

Wireless Printing

Erick Engelke

Engineering Computing

University of Waterloo

August 30, 2006

Background

The proliferation of laptop computers at the University of Waterloo has greatly changed how we deliver IT services and how users regard these services. The new reality is that our many laptop users do not have top-down managed computer systems. We cannot assume users will have the same laptop userid as their campus issued userid. Nor do we have any guarantees of the various possible settings or applications. Laptops are full of unknowns, yet we hope to provide reliable service to their owners.

As we saw with MinUWet and Toilet Tank Traffic Shaping (TTTS), it is possible for IT management to control the seemingly uncontrollable laptop environment. MinUWet assures the campus of the laptop's trustworthiness as a network client, and the TTTS exerts control of network bandwidth usage. Both of these services bridge the gap between an unmanaged laptop and well defined campus rules and parameters.

Laptop access to printers was another growing problem. Users were obviously now mobile, but needed help to gain access to the many available printers located across campus.

Just as we had tried with bandwidth usage and antivirus strategies, we began with an education campaign to explain to users how they could print by clicking on various buttons and entering appropriate printer names. This strategy was largely unsuccessful.

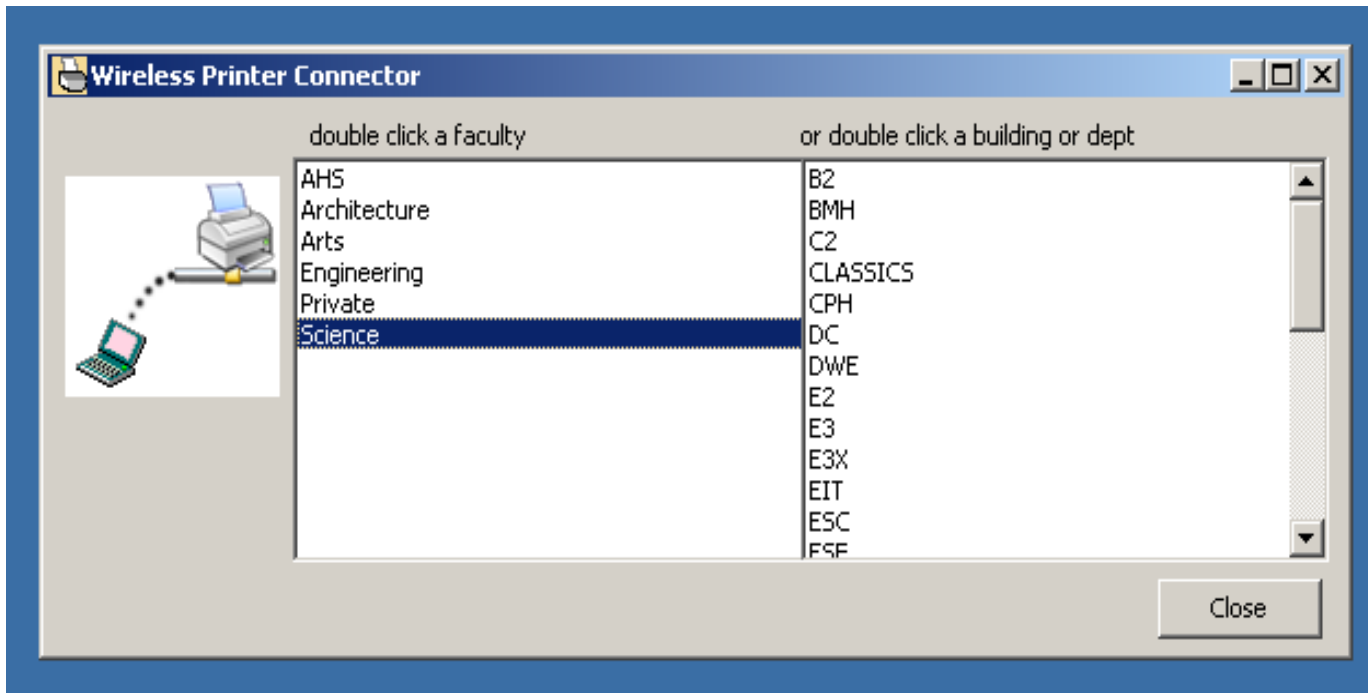
As a solution, I created a program which shares knowledge of campus printers and greatly simplifies users' access to these printers. The program, IPPCONFIG, was later deployed on the wireless login screen and is now accessible to all wireless users when they connect to the campus network.

The Program

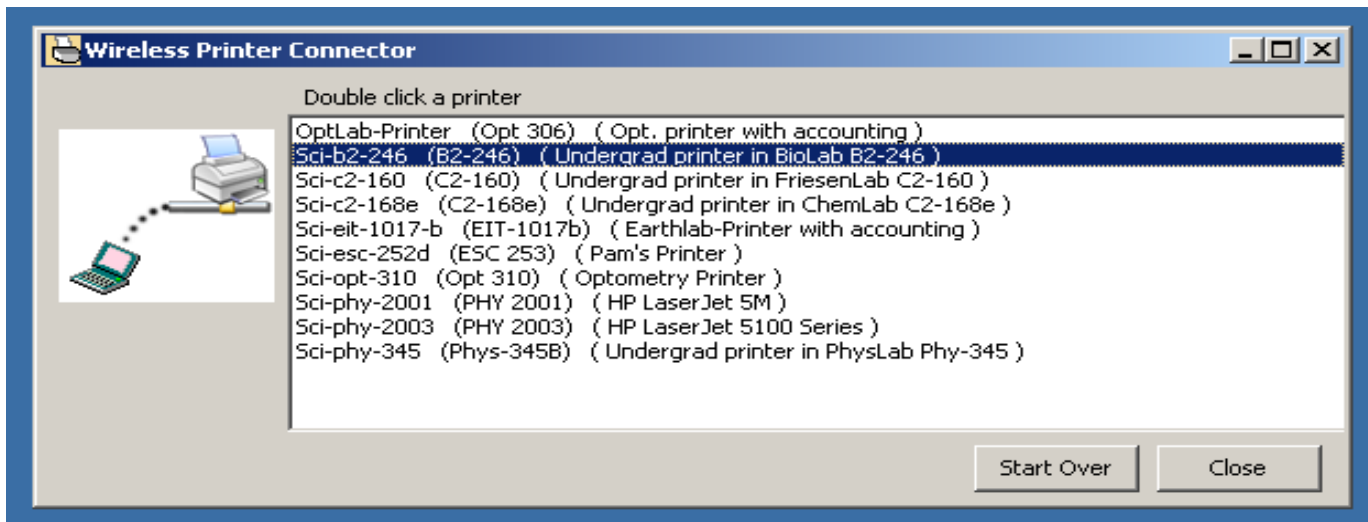
The program makes very few assumptions about the user environment, or even the campus environment.

It connects to a server and downloads a current list of known printers. Currently the list contains more than 200 printer names, descriptions and locations. With that quantity, it is necessary to group the printers into digestible categories.

IPPCONFIG lets the user select the printer by either faculty or building location with a simple user interface.



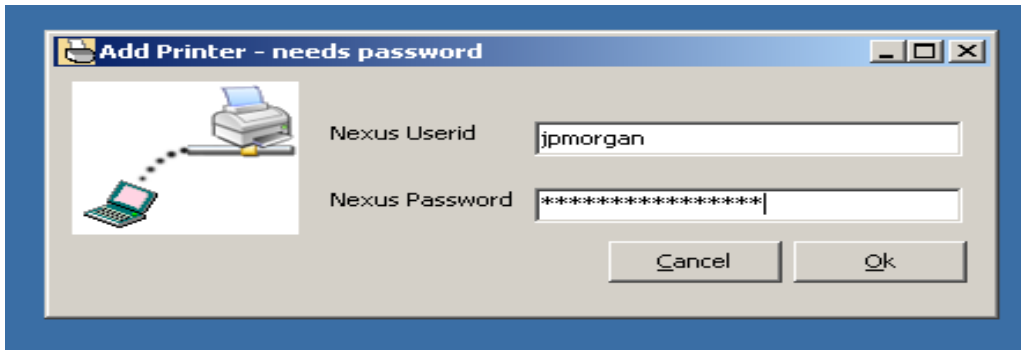
Once the category is chosen, a list of printers is given with printer names, room locations and any comments available to distinguish each printer from others.



IPPCONFIG gets its information from directories of published printer names (some printers are not published and are thus kept private).

Currently the only consulted directory is the Nexus active directory. The ADS active directory could be added, but currently ADS does not have any published printers.

When the user double clicks a particular printer, s/he is prompted for a campus userid and password to complete the connection.



IPPCONFIG requires only Windows' usual printing network protocols. It works for any user who has been assigned *premium* wireless service (having passed MinUWet). Unfortunately, it does not work for off-campus users today, because the campus router/firewall configuration do not permit these protocols to off-campus computers. That shortcoming will be addressed when campus VPN services are added to the campus firewall.

Summary

It is now possible for users anywhere on campus to find and print to any of the listed printers. This is a great improvement, particularly for students as they tend to be very mobile and are served primarily by Nexus.

There are two major Active Directories which server the campus (Nexus for academic, ADS for academic support). Printers outside those two can still be reached by publishing them in either of the two primary domains and adding print queues which authenticate with that domain.

Users will benefit when all the major printers on campus are accessible to all wireless users. We now have the tool, we only need to organize the remaining print queues.