98-0885R1
Proposal To Move The DFBA Text To Baseline

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The DFBA Scheme: 98-0405
Motion
GFR Sample Implementations

- VII.2.1: WFQ and Per-VC Accounting
  - Works for TCP [ATM Forum 97-0528]
  - Multiple TCPs per VC not tested

- VII.2.2: Tagging and FIFO Queuing
  - Does not work for TCP [ATM Forum 97-0310]

- (Proposed VII.2.3): DFBA [ATM Forum 98-0405]
  - Works for TCP
  - Works for multiple TCPs per VC
  - Works for terrestrial and satellite RTTs
Differential Fair Buffer Allocation

\[ W_i = \text{Weight of VC}_i = \frac{\text{MCR}_i}{(\text{GFR Capacity})} \]

\[ W = \sum W_i \]

\[ L = \text{Low Threshold. } H = \text{High Threshold} \]

\[ X_i = \text{Per-VC buffer occupancy. } (X = \sum X_i) \]

\[ Z_i = \text{Parameter } (0 \leq Z \leq 1) \]
DFBA Operating Region

Buffer occupancy (X)

<table>
<thead>
<tr>
<th>Desired operating region</th>
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H (cliff)  
L (knee)

Throughput

Load

Delay
**DFBA (contd.)**

- **ith VC’s Queue (Normalized):** $X_i(W/W_i)$
- **TCP Rate:** $D \propto \frac{MSS}{RTT \times \sqrt{P(drop)}}$

- **Accept All frames.**
- **Drop all low priority. Drop high priority with probability $P()$.**
- **Drop all low priority. Do not drop high priority.**
- **Drop all.**

- **Low Threshold $L$:** $X < L$
- **High Threshold $H$:** $X > H$
VII.2.1 GFR Implementation using Weighted Fair Queuing and per-VC accounting
(Unchanged)

VII.2.2 GFR Implementation Using Tagging and FIFO Queue
(Unchanged)

VII.2.3 GFR Implementation Using Differential Fair Buffer Allocation
(From living list)

VII.2.4 Evaluation Criteria
(From VII.2.3 in the baseline text document.)
DFBA Algorithm

When first cell of frame arrives:

IF (X < L) THEN
    Accept frame
ELSE IF (X > H) THEN
    Drop frame
ELSE IF ( (L < X < H) AND (X_i \leq X \times W_i/W ) )
    Drop CLP1 frame
ELSE IF ( (L < X < H) AND (X_i > X \times W_i/W ) )
    Drop CLP1 frame
    Drop CLP0 frame with

P\{\text{Drop}\} = Z_i \left( \alpha \times \frac{X_i - X \times W_i/W}{X(1-W_i/W)} + (1-\alpha) \times \frac{X - L}{H - L} \right)
Motion

- Move the modified Section VII.2.3 in the GFR section of the living list to the baseline text.