

What is LAWN and MOWER?

LAWN (Local Area Wireless/Walk-up Network) is a method by which Georgia Tech users can gain authenticated access to the campus network via a wireless access point or a walk-up (public) Ethernet port. LAWN use is platform independent, as no special client software (other than an SSL-capable web browser) is required.

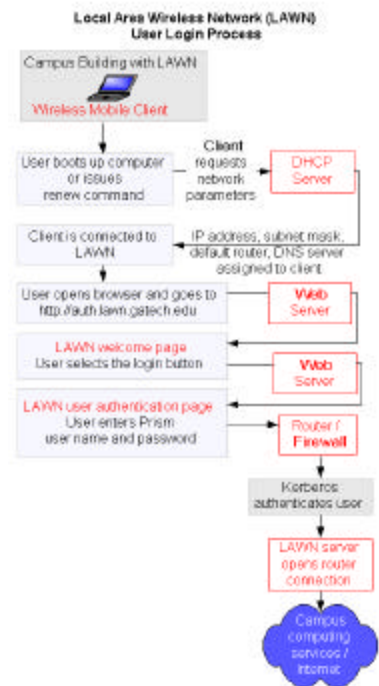
In LAWN terminology, a MOWER is a LAWN router/firewall, forwarding traffic between the LAWN network and our main campus network. We currently have one MOWER in service; additional MOWERS can be easily added as usage warrants. A MOWER provides the following services:

- DHCP server - Used to establish client IP configurations. We use ISC's DHCPd (<http://www.isc.org/products/DHCP>).
- Web server - Serves web pages/cgi-scripts used to authenticate users. We use the apache web server (<http://www.apache.org>).
- Caching DNS server - Provides local DNS services to clients. It serves as a caching, forwarding DNS server. We use ISC's BIND (<http://www.isc.org/products/BIND/>).
- Firewall and Routing services - Provides traffic restriction and routing to allow only authenticated clients access to resources outside of the LAWN network. We use the iptables implementation native to the Linux 2.4 kernel <http://netfilter.kernelnotes.org/>.

What a user experiences when using the Georgia Tech LAWN

- In a wireless-enabled campus building, the user boots up a mobile client e.g. a laptop with an IEEE 802.11b compatible wireless card). The network card is configured with a specific network name and WEP key. Or, if a walk-up Ethernet port is to be used instead, the user connects to the port via an Ethernet cable and Ethernet card.
- The client computer should be configured to use DHCP to obtain network settings. Upon boot or first network access, the user's DHCP software transmits a request for settings. The request is routed via a VLAN on our campus backbone to a MOWER. The DHCP server on the MOWER assigns the client an IP address along with other network parameters.
- In order to authenticate to the MOWER, the user opens up a web browser on their machine, and accesses *any* network URL. Note: for access to the Georgia Tech LAWN, a 128-bit SSL-capable web browser is required.
- The client's web request is picked up by the MOWER and the LAWN welcome page is returned. At this point the user cannot access any external network resources of any kind. Any attempt to access an external web page results in redirection to the LAWN welcome page.
- Users click on the "login" button to access the authentication page. On the authentication page, the user enters their PRISM username and password. PRISM is Georgia Tech's Kerberos-based account system.
- Upon valid authorization, entries are placed in the MOWER's firewall to allow traffic to and from the user's IP address. Also, the user's ARP address is hard coded into the MOWER's ARP cache.
- The user can now access both campus and external computing resources. If cookies and JavaScript are enabled on the user's browser, they are automatically redirected to the web address initially accessed by their web browser.

The figure to the right illustrates the steps used to connect to the LAWN.



How am I disconnected?

The MOWER uses an internal program, called a "REAPER", to periodically monitor network traffic statistics and connectivity of authenticated users. As long as a user has recently transmitted packets or is ping-able, they remain authenticated. If the REAPER can't ping an inactive client, it closes the firewall entries for that user. The client can also initiate a closure by issuing a DHCP-RELEASE, which is picked up by a log watching script on the MOWER.

How do I get a copy of the code?

In order to allow others to set up similar services, Georgia Tech is willing to release the source code to LAWN. LAWN is a "work in progress" and we are still developing and evolving LAWN into a true mobility solution.

If you are interested in obtaining a copy of the code, you can contact us. However, we will release the code to you under the understanding that you are expected to share any bug-fixes and enhancements to the LAWN code with Georgia Tech, and those enhancements may be incorporated into future releases. You are free to use the code as you wish, as long as you do not redistribute it; refer inquiries back to us, so that we can keep track of who is using the software.