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New Source Rules and Satellite Links

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Effect of XRM

- It was shown in August [1]: If XRM is low, rule 6 is triggered repeatedly leading to oscillations and a net throughput of 50 Mbps on a 155 Mbps (or even higher speed) link.
- Conclusion: XRM width should be increased.

Effect of CIF

- Also in August meeting: XRM signalling was replaced by CIF signalling.
- XRM = Min{CIF/Nrm, PCR*RTT/Nrm}
- Goal: To verify that satellite links can be efficiently used under the new rules.
Problem

- Previously, XRM directly controlled the oscillation. User could guarantee no-oscillation by setting Xrm to 6144 or higher
- $\text{XRM} = 6144$
  \[ \Rightarrow \text{CIF} = \text{XRM} \times \text{NRM} = 196608 \]
- Even with CIF=196608, XRM=6144, oscillations can be caused by TOF decreases
- The problem happens only if the VC is setup during congested period
All links 155 Mbps, ICR = 0.9 × PCR

Goal: If the scheme has problem with single-source, it will have problems with more complex configurations
Simulation Parameters

- Source: Parameters selected to maximize ACR
  Nrm = 32
  AIRF=1 ⇒ AIR = PCR/Nrm ⇒ ACR is not limited by AIR
  RDF= 512 cells
  \{TDFF, PNI\} = \{1/8, 0\} or \{0, 1\} ⇒ Rule 5 on or off
  CIF = 196608
  RTT = Propagation delay × multipliers of 1, 10 or 110
  XDF = 1/2

- Traffic: Bidirectional

- Switch:
  Target Utilization = 90%
  Averaging interval = min\{30 cells, 200 µs\}
XRM should be directly negotiated or its dependence on RTT should be removed.