEFITS

- Enhanced service stability
- Improved throughput
- Support for emerging standards

**“Fast servers are crucial to our reputation. Since we implemented Nominum ANS, the CPU load on our busiest server has dropped by almost 70 percent; and, the DNS server process start time, which used to take several minutes, is now less than 30 seconds.”**

Terry Manderson  
Network Operations Manager  
APNIC

APNIC, the Asia Pacific Network Information Centre, is one of five regional Internet registries that support the global operation of the Internet. APNIC’s role is to provide IP address allocation and registration services to the Asia Pacific Internet community, which comprises 56 economies, including Japan, China, India and Australia.

APNIC has an important role in the facilitation of the global Internet. As part of its responsibilities, APNIC maintains the authoritative servers that perform reverse DNS lookups for the region, mapping IP addresses to their associated domains (in-addr.arpa servers). Reverse lookups are used for troubleshooting, anti-spam and security measures. In addition, APNIC runs secondary authoritative DNS servers for country-code Top Level Domains (ccTLDs) in the Asia Pacific region. APNIC utilizes Nominum’s Authoritative Name Server (ANS) to serve these vital infrastructure functions.

### Challenge: to Support the Growing Internet Infrastructure in the Asia Pacific Region

As Internet usage increases in the Asia Pacific region, so does the importance of APNIC’s authoritative DNS servers. Because they are crucial servers that provide core Internet services, APNIC’s DNS servers need to be available at all times.

- The in-addr.arpa servers, which manage reverse DNS lookups, are critical to many email and security services. The increased prevalence of spam has resulted in a corresponding growth in anti-spam activity, which relies on reverse DNS lookups
- The secondary ccTLD servers serve the country-code level DNS queries. They distribute the query load and provide essential redundancy to protect the Internet DNS infrastructure from network or server failures

APNIC’s servers are subject to frequent updates, and maintaining optimal availability while keeping the servers up-to-date had been a challenge for the operators. Some servers manage up to 360 zones, and each time APNIC needed to add a zone, they were forced to reload the server, creating a measurable and discernable outage to all of the zones served by that system. Restarting created outages of several minutes, depending on the size of the configuration file.

In addition, the manual process of editing and reloading configuration files is slow and inherently error-prone, and any errors discovered on the reload would necessitate further server restarts.

In researching solutions, APNIC wanted to deploy DNS servers that provided:

- High throughput and low response latency
- Operational stability, without unplanned outages or lengthy restarts

- Scalability to handle high traffic levels and large data volumes
- The ability to make configuration changes on the fly, without needing to reload the server
- Support for IPv6 and DNSSEC. Emerging standards like DNSSEC and IPv6 have implications for DNS performance and scalability. APNIC assigns and manages IPv6 addresses, and must support IPv6 with the same high standards as IPv4
- Ongoing support. APNIC wanted a solution with responsive, expert and ongoing technical support

**Nominum ANS: Reliable, Scalable Performance for Essential Services**

Nominum ANS met all of APNIC’s requirements. Today, ANS runs the in-addr.arpa reverse resolution servers in the Asia Pacific region, as well as secondary country-code Top Level Domain servers.

ANS has delivered measurable and significant improvements in scalability and throughput. According to Terry Manderson, Network Operations Manager for APNIC, “Since switching to ANS, the CPU load on our busiest server has dropped by nearly 70% despite the number of queries per second having more than doubled, from 3,500–4,000 queries per second to more than 9,000.”

Using ANS has also reduced the downtime on these critical servers. APNIC has not experienced any service outages caused by the authoritative servers. They can change or add zones without restarting the servers because ANS supports online reconfiguration. And, when a restart is required, ANS can be brought back online in less than 30 seconds.

Nominum ANS also offers full support for IPv6 without any performance degradation, so APNIC is well-positioned for the future, when IP addresses themselves will change.

In addition, ANS supports DNSSEC protocols, combining public key cryptography with digital signatures to verify the validity of DNS data.

**Summary**

As the Internet continues to grow in the Asia Pacific region, APNIC will continue to play a role in the stable and reliable operation of the Internet. With ANS, APNIC can continue to fill this role with a resilient infrastructure that links the IP addresses it assigns and manages to their associated domain names on the Internet.

**ABOUT NOMINUM**

Nominum’s network naming and addressing solutions power the world’s largest always-on networks. Nominum is a global provider of ENUM-based IP-application routing directory, DNS and DHCP solutions that enable communication providers to deliver high-quality, always-on broadband Internet and innovative services to their customers, including VoIP, push to talk, fixed-mobile convergence, IPTV, and triple-play. For more information, visit [www.nominum.com](http://www.nominum.com).

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