Alternate Fairness Algorithm

Current FA

- Positive points on the current Fairness Algorithm
  - Small FA message
  - Simple FA message handling to ensure fairness
- Issues with the current Fairness Algorithm
  - Lack of analytical model for FA evaluation
    - Stability and stability margin
    - Transient response characteristics
    - Intuition based fairness algorithm parameter adjustment
    - Simulation work is very sensitive to traffic pattern and configuration
  - Complicated fair rate generation rules
    - Number of adjustable parameters (16 configurable parameters)
    - Rate adjustment mechanism is highly non-linear

Objectives

- Keep the current fairness message format
  - The fairness message is to advertise the fair rate
- Keep the current fairness message processing (without corner cases)
  - If (normLocalFairRate < rcvdRate)
    - Use and advertise rcvdRate
  - Else
    - Use and advertise normLocalFairRate
- Work out a mechanism to compute normLocalFairRate so that
  - Analytical model for the feedback system can be obtained
  - Parameters can be adjusted so that the trade-offs between the stability margin and transient response time can be quantified.
- Interwork with the current fairness algorithm (no analytical model available)

Fairness Algorithm

- To ensure fairness among all the transmitting stations
  - Achievable via current fairness message handling procedure (i.e. the rate is controlled to never exceed the advertised rate, after normalization)
- To ensure high utilization on the immediate downstream link
  - To work out a mechanism to compute the normLocalFairRate
    - Current aggressive and concretive mode are two examples
    - Alternate Fairness Algorithm will be just another example, which inter-operate with the existing fairness algorithm

Indulgence of the WG

- Include the alternate FA in the future 802.17 document if objectives are achieved
- Needs brain-power, both analytical and simulational, to finish the task