How to access internal web via ssh tunneling

-- TheoLarrieu - 23 Jun 2005

Accessing internal web from outside the jlab network

The problem

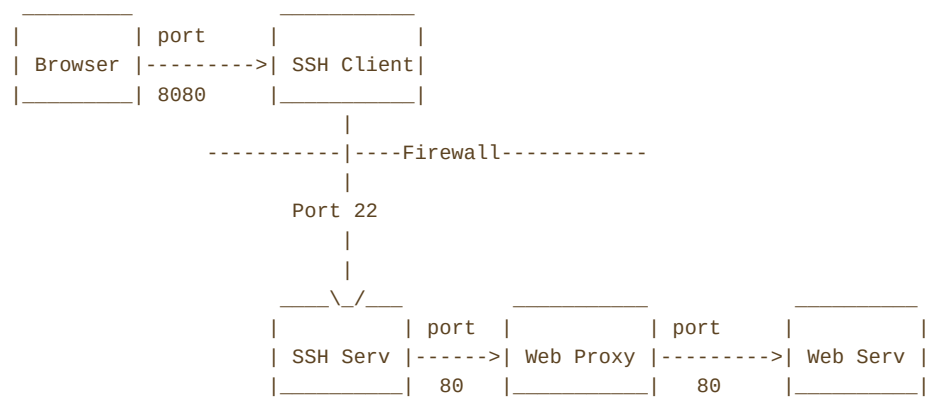
Access controls effected in the Jefferson Lab perimeter firewall restrict inbound traffic from outside networks to allow a limited set of protocols to access a small number of machines. For this reason, a staff member using an ISP service cannot simply type a url such as http://devweb.acc.jlab.org/ into a web browser and expect to have a page returned. Unfortunately many staff use external ISPs such as Cox cable modem, Earthlink DSL, AOL, etc. and wish to work or perform on-call duties through those same services.

Solution overview

Fortunately, one of the protocols permitted to enter the jlab network is secure-shell (ssh), and fortuitously ssh has a port-forwarding capability which makes it possible to forward (tunnel) other protocols such as http over an open ssh connection. By configuring forwarding in the ssh client and by instructing the web-browser to use that ssh tunnel, it is possible to access useful internal web pages such as elog, ace-pr form, newts, etc.

Figure 1. Shows the chaining that allows a browser to fetch internal web pages through the ssh hole in the firewall.

Figure 1.

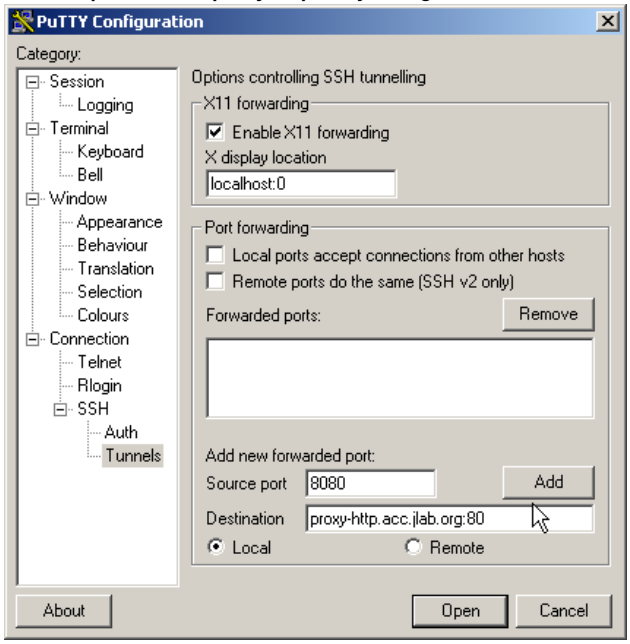


1. The browser is configured to use a proxy server of localhost on port 8080
2. The ssh client is configured to accept connections on localhost port 8080 and forward them to the ssh server. The forwarded http packets are flagged for delivery to Web Proxy 80
3. The ssh server forwards the http traffic to the Web Proxy
4. The Web proxy fetches the requested page from the appropriate web server and returns it back along the chain to the client

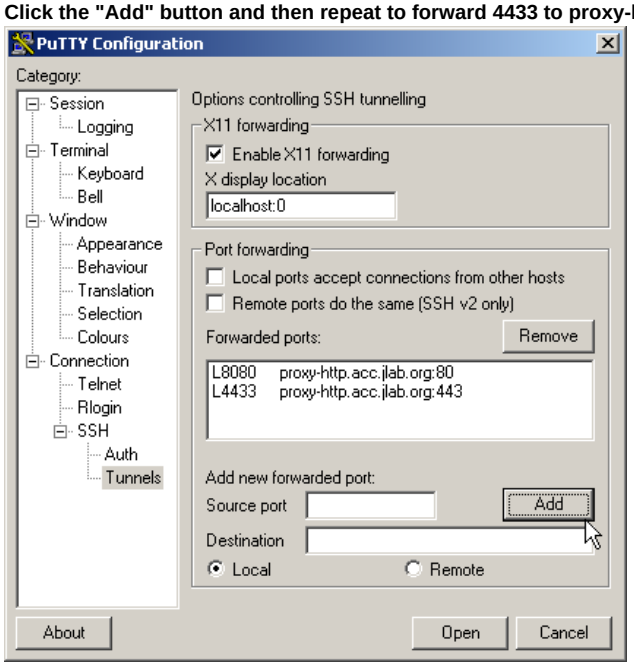
Configure port forwarding in Win32 PUTTY client

The prevalent ssh client in use by Controls Department staff on win32 platforms is PUTTY. The screenshots below walk through the steps necessary to configure port-forwarding in the PUTTY client. Similar configuration can be done for other Windows ssh clients (e.g. f-secure client) and can be performed from the command-line for for ssh on linux or unix.

1. **Go to Connection->SSH->Tunnel in the PUTTY configuration Window.**
2. **Go to "Add new forwarded port" at bottom right.**
3. **Forward port 8080 to proxy-http.acc.jlab.org:80 as shown:**

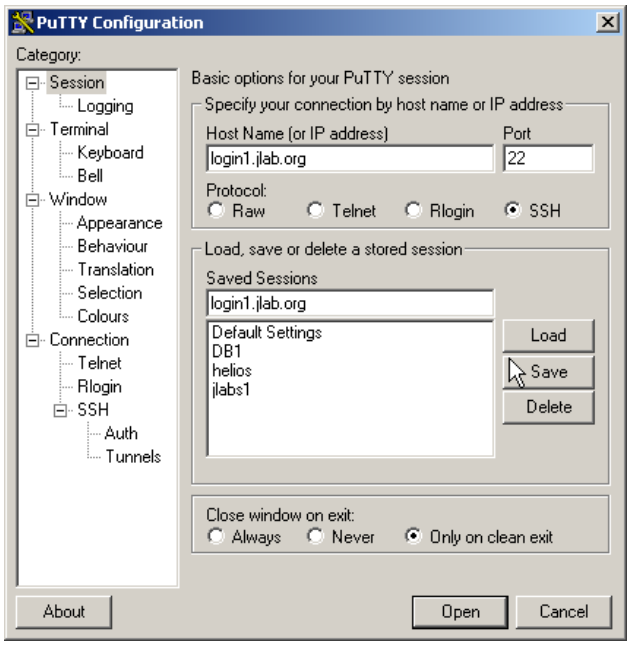


4. **Click the "Add" button and then repeat to forward 4433 to proxy-http.acc.jlab.org:443**



If you wish to avoid repeating steps 1-4 above every time you use PUTTY, it is necessary to save your configuration.

1. **Go to the Session area of PUTTY configuration and save your settings**



Once the configuration is saved, at every future login through PUTTY the port-forwarding will be active.

Configure port forwarding with command-line ssh client (i.e. on linux)

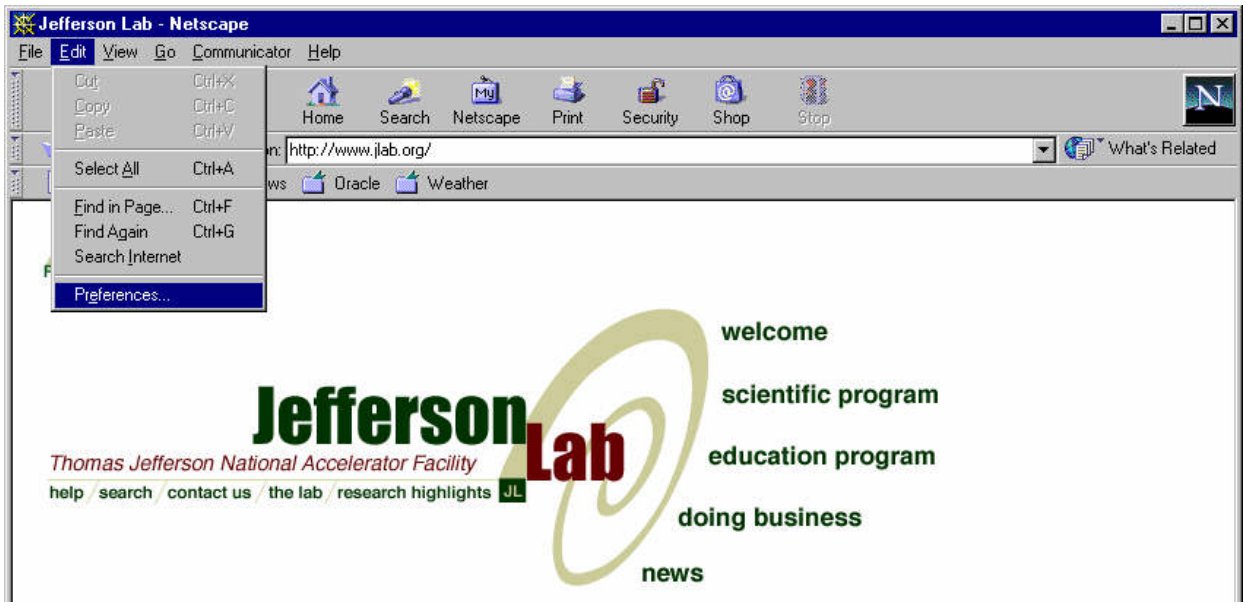
This is easy. Just specify the tunnel parameters on the commandline like so:

- ssh -L 8080:proxy-http.acc.jlab.org:80 -L 4433:proxy-http.acc.jlab.org:443 jlab.org

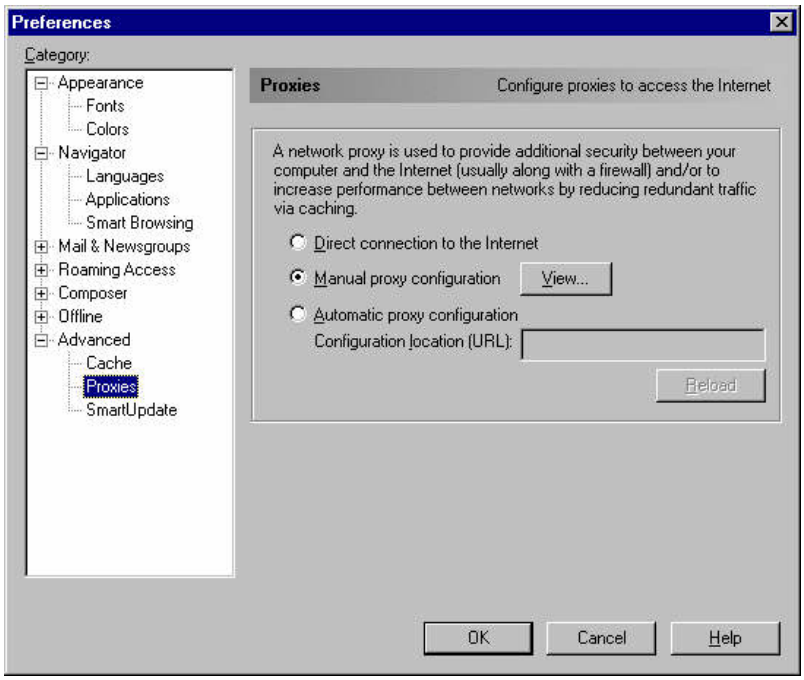
Configure Netscape to use ssh tunnel

The web browser must be configured to use the ssh tunnel to transmit requests and receive pages. This can be accomplished by changing browser proxy settings to point to the ssh tunnel source port on localhost. The screenshots below illustrate this configuration for the Netscape browser.

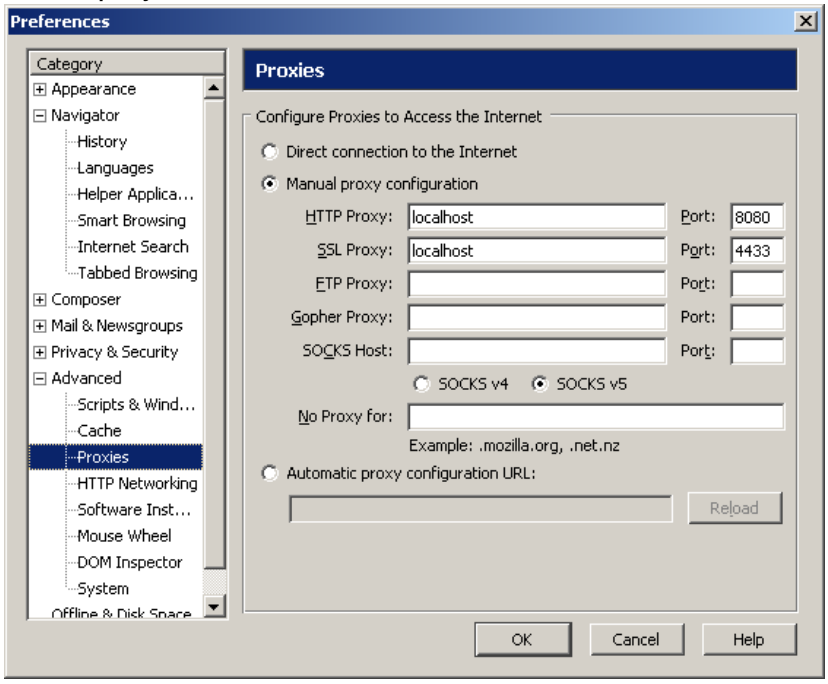
1. **Choose "Preferences..." from the edit menu**



2. **Go to Advanced->Proxies, click "manual proxy configuration" and then click the "View..." button.**



3. **Enter the proxy info as shown.**



Putting it all together

After performing the setup steps outlined above, follow these steps to browse internal web pages from an external ISP.

1. **Open PUTTY and log into jlab.org (aka login1.jlab.org or login2.jlab.org).**
2. **Open Netscape and type in the jlab.org URL you wish to access.**
3. **When finished, undo your Netscape proxy settings to avoid routing all your page traffic through jlab.**

Notes

- To avoid changing the proxy settings back and forth, it may desirable to create a new Netscape user profile.

DocTypeForm	
DocTitle?	How to access internal web via ssh tunneling
RelatedDocs	none
TopicClassification?	SystemTeam?
DocType	HowTo?
DocOwner	TheoLarrieu

I	Attachment	Action	Size	Date	Who	Comment
	netscape_prefs_1.jpg	manage	50.7 K	23 Jun 2005 - 10:57	TheoLarrieu	Netscape Prefs 1
	netscape_prefs_2.jpg	manage	38.3 K	23 Jun 2005 - 10:58	TheoLarrieu	Netscape Prefs 2
	ns2.png	manage	11.0 K	23 Jun 2005 - 10:54	TheoLarrieu	Netscape Fig 2
	pf1.png	manage	9.0 K	23 Jun 2005 - 10:51	TheoLarrieu	Putty Figure 1
	pf2.png	manage	9.2 K	23 Jun 2005 - 10:51	TheoLarrieu	Putty Figure 2
	ss1.png	manage	9.4 K	23 Jun 2005 - 10:54	TheoLarrieu	Save Settings

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