

With an increasing demand of bandwidth from enterprises and households, the data rates of broadband access network will be required over 1Gbps for each customer. To solve this problem, Time-Division Multiple Passive Optical Network (TDM-PON) like Gigabit PON (GPON) and Ethernet PON (EPON) are deployed to resolve the bandwidth bottleneck. These technologies, however, still cannot meet the demands of the increasing services such as High Definition TV (HDTV). In the proposed thesis Coarse Wavelength Division Multiplexing-Passive Optical Network (CWDM-PON) has been employed as the most effective technology for enhancing bandwidth at the access side. The report gives a detailed description of the work done in designing the whole setup. The proposed setup has been tested, simulated and analyzed using software named OptiSystem. Complete results with graphs are also included. The results show that the designed setup has the capability to withstand huge number of customers with an acceptable value of BER.

Keywords: Time-Division Multiple Passive Optical Network (TDM-PON), Gigabit PON (GPON), Fiber-To-The-Home (FTTH), High Definition TV (HDTV), Coarse Wavelength Division Multiplexing-Passive Optical Network (CWDM-PON).