Simulation Parameters

NS3

UDP Model in NS3

Classes in NS3 for implementing user datagram protocol:

- Class **UdpSocket** – For hosting Udpsocket attributes that can be reused across different implementations.
- Class **UdpSocketImpl** – Provide socket interface to NS3's implementation of UDP.
- Class **UdpSocketFactory** – Used by layer 4 protocol instance to create UDP sockets.
- Class **UdpSocketFactory Impl** – Implements the API for creating UDP sockets.
- Class **UdpL4Protocol** – This is subclass of IpL4Protocol and provides an implementation of the UDP protocol.

TCP Model

Classes in NS3 for implementing user datagram protocol:

- Class **TcpSocket**
- Class **TcpSocketFactory**
- Class **TcpCongestionOps –** This provides different variants for congestion control.

Antenna Module

- **AntennaModel() -** This base class provides an interface for the modeling of the radiation pattern of an antenna.
- Set of classes derived from this base class are:
  - Class **IsotropicAntennaModel -** model provides a unitary gain (0 dB) for all direction.
  - Class **CosineAntennaModel** – This is the model described in **Chunjian** and in this model we specify the beamwidth and orientation in degrees.
  - Class **ParabolicAntennaModel** - This model is based on the parabolic approximation of the main lobe radiation pattern.

Transmission Power thresholds

- **ns3::YansWifiPhy**
  - **EnergyDetectionThreshold –** For PHY layer to detect the signal the energy must be greater than this value (dbm).
  - **TxGain -** Transmission gain (dB).
  - **RxGain** - Reception gain (dB).
  - **TxPowerStart** - Minimum available transmission level (dbm).
  - **TxPowerEnd** - Maximum available transmission level (dbm).
  - **TxPowerLevels** - Number of transmission power levels available between TxPowerStart and TxPowerEnd included.
  - **RxNoiseFigure** - Loss (dB) in the Signal-to-Noise-Ratio due to non-idealities in the receiver.
  - **ChannelSwitchDelay -** Delay between two short frames transmitted on different frequencies.

Transmission Power thresholds

- **ns3::WifiRemoteStationManager**
  - **RtsCtsThreshold -** If the size of the data packet + LLC header + MAC header + FCS trailer is bigger than this value, we use an RTS/CTS handshake before sending the data**.**
  - **FragmentationThreshold -** If the size of the data packet + LLC header + MAC header + FCS trailer is biggerthan this value, we fragment it such that the size of the fragments are equal or smaller than this value.
- **ns3::IdealWifiManager**
  - **BerThreshold -** The maximum Bit Error Rate acceptable at any transmission mode.

Transmission Power thresholds

- **ns3::CaraWifiManager**
  - **ProbeThreshold -** The number of consecutive transmissions failure to activate the RTS probe.
  - **FailureThreshold -** The number of consecutive transmissions failure to decrease the rate.
  - **SuccessThreshold -** The minimum number of sucessfull transmissions to try a new rate.
- **ns3::RedQueue**
  - **MinTh -** Minimum average length threshold in packets/bytes.
  - **MaxTh -** Maximum average length threshold in packets/bytes.