Tech Lesson: Intro to Tcl Scripts on Cisco IOS

What is a Tcl Script? Also known as "tickle", Tcl (Tool Command Language) is a scripting language commonly used for rapid prototyping, scripted applications, GUIs, and … testing! Cisco IOS has a form of Tcl scripting built in which can be used for automating tests and tasks from within the IOS command line. To begin scripting with Tcl on a Cisco router for example you would first need to enter the Cisco IOS Tcl shell by typing "tclsh" from the priviledged exec mode (Router# tclsh) which brings the router prompt to Router(tcl)#. If you are able to access this tcl-level mode it means Tcl is supported on your IOS device and you can begin to enter your script commands.

In this Tech Lesson we will see what it takes to use tcl scripting to automate a series of ping commands for testing layer 3 connectivity to multiple IP destinations. Before we get started we should note that it is best to first write out the script in your favorite text editor such as Notepad or Sublime Text. This way we can paste the script into the CLI when it is ready and also save it for future reference and changes just as we would do with an access-list. To create our script we will use the "foreach" Tcl command with "ip" as a variable to loop through each individual IP address we list after it. At the end of the script we will enter the exec-level command to be used with the variable, which in our case will be the "ping" command. So, here's what we can type in text editor to set up a list of 2 IP addresses to ping:

foreach ip {192.168.10.1 192.168.10.2} { puts [exec "ping $ip"] }

Having saved this tcl syntax in our text editor we can then add or remove IP addresses as we see fit. Then, we can copy and paste it into our router's tcl-level prompt to get a quick return on IP connectivity to the specific nodes in our list. Check out a real output example below:

R1#tclsh
R1(tcl)#
R1(tcl)#foreach ip {192.168.10.1 192.168.10.2} { puts [exec "ping $ip"] }

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.10.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 20/50/80 ms

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.10.2, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

We used only two ip addresses in our example, but this particular script is useful when we have many destinations to test. This is merely scratching the surface of Tcl as the ways to apply it for network automation are vast. To keep up with Tcl visit the wiki @ http://wiki.tcl.tk/.