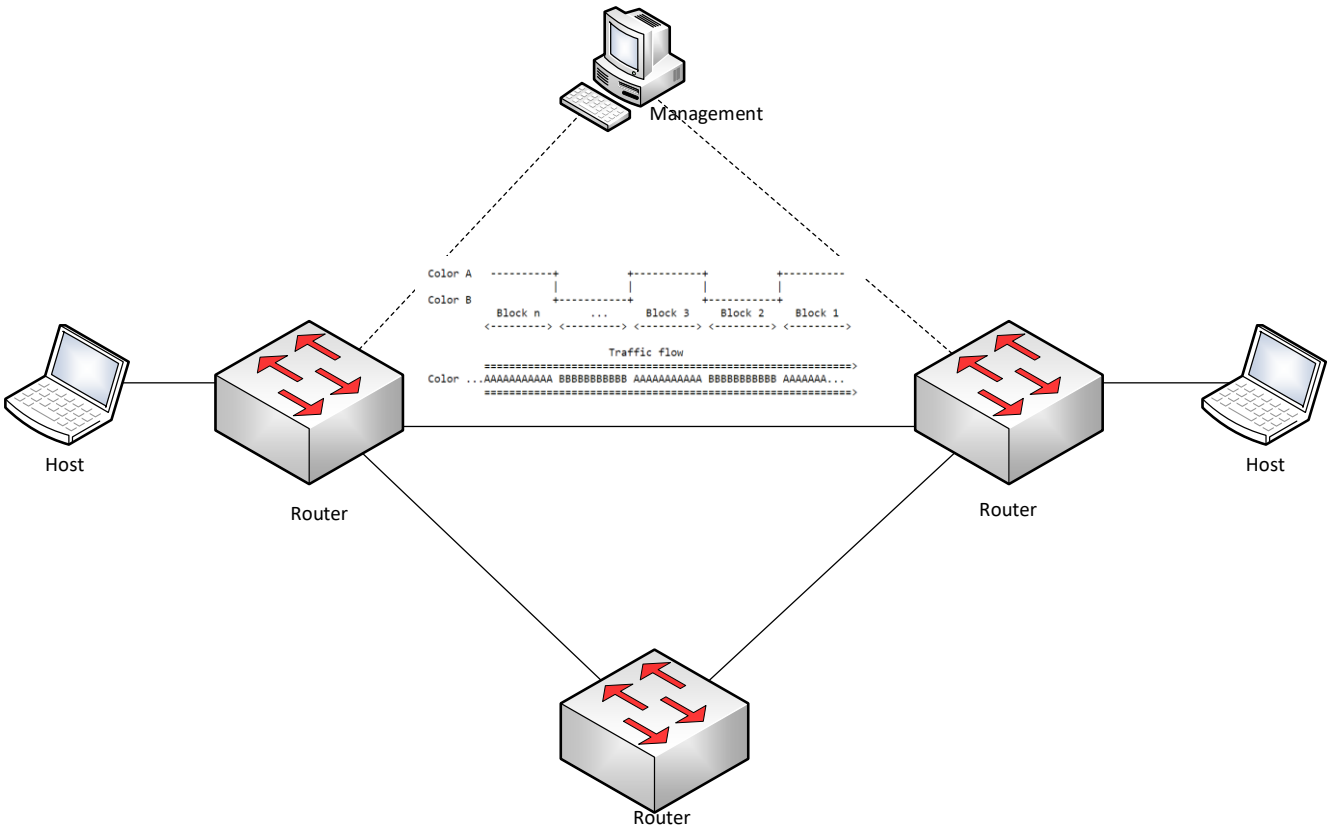
Italian Performance Monitoring Method

Abstract:

Nowadays, most of the traffic in Service Provider's networks carries contents that are highly sensitive to packet loss, delay and jitter. In this sense, Service Providers need methodologies and tools to monitor and measure network performances with an adequate accuracy, in order to constantly control the quality of experience perceived by their customers and also in order to fast troubleshoot and isolate network problems.

Recently, a new method to perform passive performance monitoring was proposed by Telecom Italia. It is based on Alternate Marking (coloring) technique done on live traffic, and addresses mainly packet loss measurements.



Goals:

1. Implement in P4 the Alternate Marking Method to measure traffic loss
2. Extend the method to measure one way delay and delay variation.

Project Steps:

1. Review the Alternate Marking method for passive performance monitoring draft proposal per https://tools.ietf.org/html/draft-ietf-ippm-alt-mark-06
2. Learn the P4-16 language
    a. Refer to http://p4.org/
    b. Read http://p4.org/wp-content/uploads/2017/05/p4_d2_2017_p4_16_tutorial.pdf
    c. Perform exercises per - https://github.com/p4lang/tutorials/tree/master/P4D2_2017/exercises
3. Raise Mininet environment with P4 simple routers
4. Implement in P4 the draft proposal on per flow basis

Requirements:

Python, Internet Networking Course