

Analysis of packet loss in IP networks

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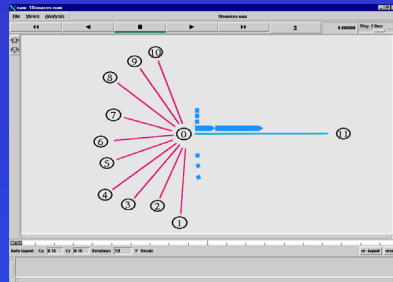
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1

NETWORK SIMULATION

Trace-driven simulation

is an efficient and flexible method for getting insight into loss behavior. Understanding loss patterns in the network is important for achieving the desired quality of service during transfer of multimedia traffic.



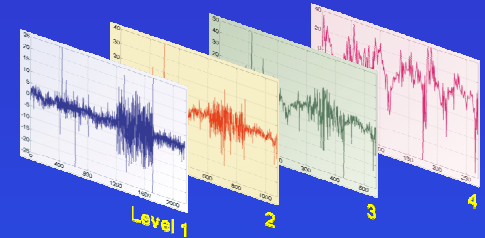
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LOSS PATTERNS ANALYSIS

Wavelet analysis

can decompose a signal into a hierarchical set of approximations and details. The detail part provides information in the time and frequency domains. It also serves as a mathematical microscope for investigating complicated traffic and loss patterns.

Details on various levels

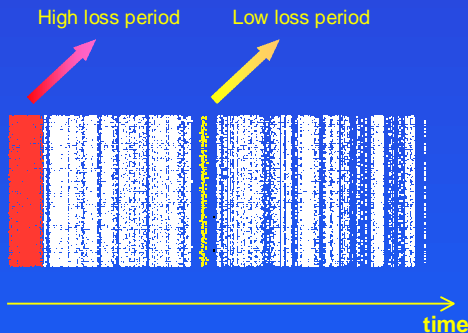


2

DATA VISUALIZATION

Textured dot strip plots

provide the initial insight into loss patterns. They provide information about the density of loss within the trace and thus reflect the periods of higher or lower congestion.

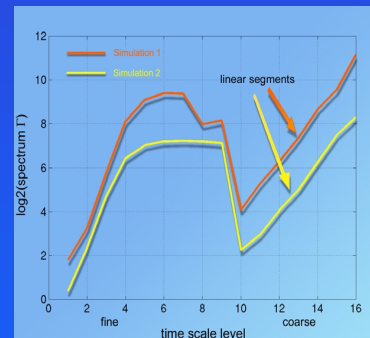
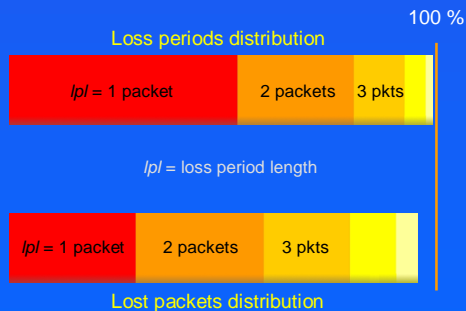


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LOSS PERIOD LENGTH

Loss period length

represents the number of consecutively lost packets of a connection. Longer loss periods have major impact on the quality of service of an end to end connection.



5

LRD OF PACKET LOSS

Long-range dependence (LRD)

is indicated by the linear relationship between the log of the spectrum Γ and the time scale level. The packet loss spectrum can be obtained from the detail part of the wavelet analysis.

The packet loss over User Datagram Protocol in IP networks exhibits long-range dependence over coarser time scales.

References:

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