Internet Protocol Version 6 Lab - A Nifty Assignment : Additional Material

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This assignment is limited by the equipment you are able to allocate to the class. In our environment, Cisco 2500, 2600, 1800 and 2800 routers are all available in limited quantities as well as various brands and models of switches and computers. Cisco 2500s are not IPv6 capable, 2600s may be IPv6 capable, but usually need additional investments to make them capable. This creates time problems for semester classes. Cisco 1800 and 2800 series are better as equipment, as they typically require the least modification. They typically require modifications to support a newer, larger version of Cisco’s IOS in order to support IPv6. Switches as well can be very finicky about what is required for IPv6 support. The first time you run this assignment, you will learn a lot about how well (or badly) your inventory of equipment performs, so for the first try you may want to make it a multi-week assignment to deal with the incompatibilities, upgrades and installation quirks that are bound to happen. If you have the opportunity to utilize all identical equipment for all teams, you can troubleshoot these issues before making the assignment. But in several cases, teams have come up with their own equipment, creating more opportunities for troubleshooting.

Once students have the equipment, it can be beneficial to have a discussion about how to approach the assignment; get the tunnel working to the Tunnel broker first or get the “mini-lab” working on IPv6 before attempting the Tunnel to the IPv6 Internet. The students must use the provided IPv4 Public IP to tunnel through the campus IPv4 network (switches, routers and firewall) to the selected ISP’s IPv6 Tunnel server.)

The listing of resources given to the students includes:   
the IETF RFC for transition mechanisms: <http://tools.ietf.org/html/rfc2893>   
the Cisco IPv6 home page <http://www.cisco.com/en/US/products/ps6553/products_ios_technology_home.html>   
the Microsoft IPv6 page <http://technet.microsoft.com/en-us/network/bb530961.aspx>

as well as other selected material current Internet searches can turn up.

Rubrics are tricky unless you are able to provide all student teams with identical hardware, software and require them to utilize a specific tunnel-vendor. At our campus, there haven’t been enough hardware resources to do that and the assignment doesn’t dictate the tunnel-vendor. The grade is awarded based upon the quality of the research, teamwork, and originality as documented by the teams. Getting an A requires demonstrating an operating tunnel, but the team may not always utilize all the equipment in the expected roles.

While positive outcomes have come from a variety of ISPs, the teams have reported that the most beneficial experiences have come from using ISP Hurricane Electric (HE) ( <http://www.he.net/> ) and their tunnel broker services ( <http://tunnelbroker.net/> ). In addition to tunnel brokering, HE offers a variety of useful tutorials and services, their certification page below has several items useful for a team’s research as well as the instructor’s assessment of the assignment:

