The growing popularity of the Internet has taken many organisations by surprise. Established mechanisms such as fax technology, electronic data interchange (EDI), electronic messaging, and file transfers over private networks have dominated electronic commerce until now.

The advantages of the Internet are changing that technological landscape very rapidly. Those advantages include:

a) Worldwide connectivity.
b) Hardware and software independence provided by ubiquitous Web browsers.
c) User friendliness.
d) Interactive nature of Web-aware technologies.
e) Affordable technology.

However, many of those advantages are shadowed by the lack of widespread use of security and data protection mechanisms. This chapter reviews the history of the Internet in New Zealand, discusses the main problems associated with data protection on the Internet, highlights some of the solutions being implemented in New Zealand, and reviews the main issues and challenges for the future of secure Internet communications.
THE INTERNET IN NEW ZEALAND

One of the first attempts to link research organisations via computer networks was made during the early 1970s by the New Zealand Department of Scientific and Industrial Research (DSIR). The connections were made using dial-up lines and dumb terminal emulation programs.

In 1985 Victoria University of Wellington established a dial-up link to the University of Calgary in Canada for the transfer of electronic mail, and the University of Canterbury in Christchurch established a link to the University of Waterloo (also in Canada). These connections preceded any interconnection among NZ universities (Wiggin, 1996).

In 1986 Victoria University established a link with the University of Melbourne and started carrying and reselling Usenet and e-mail access to several organisations in New Zealand, including other tertiary education entities and government research institutes.

In 1989 Waikato University in Hamilton established the first Internet link to the US via a leased line running at 9600 bits per second.

In 1990 the Kawaihiko network was formed linking all seven New Zealand Universities. This network was later (1992) incorporated into TuiaNet connecting the universities to the government research units (Crown Research Institutes) and most of the remaining tertiary education organisations.

Most of the Internet traffic between New Zealand and the rest of the world passes through facilities provided at The University of Waikato by NZGate, a nonprofit activity of that university. NZGate handed over management of the international links to Netway and Clear Communications in early 1996. The Internet gate, still operating out of Waikato, was renamed the New Zealand Internet Exchange (NZIX), and it provides several 2 Mbps links to the United States, and a 128kbps link to AARNET at the University of Melbourne in Australia.

Some organisations, such as Compuserve Pacific, Telstra and AT&T, provide their own overseas connections to link their customers to the Internet. A complete reference to Internet access in New Zealand, including a list of the Internet Service Providers (ISPs), can be found in Wiggin (1999). A somewhat more detailed list of major
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