Networking Applications of WDM Passive Optical Networks

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The wavelength-division-multiplexed passive optical network (WDM-PON) is a promising approach to deliver high speed services to both business and residential subscribers. Common WDM-PONs support two-way point-to-point data transmissions between the optical line terminal (OLT) and the individual subscribers or optical network units (ONUs), via the respective designated set of wavelengths. However, with more diverse multimedia and data services available for broadband access, the access network has to be designed with more networking capabilities and applications, rather than mere data distribution. It is desirable to possess self-healing capability to survive under fiber link failure, and support various different modes of data or video delivery, such as broadcast, multicast, and inter-ONU communication, etc. The data routing and service connections should be flexibly reconfigurable to facilitate intelligent management of the WDM-PONs. In this talk, we will discuss the realization of these networking applications in WDM-PONs.