

Open source : A boon for education sector

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Every educational institution's computing environment is becoming more and more demanding with the passage of time. Consequently, the complexity of its IT infrastructure is also increasing. Delivering the required computing capability requires a wide range of software products. The traditional approach was to use proprietary software as it was proven and well supported. The biggest hurdle was its cost. It is this hurdle that Open Source Software (OSS) helps to overcome. Not only is the software available at zero cost, it is robust, reliable and widely used.

The open source community is a paradigm by itself. It has changed the way to tap the full potential of any software in the open source domain. Such software is developed, tested improved and updated for use, by a diverse community of programmers and users, on a regular basis. It has proved to be a great boon for the educational institutions as it can meet a variety of computing needs at a very low cost.

While paid software has its own advantages few educational institutions can afford to buy and use paid software to meet all its needs. This need is best met by open source software which has its own merit. Being free is not its only attraction, inherent in the open source philosophy is the freedom of a distributed community of programmers to modify and improve the code. This model exemplifies the best of humanitarian effort for a social cause.

Due to this reason alone, educational institutions must give it a chance and in the process reap the dual benefit of getting robust and proven software free of cost and promoting the Open Source movement.

Software typically required by educational institutes.

A typical institution needs software to run its network, access the internet, send and receive emails, share printing resources, maintain databases and for word processing, spreadsheets and presentations. In more advanced setups there is a need for DTP and audio visual software besides managing an intranet and local messaging.

The open source domain has applications to easily meet all these needs and more. Those who need can even get ERP & CRM software besides groupware to collaborate.

We maintain:

3 LTSP servers
2 firewall cum proxy servers
2 data exchange servers
2 NAS boxes
1 DHCP server
1 LDAP server
5 distributed print servers
30 indoor WiFi access points
3 outdoor WiFi access points

Connecting all the computers is done using 24 switches.

Bandwidth is in the form of two leased circuits, each of 2mbps rating from two independent sources. Students have access to multiple online resources. Most of the assignments are submitted in soft copy format.

The lifeblood of this network is a host of applications from the Open Source domain. The list comprises of:

- Fedora as the operating system, be it desktops or servers.
- LTSP software is used to support over 90 thin clients. Three LTSP servers centrally manage about 30 users each. This could have been accomplished using a single server but the cost of hardware was found to be more than that of three ordinary servers with 4MB RAM on each.
- IP Chains is used to setup the firewall, SQUID for distribution of bandwidth and AWSTATS to monitor its consumption.
- System administrators use Webmin and NTOP to manage and monitor the entire network.
- Data repositories and backups reside on two NAS boxes. One of them runs on FreeNAS and the other uses OpenFiler.RAID5 which is inbuilt in both of these software, is in the process of being deployed.
- Desktops use Firefox for browsing and Open Office for wordprocessing, spreadsheets and presentations. Thunderbird is the default mail client.
- We even manage a mail server based on Q-Mail with over a hundred users and as many mailing lists.

- We have small applications and an Intranet created in-house using the Linux-Apache-MySQL-Php (LAMP) platform.
- For audio-video manipulations we use Gimp for photographs, Audacity for audio editing, Kino for video editing and Blender for 3-D animation.
- Our latest venture is implementing Moodle, which an Open Source teacher-student interaction platform, which supports e-learning, online tests and academic data management.

Future Plans

In the coming months we plan to use open source software for the following services.

VPN
LDAP
RSynch
IM
FreeNAS and OpenFiler
Virtual domains

As a tribute to the efforts of the Open Source community, we are now exploring avenues to contribute to this pool of software and train system administrators of institutions who wish to adopt this model.