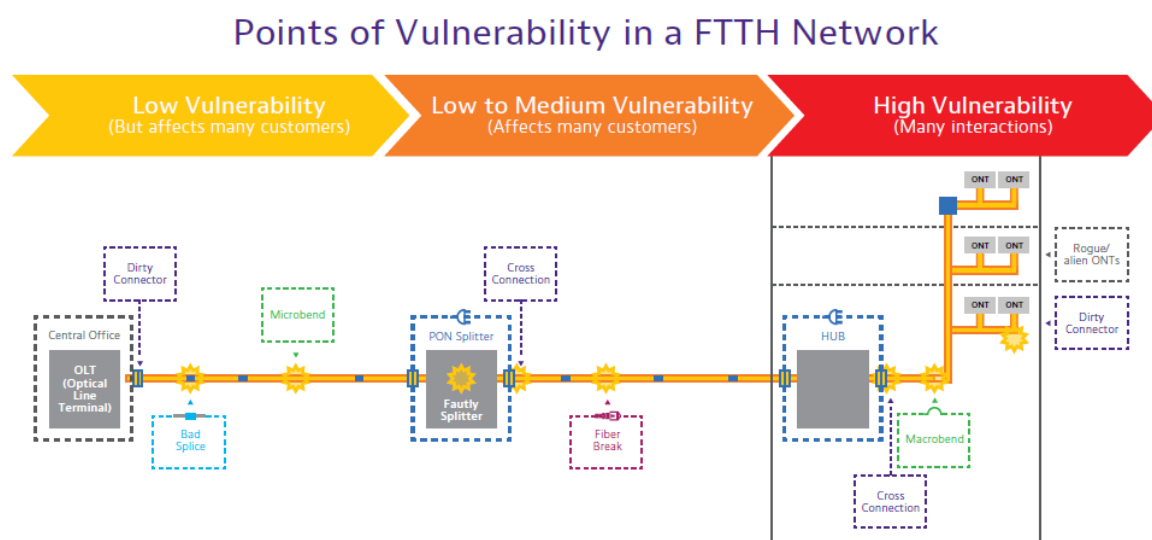


Tech Tip

Troubleshooting Fiber-to-the-Home

Fiber is being deployed to the home to meet increasing demand by customers, but installations often happen in harsh environments such as dirty cellars or basements, and next to water and gas pipes. This leads to contaminated fiber and other problems that can decrease service quality. Below are the top four issues to look for when troubleshooting or recertifying Fiber to the Home (FTTH).



- 1. Dirty Connectors:** Dirty connectors increase return loss and insertion loss. This causes an increase in bit error rates and can sometimes cause loss of the signal. Inspect the connectors to make sure they are clean. If the connector is dirty, use a fiber cleaning tool to clean the end face. Re-inspect the connector. If both male and female connectors are clean, make the connection.
- 2. Macro-bends:** G-PON transmissions may not be impacted by macro-bends presence, but the next generation of PON (XGS-PON, NG-PON2) uses longer wavelengths that are more sensitive to macro-bends and will cause an excess of insertion loss. Locate a macro-bend by using an OTDR at 2 wavelengths (1310 and 1550nm or 1625nm). Once the macro-bend has been located, gently adjust the fiber to eliminate the bend. Re-test to make sure the problem has been corrected.

3. **Cross Connections:** Cross connections could happen at the splitter or the drop terminal where connectors are inserted into the wrong port. This makes ONT units talk out of sequence with the OLT at the central office. Symptoms of a cross connection are customers complaining of service problems, but the location of the problem is not easy to find using traditional tests. A PON ID continuity check should be performed to locate the problem by validating the incorrect OLT to ONT patch. Plug the connectors into the correct ports and validate that the correct ONT is now talking to the OLT.
4. **Faulty and Broken Splitters:** There are two types of problems. First, faulty splitters have good and bad legs causing increased loss to some customers but not others. The second type of problem is a broken splitter where service to all customers is disrupted. In both situations, do an OTDR test to locate the issue. Replace the splitter and re-test to make sure no other issues are present.

Products Used for Testing

1. [FiberChek Probe Microscope](#)
2. [FiberChek Sidewinder](#)
3. [Choosing the Right OTDR](#)
4. [T-BERD 2000](#)
5. [OLP-88 TruePON](#)
6. [FTTH-SLM](#)

For a comprehensive guide to testing fiber, read our Reference Guide to Fiber Optic Testing.