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Detecting faulty fiber with centralized failure detection system (CFDS) in fiber-to-the-home (FTTH) access network

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Keywords

detection of faulty fiber, identification of failure location, fiber-to-the-home (FTTH), centralized failure detection system (CFDS), Visual Basic, downwardly

Abstract

A new technique for detecting any faulty fiber and identifying the failure location occurring in tree-based structured fiber-to-the-home (FTTH) access network with centralized failure detection system (CFDS) based on Visual Basic is proposed and experimentally demonstrated in the paper. CFDS is installed with optical line terminal (OLT) at central office (CO) to monitor the network system and detect any failure that occurs in multi-line drop region of FTTH access network downwardly from CO towards customer premises. CFDS enables the status of each optical network unit (ONU) connected line to be displayed on a computer screen with capability to configure the attenuation and detect the failure simultaneously. The failure analysis and information is delivered to the field engineers for prompt actions, and meanwhile the failure line is restored to stand-by line to ensure a continuous traffic flow. This approach has bright prospects of improving the survivability and reliability as well as increasing the efficiency and monitoring capabilities in FTTH access network. Besides, it is able to overcome the upwardly or downwardly monitoring issues with conventional fiber fault localization technique by using optical time domain reflectometer (OTDR). With CFDS database, the histories of scanning process and data can be recalled and further analysis can possibly be conducted.



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