

CN-Simulation

Code:second.cc

```
#include "ns3/core-module.h"
#include "ns3/network-module.h"
#include "ns3/internet-module.h"
#include "ns3/point-to-point-module.h"
#include "ns3/csma-module.h"
#include "ns3/applications-module.h"
#include "ns3/ipv4-global-routing-helper.h"
#include "ns3/netanim-module.h"

using namespace ns3;
int main ()
{
    LogComponentEnable ("UdpEchoClientApplication",
LOG_LEVEL_INFO);
    LogComponentEnable ("UdpEchoServerApplication",
LOG_LEVEL_INFO);
    std::string animFile="second.xml";

    NodeContainer p2pNodes;
    p2pNodes.Create (2);

    NodeContainer csmaNodes;
```

```
csmaNodes.Add (p2pNodes.Get (1));  
csmaNodes.Create (3);
```

```
PointToPointHelper pointToPoint;  
pointToPoint.SetDeviceAttribute ("DataRate",  
StringValue ("5Mbps"));  
pointToPoint.SetChannelAttribute ("Delay",  
StringValue ("2ms"));
```

```
NetDeviceContainer p2pDevices;  
p2pDevices = pointToPoint.Install (p2pNodes);
```

```
CsmaHelper csma;  
csma.SetChannelAttribute ("DataRate", StringValue  
("100Mbps"));  
csma.SetChannelAttribute ("Delay", StringValue  
("2ms"));
```

```
NetDeviceContainer csmaDevices;  
csmaDevices = csma.Install (csmaNodes);
```

```
InternetStackHelper stack;  
stack.Install (p2pNodes.Get (0));  
stack.Install (csmaNodes);
```

```
Ipv4AddressHelper address;  
address.SetBase ("10.1.1.0", "255.255.255.0");
```

```
    Ipv4InterfaceContainer p2pInterfaces =  
address.Assign (p2pDevices);  
  
    address.SetBase ("10.1.2.0", "255.255.255.0");  
    Ipv4InterfaceContainer csmaInterfaces =  
address.Assign (csmaDevices);  
  
    UdpEchoServerHelper echoServer (9);  
  
    ApplicationContainer serverApps =  
echoServer.Install (csmaNodes.Get (3));  
    serverApps.Start (Seconds (1.0));  
    serverApps.Stop (Seconds (10.0));  
  
    UdpEchoClientHelper echoClient  
(csmaInterfaces.GetAddress (3), 9);  
    echoClient.SetAttribute ("MaxPackets",  
UIntegerValue (1));  
    echoClient.SetAttribute ("Interval", TimeValue  
(Seconds (1.0)));  
    echoClient.SetAttribute ("PacketSize",  
UIntegerValue (1024));  
  
    ApplicationContainer clientApps =  
echoClient.Install (p2pNodes.Get (0));  
    clientApps.Start (Seconds (2.0));  
    clientApps.Stop (Seconds (10.0));
```

```
    Ipv4GlobalRoutingHelper::PopulateRoutingTables
();
    AnimationInterface anim(animFile);

anim.SetConstantPosition(p2pNodes.Get(0),1.0,2.0);

anim.SetConstantPosition(csmaNodes.Get(0),45.0,60.0
);

anim.SetConstantPosition(csmaNodes.Get(1),55.0,60.0
);

anim.SetConstantPosition(csmaNodes.Get(2),65.0,60.0
);

anim.SetConstantPosition(csmaNodes.Get(3),75.0,60.0
);

    AsciiTraceHelper ascii;

pointToPoint.EnableAsciiAll(ascii.CreateFileStream(
"second.tr"));

csma.EnableAsciiAll(ascii.CreateFileStream("second1
.tr"));

    Simulator::Run ();
    Simulator::Destroy ();
```

```
    return 0;
}
```

Output:

```
student@isl08-25:~/ns-allinone-3.33/ns-3.33$ ./waf --run scratch/second.cc
Waf: Entering directory `/home/student/ns-allinone-3.33/ns-3.33/build'
Waf: Leaving directory `/home/student/ns-allinone-3.33/ns-3.33/build'
Build commands will be stored in build/compile_commands.json
'build' finished successfully (0.544s)
AnimationInterface WARNING:Node:0 Does not have a mobility model. Use SetConstantPosition if it is stationary
AnimationInterface WARNING:Node:1 Does not have a mobility model. Use SetConstantPosition if it is stationary
AnimationInterface WARNING:Node:2 Does not have a mobility model. Use SetConstantPosition if it is stationary
AnimationInterface WARNING:Node:3 Does not have a mobility model. Use SetConstantPosition if it is stationary
AnimationInterface WARNING:Node:4 Does not have a mobility model. Use SetConstantPosition if it is stationary
AnimationInterface WARNING:Node:0 Does not have a mobility model. Use SetConstantPosition if it is stationary
AnimationInterface WARNING:Node:1 Does not have a mobility model. Use SetConstantPosition if it is stationary
AnimationInterface WARNING:Node:2 Does not have a mobility model. Use SetConstantPosition if it is stationary
AnimationInterface WARNING:Node:3 Does not have a mobility model. Use SetConstantPosition if it is stationary
AnimationInterface WARNING:Node:4 Does not have a mobility model. Use SetConstantPosition if it is stationary
At time +2s client sent 1024 bytes to 10.1.2.4 port 9
At time +2.01378s server received 1024 bytes from 10.1.1.1 port 49153
At time +2.01378s server sent 1024 bytes to 10.1.1.1 port 49153
At time +2.02957s client received 1024 bytes from 10.1.2.4 port 9
```