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#!/usr/bin/python

from mininet.topo import Topo
from mininet.net import Mininet
from mininet.util import dumpNodeConnections
from mininet.log import setLogLevel
from mininet.cli import CLI
from mininet.node import RemoteController


class final_topo(Topo):
    def build(self):
        # Examples!
        # Create a host with a default route of the ethernet interface. You'll need
to set the
        # default gateway like this for every host you make on this assignment to
make sure all
        # packets are sent out that port. Make sure to change the h# in the
defaultRoute area
        # and the MAC address when you add more hosts!
        # h1 = self.addHost('h1',mac='00:00:00:00:00:01',ip='1.1.1.1/24',
defaultRoute="h1-eth0")
        # h2 = self.addHost('h2',mac='00:00:00:00:00:02',ip='2.2.2.2/24',
defaultRoute="h2-eth0")

        # Create a switch. No changes here from Lab 1.
        # s1 = self.addSwitch('s1')

        # Connect Port 8 on the Switch to Port 0 on Host 1 and Port 9 on the Switch
to Port 0 on
        # Host 2. This is representing the physical port on the switch or host that
you are
        # connecting to.
        #
        # IMPORTANT NOTES:
        # - On a single device, you can only use each port once! So, on s1, only 1
device can be
        #   plugged in to port 1, only one device can be plugged in to port 2, etc.
        # - On the "host" side of connections, you must make sure to always match
the port you
        #   set as the default route when you created the device above. Usually,
this means you
        #   should plug in to port 0 (since you set the default route to h#-eth0).
        #
        # self.addLink(s1,h1, port1=8, port2=0)
        # self.addLink(s1,h2, port1=9, port2=0)

        # add hosts
        host1 = self.addHost('h10', mac='00:00:00:00:01',
                             ip='10.1.1.10/24', defaultRoute="h10-eth0")
        host2 = self.addHost('h20', mac='00:00:00:00:02',
                             ip='10.1.2.20/24', defaultRoute="h20-eth0")
        host3 = self.addHost('h30', mac='00:00:00:00:03',
                             ip='10.1.3.30/24', defaultRoute="h30-eth0")
        host4 = self.addHost('h40', mac='00:00:00:00:04',
                             ip='10.1.4.40/24', defaultRoute="h40-eth0")

        host5 = self.addHost('h50', mac='00:00:00:00:05',
                             ip='10.2.5.50/24', defaultRoute="h50-eth0")
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        host6 = self.addHost('h60', mac='00:00:00:00:06',
                             ip='10.2.6.60/24', defaultRoute="h60-eth0")
        host7 = self.addHost('h70', mac='00:00:00:00:07',
                             ip='10.2.7.70/24', defaultRoute="h70-eth0")
        host8 = self.addHost('h80', mac='00:00:00:00:08',
                             ip='10.2.8.80/24', defaultRoute="h80-eth0")

        hostTrust = self.addHost('h_trust', mac='00:00:00:00:09',
                                 ip='108.24.31.112/24', defaultRoute="h_trust-
eth0")

        hostUntrust = self.addHost('h_untrust', mac='00:00:00:00:10',
                                   ip='106.44.82.103/24', defaultRoute="h_untrust-
eth0")

        hostServer = self.addHost('h_server', mac='00:00:00:00:11',
                                  ip='10.3.9.90/24', defaultRoute="h_server-eth0")

        # add switches
        coreSwitch = self.addSwitch('s1')

        floor1switch1 = self.addSwitch('s2')
        floor1switch2 = self.addSwitch('s3')
        floor2switch1 = self.addSwitch('s4')
        floor2switch2 = self.addSwitch('s5')

        dataCenterSwitch = self.addSwitch('s6')

        # add links
        self.addLink(floor1switch1, host1, port1=3, port2=0)
        self.addLink(floor1switch1, host2, port1=4, port2=0)
        self.addLink(floor1switch2, host3, port1=3, port2=0)
        self.addLink(floor1switch2, host4, port1=4, port2=0)

        self.addLink(floor2switch1, host5, port1=3, port2=0)
        self.addLink(floor2switch1, host6, port1=4, port2=0)
        self.addLink(floor2switch2, host7, port1=3, port2=0)
        self.addLink(floor2switch2, host8, port1=4, port2=0)

        self.addLink(coreSwitch, dataCenterSwitch, port1=1, port2=1)
        self.addLink(coreSwitch, floor1switch1, port1=2, port2=1)
        self.addLink(coreSwitch, floor1switch2, port1=3, port2=1)
        self.addLink(coreSwitch, floor2switch1, port1=4, port2=1)
        self.addLink(coreSwitch, floor2switch2, port1=5, port2=1)

        self.addLink(dataCenterSwitch, hostServer, port1=2, port2=0)

        self.addLink(coreSwitch, hostTrust, port1=6, port2=0)
        self.addLink(coreSwitch, hostUntrust, port1=7, port2=0)



def configure():
    topo = final_topo()
    net = Mininet(topo=topo, controller=RemoteController)
    net.start()

    CLI(net)
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    net.stop()


if __name__ == '__main__':
    configure()
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