

# Optical Network Monitoring

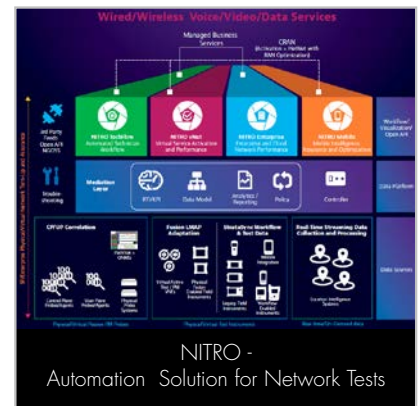
With OTDR and fiber optic sensors, fiber optic networks and other critical infrastructures can be monitored in real time. Errors are reported immediately and failures avoided altogether.

## Description

Fiber optic connections form the backbone of all state-of-the-art data networks. Even the smallest disturbances can have serious consequences – including complete power failure. It is, therefore, important to protect the cables and relevant infrastructure from sabotage, espionage, and environmental damage. Optical real-time monitoring is a proven means of this. In optical time domain reflectometry (OTDR), short light pulses (ns to  $\mu$ s) are sent into the fiber and the backscattering based on Rayleigh scattering is evaluated. The running time of the pulses can then be used to detect the exact location of errors, attenuation, and manipulation within seconds. In this case, the system triggers an alarm.

This type of optical network monitoring not only protects against network failures and physical damage, but it also contributes to data security: With comparatively simple methods such as fibertapping, spies and criminals repeatedly try to intercept sensitive information during transmission. However, this results in attenuation losses, which can also be detected and localized via OTDR.

In an increasingly interlinked world, optical technologies are not only used to monitor data networks. Legislation also demands the protection of other critical infrastructures (KRITIS). These include electricity, gas, and water networks, as well as healthcare and financial networks. Fiber optic sensors are used wherever the protection of a facility is required. For example, they recognize when a cable duct has been broken open or a manhole cover has been lifted. The purely optical systems have a decisive advantage: they do not require an operating voltage and therefore function perfectly, even in the event of a power failure.



Source: VIAVI

## smartOTU – Monitoring System for City and Company Networks

LASER COMPONENTS offers the smartOTU from VIAVI, which is a remote monitoring system for optical fiber networks. The 2U unit can be integrated into a typical 19" rack via a mounting kit and can track up to 48 individual fibers simultaneously. The number of fibers can be set via a practical optical switch.

In order to avoid a disturbance in the active data transmission of the fibers being monitored, monitoring is typically carried out in the 1650 nm wavelength range. Deviating wavelengths can also be selected. Events that occur along the optical fiber link can utilize different alarm options. This includes e-mail, SMS, SNMP, and three potential-free contacts (relays). If necessary, you can always connect via a separate LAN port with this unit. Therefore, even large IT power failures do not affect monitoring.

An expansion of the existing system is possible without a problem.

