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ATM Forum Document Number: ATM Forum/94-0882

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Title: Rate Based Schemes: Mistakes to Avoid

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Abstract:

One key advantage of the rate-based approach in general and the
explicit-rate approach in particular is that it provides
considerable freedom to switch manufacturers in terms of specific
algorithms to use. However, it is easy to misdesign a scheme
unless the overload is measured properly and the feedback is
related to the control properly. This contribution points out
examples of such mistakes.

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Source:

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EXTENDED ABSTRACT

The explicit-rate indication that was introduced in the July 1994
ATM Forum meeting [1], has become popular since it allows the
switches considerable freedom in their internal algorithms for
resource allocation and also provides quick indication to the
source about the correct transmission rate.

However, many of the proposals have the following problems:

1. Using queue length as the overload indication
2. Using a single number to indicate rate
3. Providing feedbacks that are not related to the control

In the ATM Forum presentation, we will point out what problems
are caused by these and a few other similar mistakes. In
particular, these result in unnecessary oscillations, large

delays, and unsatisfactory operation with bursty traffic. Fortunately, it is possible to avoid these mistakes and design rate based schemes that work perfectly. One such scheme is described in an accompanying contribution [2].

REFERENCES:

[1] A. Charny, D. Clark, and R. Jain, "Congestion Control with Explicit Rate Indication," ATM Forum Contribution 94-0692, July 1994.

[2] R. Jain, S. Kalyanraman, R. Viswanathan, "The OSU Scheme for Congestion Avoidance Using Explicit Rate Indication," ATM Forum Contribution 94-0883, September 1994.