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New Source Rules and Satellite Links

Raj Jain, Shiv Kalyanaraman, Fang Lu, Sonia Fahmy
The Ohio State University

Saragur M. Srinidhi
Sterling Software and NASA Lewis Research Center

Raj Jain is now at
Washington University in Saint Louis
Jain@cse.wustl.edu
http://www.cse.wustl.edu/~jain/

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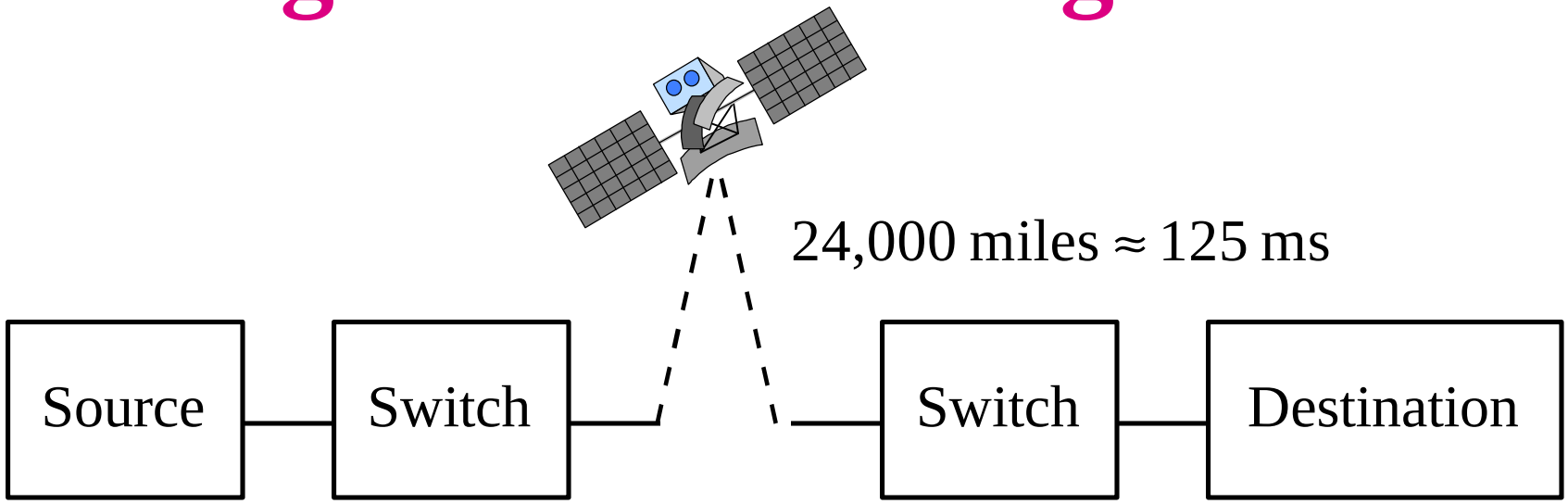
Effect of XRM

- 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 Mpbs (or even higher speed) link
- Conclusion: XRM width should be increased.
- [1] AF-TM 95-0972R1, "Parameter Values for Satellite Links," August 1995.
- 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
- XRM = 6144
  $\Rightarrow$ CIF = XRM*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

Single-Source Configuration

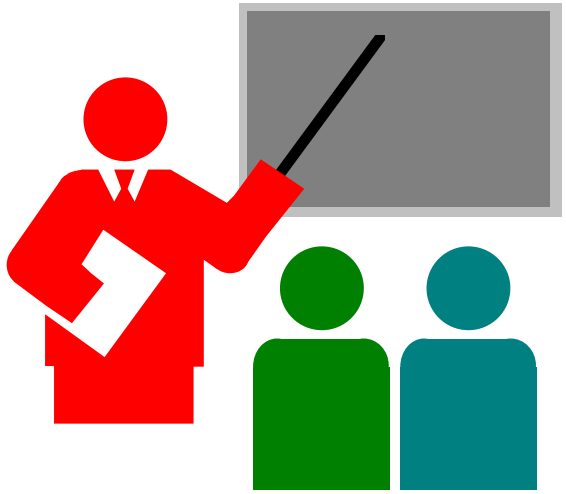


- All links 155 Mbps, ICR = 0.9 × PCR
- Goal: If the scheme has problem with single-source, it will have problems with more complex configurations

Simulation Parameters

- Source: Parameters selected to maximize ACR
  Nrm = 32
  AIRF=1 $\Rightarrow$ AIR = PCR/Nrm $\Rightarrow$ ACR is not limited by AIR
  RDF= 512 cells
  {TDFF, PNI} = {1/8, 0} or {0, 1} $\Rightarrow$ 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}

Summary



- XRM should be directly negotiated or its dependence on RTT should be removed.