#include "ns3/core-module.h"

#include "ns3/network-module.h"

#include "ns3/internet-module.h"

#include "ns3/point-to-point-module.h"

#include "ns3/applications-module.h"

#include "ns3/ipv4-global-routing-helper.h"

using namespace ns3;

NS\_LOG\_COMPONENT\_DEFINE ("FirstScriptExample");

int main (int argc, char \*argv[])

{

Time::SetResolution (Time::NS);

LogComponentEnable ("UdpEchoClientApplication", LOG\_LEVEL\_INFO);

LogComponentEnable ("UdpEchoServerApplication", LOG\_LEVEL\_INFO);

NodeContainer nodes;

nodes.Create (2);

NodeContainer nodes2;

nodes2.Add(nodes.Get(1));

nodes2.Create(2);

PointToPointHelper pointToPoint;

pointToPoint.SetDeviceAttribute ("DataRate", StringValue ("8Mbps"));

pointToPoint.SetChannelAttribute ("Delay", StringValue ("3ms"));

PointToPointHelper pointToPoint2;

pointToPoint2.SetDeviceAttribute ("DataRate", StringValue ("7Mbps"));

pointToPoint2.SetChannelAttribute ("Delay", StringValue ("1ms"));

PointToPointHelper pointToPoint1;

pointToPoint1.SetDeviceAttribute ("DataRate", StringValue ("7Mbps"));

pointToPoint1.SetChannelAttribute ("Delay", StringValue ("1ms"));

NetDeviceContainer devices;

devices = pointToPoint.Install (nodes);

NetDeviceContainer devices2;

devices2 = pointToPoint2.Install (nodes2.Get(1),nodes2.Get(2));

NetDeviceContainer devices1;

devices1 = pointToPoint1.Install (nodes2.Get(0),nodes2.Get(1));

InternetStackHelper stack;

stack.Install (nodes.Get(0));

stack.Install (nodes2);

Ipv4AddressHelper address,address2,address1;

address.SetBase ("10.1.1.0", "255.255.255.0");

address2.SetBase ("10.1.3.0", "255.255.255.0");

address1.SetBase ("10.1.2.0", "255.255.255.0");

Ipv4InterfaceContainer interfaces = address.Assign (devices);

Ipv4InterfaceContainer interfaces2 = address2.Assign (devices2);

Ipv4InterfaceContainer interfaces1 = address1.Assign (devices1);

UdpEchoServerHelper echoServer (9);

ApplicationContainer serverApps = echoServer.Install (nodes.Get (1));

serverApps.Start (Seconds (1.0));

serverApps.Stop (Seconds (10.0));

UdpEchoClientHelper echoClient (interfaces.GetAddress (1), 9);

echoClient.SetAttribute ("MaxPackets", UintegerValue (1));

echoClient.SetAttribute ("Interval", TimeValue (Seconds (1.0)));

echoClient.SetAttribute ("PacketSize", UintegerValue (1024));

ApplicationContainer clientApps = echoClient.Install (nodes.Get (0));

clientApps.Start (Seconds (2.0));

clientApps.Stop (Seconds (10.0));

UdpEchoServerHelper echoServer1 (10);

ApplicationContainer serverApps1 = echoServer1.Install (nodes2.Get (0));

serverApps1.Start (Seconds (1.0));

serverApps1.Stop (Seconds (10.0));

UdpEchoClientHelper echoClient1 (interfaces1.GetAddress (0), 10);

echoClient1.SetAttribute ("MaxPackets", UintegerValue (1));

echoClient1.SetAttribute ("Interval", TimeValue (Seconds (1.0)));

echoClient1.SetAttribute ("PacketSize", UintegerValue (1024));

ApplicationContainer clientApps1= echoClient1.Install (nodes2.Get (1));

clientApps1.Start (Seconds (3.0));

clientApps1.Stop (Seconds (10.0));

UdpEchoServerHelper echoServer2 (11);

ApplicationContainer serverApps2 = echoServer2.Install (nodes2.Get (0));

serverApps2.Start (Seconds (1.0));

serverApps2.Stop (Seconds (10.0));

UdpEchoClientHelper echoClient2 (interfaces1.GetAddress (0), 11);

echoClient2.SetAttribute ("MaxPackets", UintegerValue (1));

echoClient2.SetAttribute ("Interval", TimeValue (Seconds (1.0)));

echoClient2.SetAttribute ("PacketSize", UintegerValue (1024));

ApplicationContainer clientApps2= echoClient2.Install (nodes2.Get (2));

clientApps2.Start (Seconds (4.0));

clientApps2.Stop (Seconds (10.0));

Ipv4GlobalRoutingHelper::PopulateRoutingTables ();

Simulator::Run ();

Simulator::Destroy ();

return 0;

}