

A FLEXIBLE MACHINE RESERVATION SYSTEM FOR LINUX

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In an university computer lab, it is essential to be able to prioritise access to the limited computing resources. This paper proposes a flexible Machine Reservation System that facilitates reservation of computers attached to a Linux-based centralised authentication server.

The system is capable of restricting access to the machines based on user names, groups, date and time. It consists of four subsystems: a web based reservation interface, a database backend for storing reservation details, a client-side script which updates login restrictions on individual machines, and a PAM (Pluggable Authentication Modules) module that actually implements the restrictions.

A user logs into the reservation interface via a browser to make a reservation or view reservation details. If the reservation is valid i.e. there is no overlap between reservations, the database is updated accordingly. A script running on each of the Linux terminals periodically polls the database and updates a local file containing login restrictions in force on that machine. The *PAM-time* module available as part of the Linux-PAM framework, implements the login restrictions specified in the local file. The system was developed using a combination of open-source technologies including Perl, PHP, MySQL an Apache.

The system has been successfully tested at the Department of Computer Engineering laboratory. It is envisaged that it will be used to restrict lab access during practical sessions and to give final-year students the ability to reserve machines for project work. The system can also be used on most other Unix-based operating systems that have PAM support e.g. Solaris, FreeBSD. In the absence of a PAM-like application programming interface it would unfortunately be difficult to port to Microsoft Windows. The system is also applicable to businesses to log computer usage. It is observed that the system can be extended by adding administrative access and by including concurrent reservation facilities.

Figure 1: Block diagram of Machine Reservation System

