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LAMPIRAN

Lampiran 1 Kode Sumber pemanggilan *routing protocol* dan pembuatan tabel *routing*

```
void
RoutingHelper::SetupRoutingProtocol (NodeContainer & c)
{
  AodvHelper aodv;
  OlsrHelper olsr;
  DsdvHelper dsdv;
  DsrHelper dsr;
  DsrMainHelper dsrMain;
  Ipv4ListRoutingHelper list;
  InternetStackHelper internet;

  Time rtt = Time (5.0);
  AsciiTraceHelper ascii;
  Ptr<OutputStreamWrapper> rtw = ascii.CreateFileStream
("dsrrouting_table");

  switch (m_protocol)
    {
    case 0:
      m_protocolName = "NONE";
      break;
    case 1:
      if (m_routingTables != 0)
        {
          olsr.PrintRoutingTableAllAt (rtt, rtw);
        }
      list.Add (olsr, 100);
      m_protocolName = "OLSR";
      break;
    case 2:
      if (m_routingTables != 0)
        {
          aodv.PrintRoutingTableAllAt (rtt, rtw);
        }
      list.Add (aodv, 100);
      m_protocolName = "AODV";
      break;
    case 3:
      if (m_routingTables != 0)
        {
```

```
          dsdv.PrintRoutingTableAllAt (rtt, rtw);
        }
      list.Add (dsdv, 100);
      m_protocolName = "DSDV";
      break;
    case 4:
      // setup is later
      m_protocolName = "DSR";
      break;
    default:
      NS_FATAL_ERROR ("No such protocol:" << m_protocol);
      break;
    }

  if (m_protocol < 4)
    {
      internet.SetRoutingHelper (list);
      internet.Install (c);
    }
  else if (m_protocol == 4)
    {
      internet.Install (c);
      dsrMain.Install (dsr, c);
    }

  if (m_log != 0)
    {
      NS_LOG_UNCOND ("Routing Setup for " << m_protocolName);
    }
}
```

Lampiran 2 Kode sumber memberikan IP pada setiap node

```
void
RoutingHelper::AssignIpAddresses (NetDeviceContainer & d,
                                  Ipv4InterfaceContainer &
adhocTxInterfaces)
{
  NS_LOG_INFO ("Assigning IP addresses");
  Ipv4AddressHelper addressAdhoc;
  // we may have a lot of nodes, and want them all
     same subnet, to support broadcast
  ssAdhoc.SetBase ("10.1.0.0", "255.255.0.0");
  TxInterfaces = addressAdhoc.Assign (d);
```

Lampiran 3 Kode sumber menentukan jumlah node pengirim dan penerima

```
oid
RoutingHelper::SetupRoutingMessages (NodeContainer & c,
                                     Ipv4InterfaceContainer &
adhocTxInterfaces)
{
  // Setup routing transmissions
  OnOffHelper onoff1 ("ns3::UdpSocketFactory",Address ());
  onoff1.SetAttribute ("OnTime", StringValue
("ns3::ConstantRandomVariable[Constant=1.0]"));
  onoff1.SetAttribute ("OffTime", StringValue
("ns3::ConstantRandomVariable[Constant=0.0]"));

  Ptr<UniformRandomVariable> var =
CreateObject<UniformRandomVariable> ();
  int64_t stream = 2;
  var->SetStream (stream);
  for (uint32_t i = 0; i < m_nSinks; i++)
    {
      // protocol == 0 means no routing data, WAVE BSM only
      // so do not set up sink
      if (m_protocol != 0)
        {
          Ptr<Socket> sink = SetupRoutingPacketReceive
(adhocTxInterfaces.GetAddress (i), c.Get (i)); //mengatur node
penerima (dalam simulasi ini node penerima adalah node 0)
        }

      AddressValue remoteAddress (InetSocketAddress
(adhocTxInterfaces.GetAddress (i), m_port)); //mengatur node
pengirim (dalam simulasi ini node pengirim adalah node 12)
      onoff1.SetAttribute ("Remote", remoteAddress);

      ApplicationContainer temp = onoff1.Install (c.Get (i +
m_nSinks));
      temp.Start (Seconds (var->GetValue (1.0,2.0)));
      temp.Stop (Seconds (m_TotalSimTime));
    }}
```

ı 4 Kode sumber pemanggilan NetAnim dan ASCII Trace untuk
lkan file trace

```
utingExperiment::Run ()
```

```
{
  NS_LOG_INFO ("Run Simulation.");
  AnimationInterface anim("dsr30.xml");//memanggil NetAnim
AsciiTraceHelper ascii;
  MobilityHelper::EnableAsciiAll (ascii.CreateFileStream
(m_trName  + ".mob"));
  wifiPhy.EnableAsciiAll(ascii.CreateFileStream("dsr30.tr"));//Out
put dari file trace
  Ptr<OutputStreamWrapper> rtw = ascii.CreateFileStream
("routing_table");

  CheckThroughput ();
  Simulator::Stop (Seconds (m_TotalSimTime));
  Simulator::Run ();
  Simulator::Destroy ();
}
```

Lampiran 5 Kode Sumber Implementasi pemanggilan uji coba scenario pada DSR node 30

```
void
VanetRoutingExperiment::SetupScenario ()
{
if (m_scenario == 2)
    {
     m_traceFile =
"/home/raniarwaningsih/sumo/tools/lima/mobility30.tcl"; //file tcl
dari SUMO
      m_mobility = 2; //model mobility “1=trace 2=RWP”
      m_nNodes = 30; //jumlah node
      m_TotalSimTime = 180.01; //waktu simulasi
      m_nodeSpeed = 8.33; //kecepatan node
      m_nodePause = 1; //node berhenti sejenak
  m_nSinks = 12; //mengatur node sebagai pengirim
  m_txp = 7.5; //daya pengiriman (dB)
  m_traceMobility = 1; //mengaktifkan pelacakan pergerakan node
  m_protocol = 4; // mengatur protocol yang digunakan 4=DSR
  m_80211mode = 1; // mode802.11 1=802.11p
  m_lossModel = 3; // model propagasi 3=Two Ray Ground
 }}
```

ı 6 Kode Sumber Implementasi pemanggilan uji coba scenario pada DSR

```
utingExperiment::SetupScenario ()
```

```
{
if (m_scenario == 2)
    {
     m_traceFile =
"/home/raniarwaningsih/sumo/tools/lima/mobility50.tcl"; //file tcl
dari SUMO
      m_mobility = 2; //model mobility “1=trace 2=RWP”
      m_nNodes = 50; //jumlah node
      m_TotalSimTime = 180.01; //waktu simulasi
      m_nodeSpeed = 8.33; //kecepatan node
      m_nodePause = 1; //node berhenti sejenak
  m_nSinks = 12; //mengatur node sebagai pengirim
  m_txp = 7.5; //daya pengiriman (dB)
  m_traceMobility = 1; //mengaktifkan pelacakan pergerakan node
  m_protocol = 4; // mengatur protocol yang digunakan 4=DSR
  m_80211mode = 1; // mode802.11 1=802.11p
  m_lossModel = 3; // model propagasi 3=Two Ray Ground
 }}
```

Lampiran 7 Kode Sumber Implementasi pemanggilan uji coba scenario pada DSR node 70

```
void
VanetRoutingExperiment::SetupScenario ()
{
if (m_scenario == 2)
    {
     m_traceFile =
"/home/raniarwaningsih/sumo/tools/lima/mobility70.tcl"; //file tcl
dari SUMO
      m_mobility = 2; //model mobility “1=trace 2=RWP”
      m_nNodes = 70; //jumlah node
      m_TotalSimTime = 180.01; //waktu simulasi
      m_nodeSpeed = 8.33; //kecepatan node
      m_nodePause = 1; //node berhenti sejenak
  m_nSinks = 12; //mengatur node sebagai pengirim
  m_txp = 7.5; //daya pengiriman (dB)
  m_traceMobility = 1; //mengaktifkan pelacakan pergerakan node
  m_protocol = 4; // mengatur protocol yang digunakan 4=DSR
  m_80211mode = 1; // mode802.11 1=802.11p
  m_lossModel = 3; // model propagasi 3=Two Ray Ground
```

Lampiran 8 Kode Sumber Implementasi pemanggilan uji coba scenario pada DSR node 90

```
void
VanetRoutingExperiment::SetupScenario ()
{
if (m_scenario == 2)
    {
     m_traceFile =
"/home/raniarwaningsih/sumo/tools/lima/mobility90.tcl"; //file tcl
dari SUMO
      m_mobility = 2; //model mobility “1=trace 2=RWP”
      m_nNodes = 90; //jumlah node
      m_TotalSimTime = 180.01; //waktu simulasi
      m_nodeSpeed = 8.33; //kecepatan node
      m_nodePause = 1; //node berhenti sejenak
  m_nSinks = 12; //mengatur node sebagai pengirim
  m_txp = 7.5; //daya pengiriman (dB)
  m_traceMobility = 1; //mengaktifkan pelacakan pergerakan node
  m_protocol = 4; // mengatur protocol yang digunakan 4=DSR
  m_80211mode = 1; // mode802.11 1=802.11p
  m_lossModel = 3; // model propagasi 3=Two Ray Ground
 }}
```

Lampiran 9 Kode Sumber Implementasi pemanggilan uji coba scenario pada DSDV node 30

```
void
VanetRoutingExperiment::SetupScenario ()
{
if (m_scenario == 2)
    {
     m_traceFile =
"/home/raniarwaningsih/sumo/tools/lima/mobility30.tcl"; //file tcl
dari SUMO
      m_mobility = 2; //model mobility “1=trace 2=RWP”
      m_nNodes = 30; //jumlah node
      m_TotalSimTime = 180.01; //waktu simulasi
      m_nodeSpeed = 8.33; //kecepatan node
      m_nodePause = 1; //node berhenti sejenak
  m_nSinks = 12; //mengatur node sebagai pengirim
      ) = 7.5; //daya pengiriman (dB)
      ceMobility = 1; //mengaktifkan pelacakan pergerakan node
      otocol = 3; // mengatur protocol yang digunakan 3=DSDV
      11mode = 1; // mode802.11 1=802.11p
      sModel = 3; // model propagasi 3=Two Ray Ground
```

```
 }}
```

Lampiran 10 Kode Sumber Implementasi pemanggilan uji coba scenario pada DSDV node 50

```
void
VanetRoutingExperiment::SetupScenario ()
{
if (m_scenario == 2)
    {
     m_traceFile =
"/home/raniarwaningsih/sumo/tools/lima/mobility50.tcl"; //file tcl
dari SUMO
      m_mobility = 2; //model mobility “1=trace 2=RWP”
      m_nNodes = 50; //jumlah node
      m_TotalSimTime = 180.01; //waktu simulasi
      m_nodeSpeed = 8.33; //kecepatan node
      m_nodePause = 1; //node berhenti sejenak
  m_nSinks = 12; //mengatur node sebagai pengirim
  m_txp = 7.5; //daya pengiriman (dB)
  m_traceMobility = 1; //mengaktifkan pelacakan pergerakan node
  m_protocol = 3; // mengatur protocol yang digunakan 3=DSDV
  m_80211mode = 1; // mode802.11 1=802.11p
  m_lossModel = 3; // model propagasi 3=Two Ray Ground
 }}
```

Lampiran 11 Kode Sumber Implementasi pemanggilan uji coba scenario pada DSDV node 70

```
void
VanetRoutingExperiment::SetupScenario ()
{
if (m_scenario == 2)
    {
     m_traceFile =
"/home/raniarwaningsih/sumo/tools/lima/mobility70.tcl"; //file tcl
dari SUMO
      m_mobility = 2; //model mobility “1=trace 2=RWP”
      m_nNodes = 70; //jumlah node
      ı_TotalSimTime = 180.01; //waktu simulasi
      ı_nodeSpeed = 8.33; //kecepatan node
      ı_nodePause = 1; //node berhenti sejenak
      .nks = 12; //mengatur node sebagai pengirim
      ) = 7.5; //daya pengiriman (dB)
```

```
  m_traceMobility = 1; //mengaktifkan pelacakan pergerakan node
  m_protocol = 3; // mengatur protocol yang digunakan 3=DSDV
  m_80211mode = 1; // mode802.11 1=802.11p
  m_lossModel = 3; // model propagasi 3=Two Ray Ground
 }}
```

Lampiran 12 Kode Sumber Implementasi pemanggilan uji coba scenario pada DSDV node 90

```
void
VanetRoutingExperiment::SetupScenario ()
{
if (m_scenario == 2)
    {
     m_traceFile =
"/home/raniarwaningsih/sumo/tools/lima/mobility90.tcl"; //file tcl
dari SUMO
      m_mobility = 2; //model mobility “1=trace 2=RWP”
      m_nNodes = 90; //jumlah node
      m_TotalSimTime = 180.01; //waktu simulasi
      m_nodeSpeed = 8.33; //kecepatan node
      m_nodePause = 1; //node berhenti sejenak
  m_nSinks = 12; //mengatur node sebagai pengirim
  m_txp = 7.5; //daya pengiriman (dB)
  m_traceMobility = 1; //mengaktifkan pelacakan pergerakan node
  m_protocol = 3; // mengatur protocol yang digunakan 3=DSDV
  m_80211mode = 1; // mode802.11 1=802.11p
  m_lossModel = 3; // model propagasi 3=Two Ray Ground
 }}
```