Title:
Time-Slot Reservation in All-Photonic Networks based on Flow Prediction

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Abstract:
In wide-area all-photonic networks that rely on confirmed reservation for control of core optical switches, it is necessary to make the reservations a significant amount of time before the arrival of the traffic in order to allow for round-trip delays. This necessitates prediction of future requirements of source-destination traffic flows. In this presentation, we will focus on all-photonic networks that have an overlaid-star topology. We will describe an approach based on traffic sampling and distributed expectation-maximization for predicting the resource requirements of end-to-end flows traversing the network. The estimates provide the foundation for a bandwidth allocation scheme based on fixed-length time-slot reservation. We study the performance of this allocation technique and compare it with other approaches.