



# Fieldtrip write-up: Linux for total cost of ownership savings

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## 1 Introduction

Field trips are an intrinsic part for students to apply the context of academic concepts into their chosen profession and industrial setting. A computing degree class had field trip notes posted to a discussion board, with material reviewed in class and used as common experience to ground synthesis of information systems management theory.

Plumbing World was one of the case studies where students talked with Chris Hocking, IT Manager. The following Linux case study is a result of the students' collaboration.

## Plumbing World

### 1.1 Background

Plumbing World is a 100% New Zealand owned national plumbing merchant. Its core business is providing plumbers, drainlayers, gasfitters and contractors with the right product for every job.

### 1.2 Plumbing World Support Office

Plumbing World information technology is centralised in Palmerston North with four staff supported by outsourced IT services. The service levels provided are with Gen-I for hardware support, development of LAN is with Telecom managed services, and CatalystIT provide Linux customisation. Over the past six years the IT Support Office has streamlined staff from 13 to four members. Previously development and maintenance of FORTRAN applications used to require Plumbing World to employ 15 full time developers.

### 1.3 Infrastructure

The core system of Plumbing World uses Cisco gear with custom made firewalls, Servers using Sun systems (which are transferring to), IBM Blade Servers, Quad Processor Cores and a legacy HP3000 Clydis system to ensure applications developed in FORTRAN were kept alive. The hardware refresh server has 12 processors, a 200 gigabyte disk storage array, with real-time connectors capable of processing 30000 transactions. This capability has yet to be reached. Plumbing World's test server has 10 gigabyte disk arrays.

### 1.4 Network

The connectivity at head office consists of frame relay and ADSL connections to branches via a direct fibre connection to telecom. 10 megabit internet connection is also feed via the fibre. The frame relay connections terminate with a 512 kilobit connection in each of the

branch offices. To ensure that their business needs are met, all the branch office network traffic is prioritised using traffic shaping. Half of all traffic is allocated to their sales order transaction processing which ensures that this always has sufficient bandwidth to operate efficiently. The remaining bandwidth is used for internet and email communications; however they avoid unnecessary traffic by blocking sites like Trademe, Hotmail etc.

Utilising Linux as their main operating system has allowed them to realise a reduction in the network traffic by 38% compared to their experience with Microsoft based network traffic. This has resulted in the reduction of bottlenecks in the network allowing the network to run efficiently even though they are going ahead with an upgrade to gigabit networking in the server backbone.

### 1.5 Open Source at Plumbing World

Plumbing World, PWL, has some 538 Linux seats, combination of workstations and thin clients with a few exceptions where boxes support legacy MS Windows for functional software such as the human resources system and the CEO who is reluctant to change to Open Office and Linux. The Linux variant they use is Debian running a Gnome desktop. There are approximately 200 Linux thin client setups to the forty remote sites that Plumbing World Support Office can manage from their central location. This centralisation of technology easily provides updates, rollouts and fault correction with the use of a web based Remote Image Management system as the remote offices continue trading with no electronic disturbance.

The software, such as Open Office 2.0 and Mozilla that the company has implemented is based around an open source Linux/Unix combination depending on what hardware it is. All servers and critical processing hardware run Linux operating systems. They have minimised the use of propriety systems such as MS Windows, however it is still used for a few specialised software packages such as their human resource system.

### 1.6 Total Cost of Ownership Savings

The total cost to implement the Linux software in the organisation was around \$70,000. This resulted in a total cost of ownership savings of \$1.4 million after eighteen months as a direct result of avoiding propriety systems like Microsoft Windows and Office.

## Conclusion

The Linux environment planned and implemented by Plumbing World is efficiently and effectively meeting business needs.