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Title: Transient Performance of EPRCA and EPRCA++

Abstract:

Transient performance of EPRCA and EPRCA++ (a modification of EPRCA+) is compared.

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The transient performance of EPRCA and many of its variation is rather slow. It takes several milliseconds to get to the steady state. In real world, the networks are always operating in a transient mode. Some VCs are finishing up while others are starting up. Transient performance is, therefore, an important aspect. On LAN systems, where round-trip delay is only a few microseconds, EPRCA takes several milliseconds to reach the steady state. Graphs of the simulation results will be presented at the meeting.

EPRCA++ is a modification of EPRCA+ presented at the October interim meeting. The key objections to EPRCA+ was its use of time-based RM cell transmission. This is replaced by a count-based RM cell transmission. All other benefits of EPRCA+ including the following apply to EPRCA++:

1. Congestion avoidance (small queue length),

2. Simplicity,
3. Small number of parameters,
4. Insensitivity to parameters, and
5. Easy to set parameters

In addition, the following are new features of EPRCA++:

1. The queue length goal can be set at any desired value
2. EPRCA++ can operate at any desired operating point between the knee and the cliff of the delay-throughput curve.
3. 100% link utilization is achieved
4. VCs can start at PCR (ICR=PCR). However, the impact on the performance is minimal since the queue lengths are controlled. The maximum queue length is equal to the theoretical maximum (one round trip delay) and come down fast. At least in LANs, the impact of VCs starting at PCR is minimal.
5. Idle VCs are not required to do any computation during or after the idle period.

Simulation results comparing EPRCA and EPRCA++ will be presented.

[1] Raj Jain, Shiv Kalyanaraman, and Ram Viswanathan, "Simulation Results: EPRCA+ Scheme," ATM Forum Traffic Management Group Interim Meeting, October 25-26, 1994.