Fair Edge-based Differentiation of Real-time Traffic

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**INTRODUCTION**

**GOALS**
- **Service differentiation** without network support
- **Fairness** between real-time and elastic traffic
- **Consistent quality** for admitted sessions of real-time traffic
- Support for **arbitrary data rates and loss rates** for real-time traffic

**APPROACH**
- Elastic traffic uses **TCP**
- **Probe-based admission control** for real-time traffic
  - Send a number of packets over the path to **estimate loss rate**
  - Accept if loss rate is under **threshold**

**REFERENCE**

**PARAMETER SETTING**

**FORWARD ERROR CORRECTION**
The loss rates of the applications are separated from the loss rate of the network

**TCP FAIRNESS**
Comparison with TCP throughput to determine loss threshold for admission control

\[
R_{TCP} = \frac{MSS}{RTT} \sqrt{\frac{C}{p}}
\]

**RESULTS**

Neither real-time nor elastic traffic has a general advantage

Probe lengths in the order of seconds required

Applications with high demands are more likely to be blocked

Admitted sessions get the required quality

<table>
<thead>
<tr>
<th>Class</th>
<th>Rate</th>
<th>Loss req. (%)</th>
<th>Block lgth</th>
<th>Thr. (%)</th>
<th>Red. pkts</th>
<th>Block prob (%)</th>
<th>Fail (%)</th>
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