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

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Overview

❑ 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

K	H	L	0
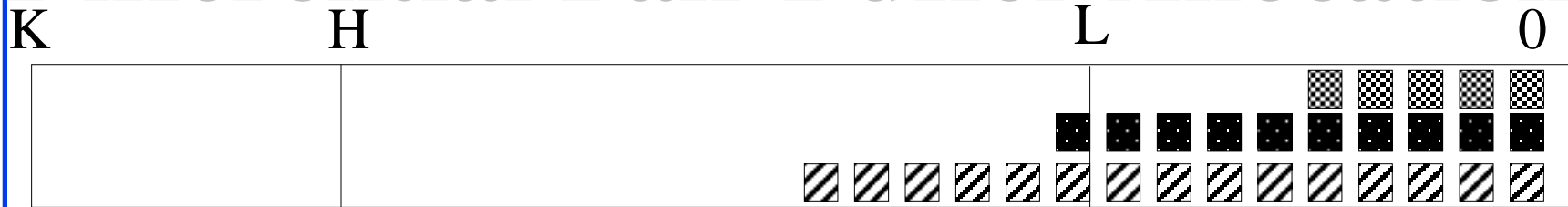
$$X > H$$
$$\Rightarrow \text{EPD}$$

$$X > L \Rightarrow \text{Drop all CLP1.}$$
$$X > L \text{ and } X_i > X*W_i/W \Rightarrow$$
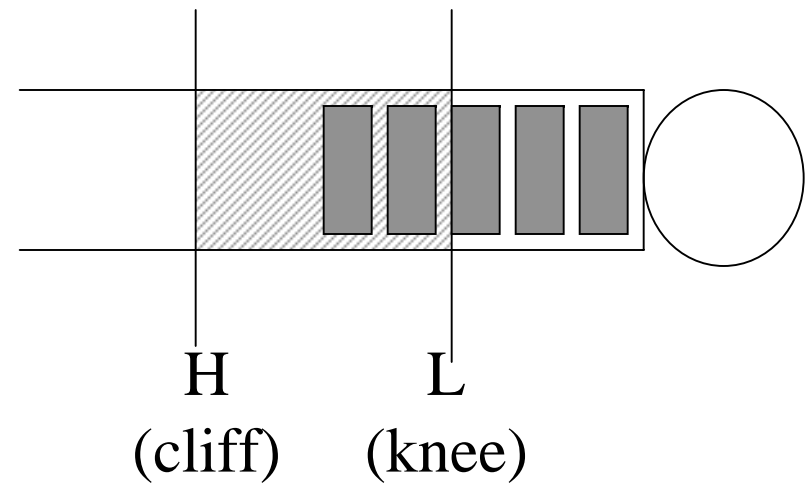$$\text{Probabilistic Loss of CLP0}$$

$$X \leq L$$
$$\Rightarrow \text{No Loss}$$

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

DFBA Operating Region

Delay

Throughput

Load

Buffer occupancy (X)

H
(cliff)

L
(knee)
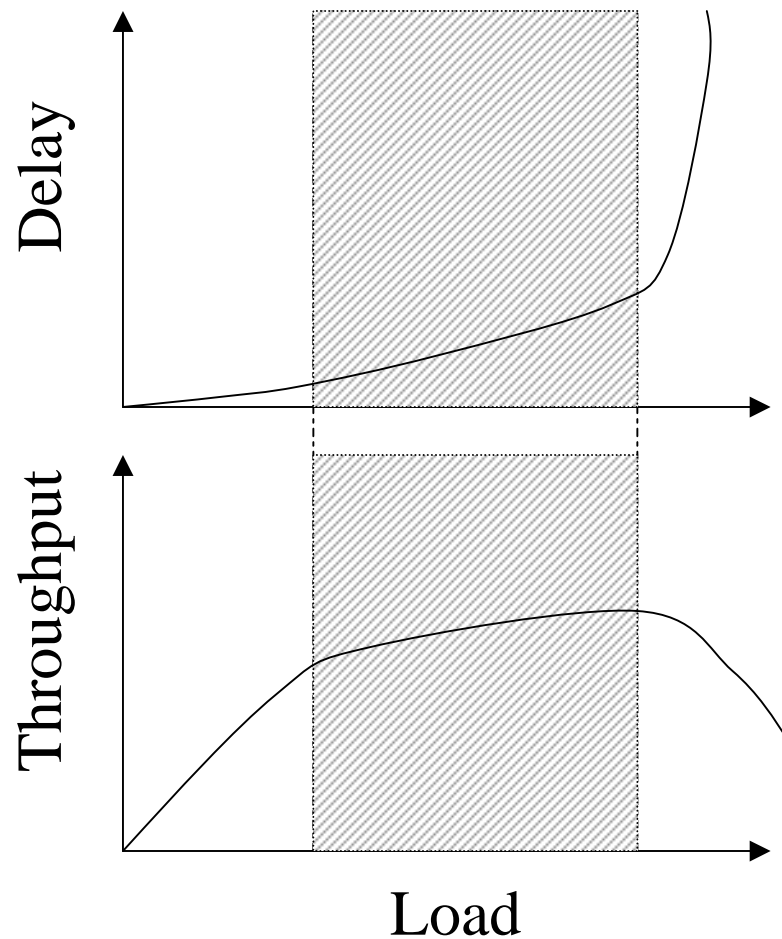
Desired
operating region

DFBA (contd.)

Accept All frames.

Drop all low priority. Drop high priority with probability P()

Drop all

ith VC's Queue (Normalized)

$X_i(W/W_i)$

$X < L$

Drop all low priority Do not drop high priority

$X > H$

①   ②   ③   ④

Low Threshold L

High Threshold H

Total Queue X
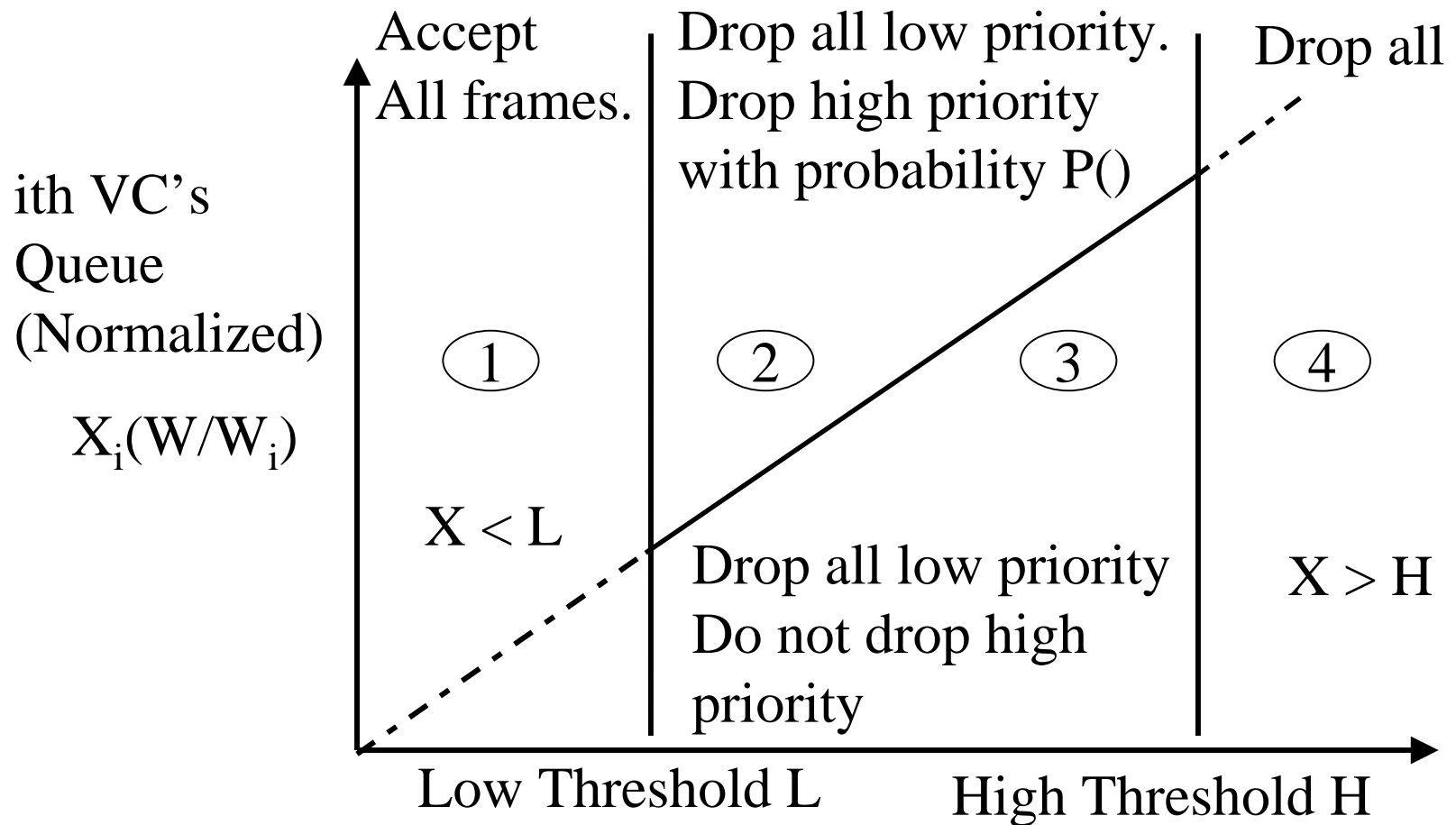
TCP Rate $D \propto \dfrac{MSS}{RTT \times \sqrt{P(drop)}}$

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

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

Motion

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