Linux Terminal Solutions for Education

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1 Introduction

This document describes how using an open source solution is providing a low-cost, sustainable ICT solution for Ocker Hill Junior School, West Midlands. As well as using freely available software, the project has looked to use refurbished equipment to give a solution that the school wants at an affordable cost. The main benefits of this solution are:-

1. Low cost, both initial and recurring.
2. Complete solution, including ongoing development and training.
3. Resilient, low maintenance solution.

This solution has been provided in partnership with the ICT support unit within the local authority, Sandwell Education Microelectronics Unit (EMU), combining both educational and technical expertise to deliver the solution.

2 Providing Access

The aim is to provide ICT access as part of normal classroom activities, so that wordprocessing, Internet access and document sharing can be done seamlessly as part of the normal teaching activity.

The computer system is based on the K12LTSP solution (see links at the end of the document), which provides Linux terminal services based on the Red Hat 7.1 distribution. The server provides the processing capacity for applications and networking resources and not accessible to the class. The client equipment is this pilot is refurbished PC's, which have no local harddisks or peripherials. This makes them ideally suited for the classroom environment, with all the management and configuration taking place on

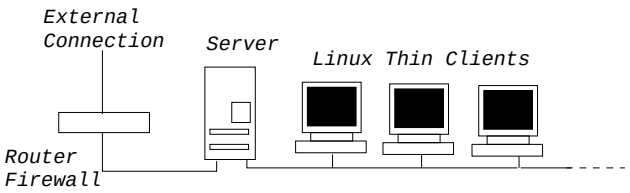

Figure 1: Linux Terminal Network Configuration

the server. It is also possible to used new Thin Client equipment, such as the New Internet Computer (NIC), which provides a full range of multimedia functionality.

All of the server and client software is open source, that is freely distributable without license restriction or cost. Each client machine runs a Gnome desktop environment, which is configured to provide a secure, locked down environment with a range of productivity and connectivity tools. These include StarOffice (full office suite, compatible with Microsoft Office), AbiWord (easy-to-use wordprocessor), the GIMP (graphics manipulation) and Mozilla (a web browser). Internet connectivity is controlled via a cacheing server, which can monitored and updated by the school. It is a multiuser system, each pupil having their identity for email, login and access to the system.

3 Complete Solution

Using Linux or open source on its own will not necessarily provide a good solution for schools, the key is to provide something that is cost-effective, reliable and fit for purpose. By working with the Sandwell Education Microelectronics Unit (EMU), Red Hat have been able to put together a low cost network solution which is complemented by support, Internet connectivity and training. By working with local providers, who have expert knowledge of providing services to schools and the community, Red Hat are able to make the most of implementing high quality open source solutions.

In the UK, National Grid for Learning (NGfL) Managed Services are available for schools, with 21 major suppliers offering 'one-stop-solutions'.

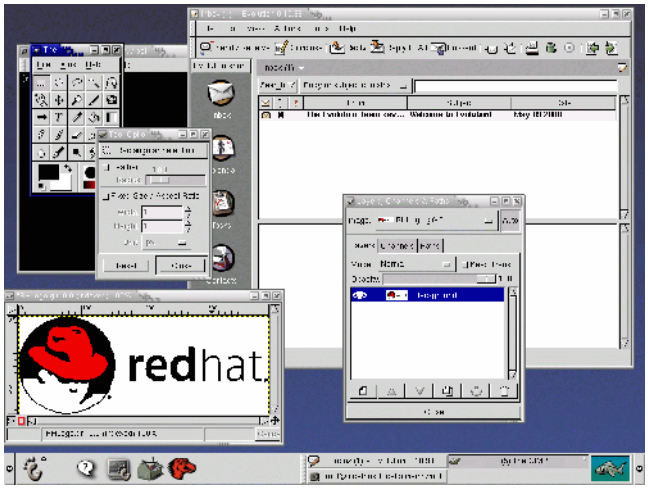

Figure 2: Linux Terminal Desktop

The aim has been to use these specifications, providing the same functionality, but using open source rather the proprietary applications. Not only does this give schools a choice, but on average, the cost for a managed solution is significantly less. NGfL Managed services solutions are starting around £1000 per machine/per annum. Using a similar approach with an open source desktop in Sandwell will enable schools to run desktop machines at less than £300 for refurbished equipment or around £500 for new equipment[1].

4 Evaluation

The next stage of the project will look at the usage and development of the system and how it is used by the puplis and staff. The system allows the teacher to distribute material to the desktops of the computers in real time, allowing them to read, write and create new material and then send it back. This can be done without queueing for computer access, the next steps may be to provide safe, public access terminals for them, to access internal email or materials related to their current work and projects.

This evaluation process is just starting, but the early indications are that the system is highly robust and provides an excellent base for secure Internet connectivity. This makes it ideal for both classroom and public access

[1]Based on a network using the ThinkNIC thin client and a flat panel monitor.

use.

5 Links

Red Hat - http://www.redhat.com
K12Linux Project - http://linux.riverdale.k12.or.us/k12linux.html
Linux Terminal Server Project - http://linux.riverdale.k12.or.us/k12ltsp.html
ThinkNIC - http://www.thinknic.com

6 Further Information

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