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

<table>
<thead>
<tr>
<th>K</th>
<th>H</th>
<th>L</th>
<th>0</th>
</tr>
</thead>
</table>

- **$X > H$**  
  $\Rightarrow$ EPD  
  $\Rightarrow$ No Loss

- **$X > L$**  
  $\Rightarrow$ Drop all CLP1.

- **$X > L$ and $X_i > X \times W_i/W$**  
  Probabilistic Loss of CLP0

- **$X \leq L$**  
  $\Rightarrow$ No Loss

- **$W_i = Weight$ of VC$_i = MCR_i/(GFR$ Capacity)**
- **$W = \Sigma W_i$**
- **$L = Low$ Threshold. $H = High$ Threshold**
- **$X_i = Per-VC$ buffer occupancy. ($X = \Sigma X_i$)**
- **$Z_i = Parameter$ (0 ≤ $Z \leq 1$)**

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DFBA Operating Region

Buffer occupancy (X)

H (cliff)  L (knee)

Desired operating region
DFBA (contd.)

ith VC’s Queue (Normalized) \( X_i(W/W_i) \)

- **Accept All frames.**
- **Drop all low priority.**
- **Drop high priority with probability \( P() \).**
- **Drop all.**

TCP Rate \( D \propto \frac{MSS}{RTT \times \sqrt{P(drop)}} \)

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New Baseline Text

- 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.