Ph: 9585554590, 9585554599
Email: support@salemsmartreach.com
URL: www.salemsmartreach.com

OSA: An Optical Switching Architecture for Data Center Networks With Unprecedented Flexibility

Abstract:

A detailed examination of evolving traffic characteristics, operator requirements, and network technology trends suggests a move away from nonblocking interconnects in data center networks (DCNs). As a result, recent efforts have advocated oversubscribed networks with the capability to adapt to traffic requirements on-demand. In this paper, we present the design, implementation, and evaluation of OSA, a novel Optical Switching Architecture for DCNs. Leveraging runtime reconfigurable optical devices, OSA dynamically changes its topology and link capacities, thereby achieving unprecedented flexibility to adapt to dynamic traffic patterns. Extensive analytical simulations using both real and synthetic traffic patterns demonstrate that OSA can deliver high bisection bandwidth of the nonblocking architecture). Implementation and evaluation of a small-scale functional prototype further demonstrate the feasibility of OSA.