Wi-Fi Deployment: A Survey of Large New Zealand Organizations

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ABSTRACT

Wi-Fi (also known as IEEE 802.11b) has proved to be a viable technology for wireless local area networking applications in both business and home environments. There has been a significant growth in Wi-Fi networking in recent years, both in applications and as the subject of academic research papers, articles in the IT press and research house reports. How much of this material, predominantly based on overseas experience, is relevant to New Zealand’s early-adopter context? This paper reports on a survey of large New Zealand organizations focusing on the level of Wi-Fi deployment, reasons for non-deployment, the scope of deployment, investment in deployment, problems encountered, and future plans. Survey results show that most organizations at least have considered the technology, though a much smaller proportion has deployed it on any significant scale.

Keywords: deployment; IEEE 802.11b; Wi-Fi technology; wireless LAN (WLAN)

INTRODUCTION

Wi-Fi (short for wireless fidelity) is one of the most popular technologies for wireless local area networks (WLANs) that has been standardized by the IEEE committee as 11 Mbps WLANs. In the generally flat hi-tech landscape of the last few years, Wi-Fi stands out as one technology that still attracts a great deal of interest (Broatch, 2003). It has experienced rapid growth both in applications and as the subject of academic research papers, articles in the IT press, and research house reports. However, the vast majority of these research papers about Wi-Fi technology is based on overseas experience. Therefore, the question is how much of this material is relevant to the New Zealand context.

New Zealanders generally have been early and enthusiastic adopters of technology. As Myers (1996) points out, New Zealanders have developed innovative IT applications to improve the competitiveness of many sectors of the economy. Wireless
technology appears to be no different. According to a recent New Zealand Trade and Enterprise (NZTE) report, New Zealand is a beacon for advanced wireless innovation and among the global leadership in the fixed and mobile wireless space (MediaLab South Pacific, 2003). The major national telecommunications provider reports that New Zealanders have been quicker than most to access mobile Internet services (Telecom, 2003).

Based on the previous discussion, one can believe that New Zealand’s experience with wireless technology may differ from that documented in overseas research. However, there is a dearth of published research focusing on New Zealand experiences. The most comprehensive survey in recent times is the NZTE report on New Zealand’s fixed and mobile wireless sector (MediaLab South Pacific, 2003). Most of the previous studies have focused on both users and vendors. In terms of the end-user experience, some case studies of individual organizations have been conducted (Jackson, 2003; Smith, 2003), and a small number of questions on wireless have been included in surveys on general IT issues (Bland, O’Neill & Bell, 2003; Hind, 2003).

In this paper, we report on a survey of Wi-Fi technology in New Zealand’s largest IT end user organizations. The survey seeks to gauge the current level of Wi-Fi deployment in these organizations and provide some details about the deployment process and related issues. To gain insights, we compared our survey results with those of similar surveys conducted overseas. We found that most large New Zealand organizations have at least considered Wi-Fi technology, although a much smaller proportion actually has deployed it on any significant scale.

The paper is organized as follows. We first summarize the previous work highlighting the growth of Wi-Fi in New Zealand. We then briefly describe the development of the survey, the target sample, and how it was administered. The survey results are analyzed and interpreted, followed by discussion and conclusion.

BACKGROUND AND RELATED WORK

In this section, we summarize the previous work highlighting Wi-Fi’s position in the wireless networking environment, its rapid growth, the benefits and limitations of Wi-Fi in general, and the current state of Wi-Fi technology in New Zealand.

Wi-Fi in Wireless Networking

IEEE 802.11b is only one of numerous wireless networking standards. McFarland and Wong (2003) provide a very good introduction to IEEE’s 802.11 family of standards. One is 802.11g, which is compatible with 802.11b but uses a different radio signal modulation technique to increase throughput up to 54 Mbps. Another is 802.11a, which also increases throughput to 54 Mbps by operating over a larger radio frequency range, making it incompatible with 802.11b. In addition to the IEEE, other bodies have defined wireless networking standards for particular geographic regions. For instance, the European Telecommunications Standards Institute (ETSI) has defined the High Performance Radio LAN standards, HiperLAN, and HiperLAN2, similar to the 802.11b and 802.11a standards, respectively.

The IEEE 802.11b/a/g and HiperLAN standards generally are considered as most suitable for WLANs. As Varshney and Vetter (2000) point out, there are other technologies better suited to larger wireless metropolitan area networks (MANs) and wide area networks (WANs). For instance,
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