



FIBRE NETWORK &
INFRASTRUCTURE MONITORING

OPTRAL

HIGH PERFORMANCE
OPTICAL CABLES

Since 1988, OPTRAL has dedicated itself to the design, manufacture and sale of fibre optic cables.



As specialists in fibre optic cables, OPTRAL is evolving towards innovative product lines, with its creation of OPTRAL SOLUTIONS, a set of sensing and monitoring solutions that detect events of interest via fibre optic cables; capable of capturing magnitudes such as temperature, pressure, vibration or tension.

These solutions can be applied in a large number of situations or markets, such as security and surveillance systems (OGuard), infrastructure analysis, fault control in telecommunications networks (OWatch), and fire and leak detection systems (OSensor) among many others.

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A system that allows preventive and reactive maintenance of an entire fibre optic network through real-time monitoring.

ADVANTAGES:

- Saves on operational and network maintenance costs.
- Increases efficiency and speed for resolving outages in the optical network.
- Reduces penalties as stipulated in Service Level Agreements (SLA).
- Detects potential theft or sabotage of wiring.
- Diagnoses and locates transmission failures such as cuts, excessive attenuation due to elongation and curvature, reflections or patchpanels.
- Monitors and geolocates events indicating the real-time status of the entire line.
- Stores alarms and events detected by different OTDRs in a searchable database.
- Allows remote control, management and parameterization of the inventory of OTDRs.

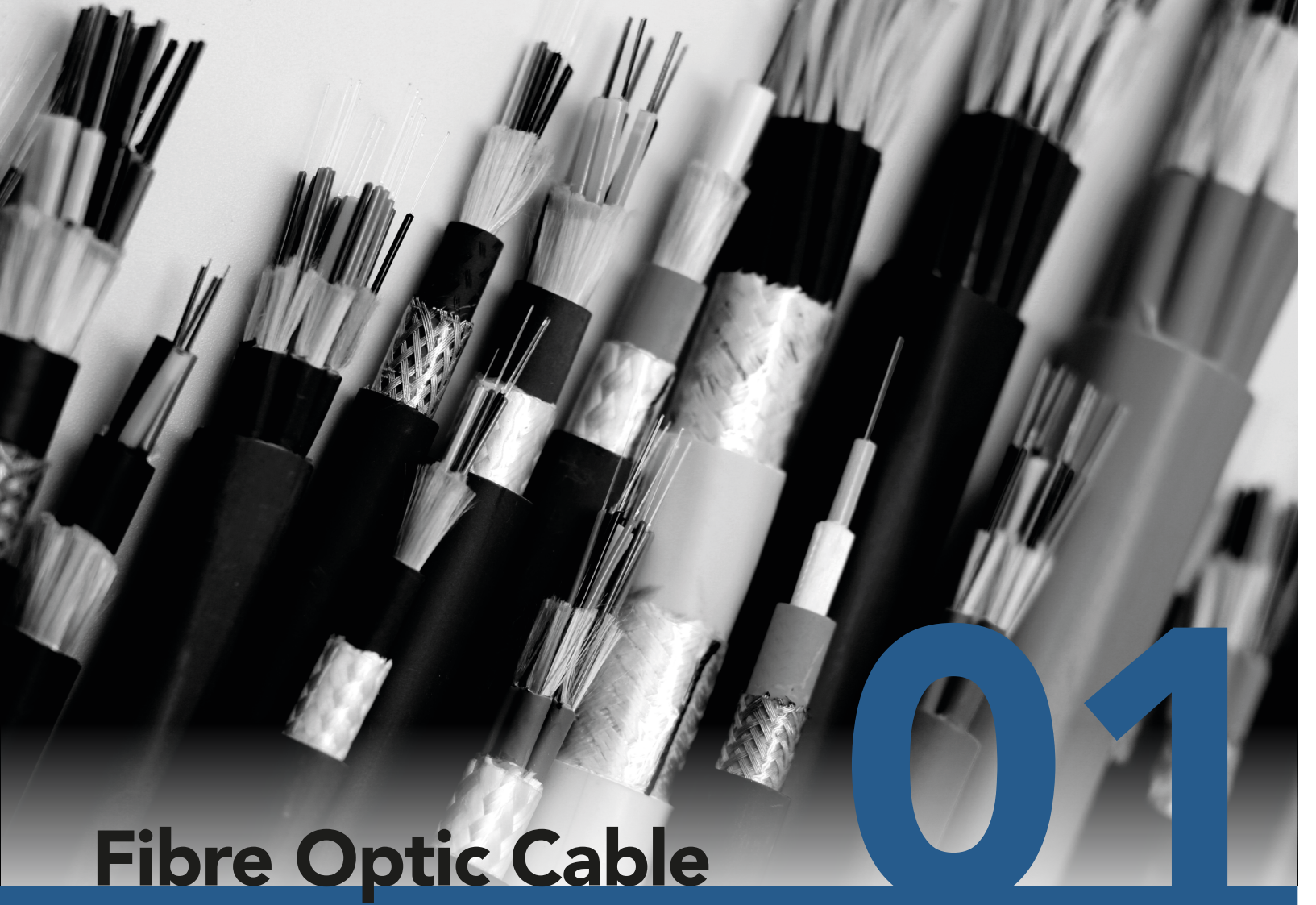


It is recommended when:

- Service Level Agreements (SLA) between operators and their customers are exceeded and, consequently, economic penalties are generated.
- There is a deterioration of service that inconveniences the customer.
- High operational costs (OPEX) are detected due to the lack of maintenance tools for the telecommunications infrastructure.
- Real-time infrastructure monitoring mechanisms are lacking and the response to optical network crashes is inefficient.

The system consists of:

1. **OPTRAL Fibre Optic Cable.**
2. **OTDR Unit device** that monitors the entire fibre optic network 24/7.
3. **OMONITOR Software Platform** which allows the visualization, monitoring and management of the system.

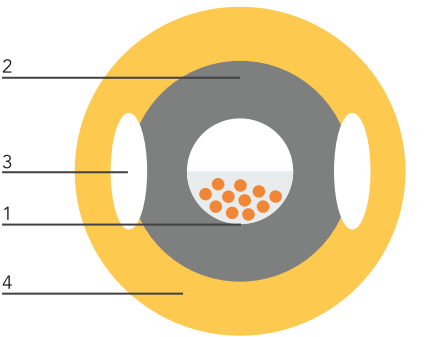


01

Fibre Optic Cable

1. ABD-01

Unitube Distribution Cable FTTx



- 1. Fibre Optics
- 2. Loose Tube
- 3. Strength Members
- 4. Outer Jacket

Applications

Air Blowing in Microduct

Features

Resistant
Reduced diameter
Tough
Compact
Totally Dielectric
Low friction in blowing deployment



MOISTURE PROTECTED



WATERTIGHT



LOW FRICTION



ULTRAVIOLET RESISTANCE



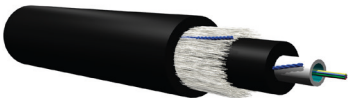
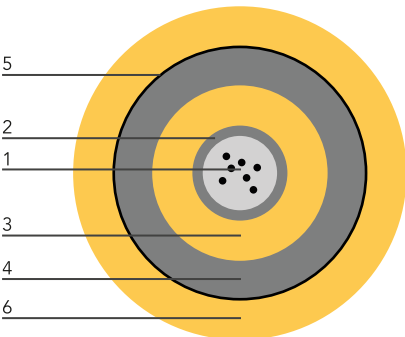
HALOGEN FREE



TOTALLY DIELECTRIC

2. PDP-1

Dielectric Unitube Cable (Up to 24 FO)



- 1. Fibre Optics
- 2. Central Tube (Jelly Filled)
- 3. Inner Jacket
- 4. Fibreglass Reinforcements
- 5. Ripcord
- 6. Outer Jacket

Applications

Outdoor
Duct
Direct buried installation

Features

Resistant
Reduced diameter
Totally Dielectric
Flexible
Rodent protected



MOISTURE PROTECTED



RODENT PROTECTION



LOW FRICTION



ULTRAVIOLET RESISTANCE



HALOGEN FREE



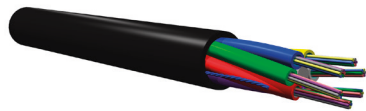
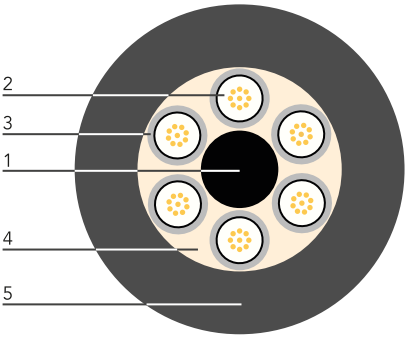
TOTALLY DIELECTRIC



WATERTIGHT

3. ABD

Multitube Distribution Cable FTTx



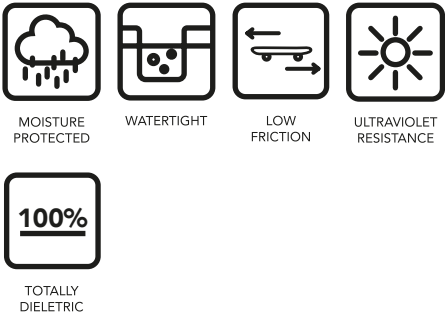
- 1. Central Element (GRP)
- 2. Fibre Optics
- 3. Loose Tubes (Jelly Filled)
- 4. Waterblocking Yarns
- 5. Outer Jacket

Applications

Outdoor
Ducts
Air blowing in Microduct

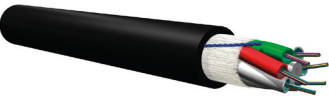
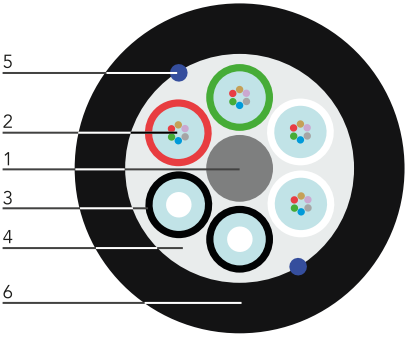
Features

Resistant
Reduced diameter
Totally Dielectric
Low friction in blowing deployment
Tough
Compact



4. DP

Dielectric Multitube Cable (Up to 144 FO)



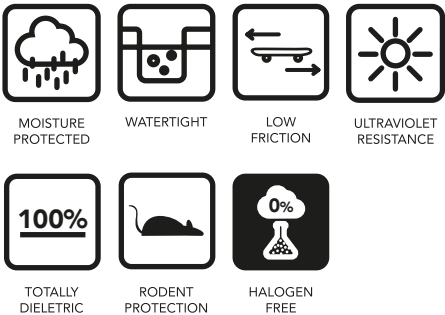
- 1. Central Element (GRP)
- 2. Fibre Optics
- 3. Loose Tubes (Jelly Filled)
- 4. Strength members
- 5. Ripcord
- 6. Outer Jacket

Applications

Outdoor
Air blowing
Duct installation

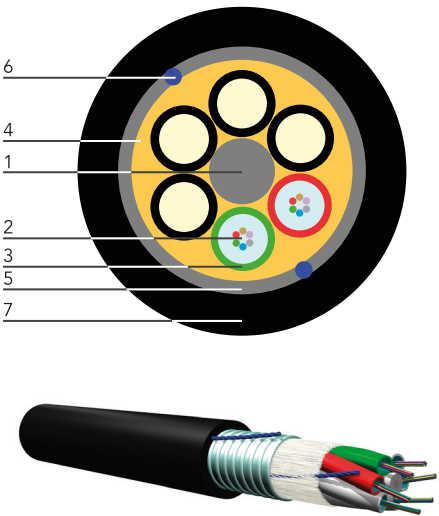
Features

Resistant
Low friction in duct installations
Rodent protected
Totally Dielectric
Flexible
Compact
Tough



5. DSP

Metallic Armoured Multitube Cable (Up to 144 FO)



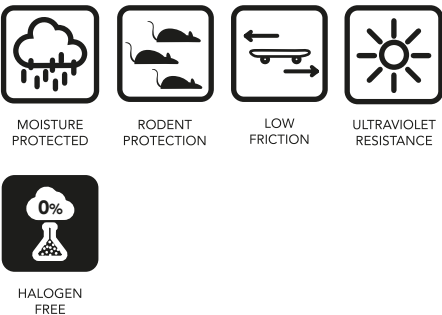
- 1. Central Element (GRP)
- 2. Fibre Optics
- 3. Loose Tube (Jelly Filled)
- 4. Strength Members
- 5. Metallic Armour
- 6. Ripcord
- 7. Outer Jacket

Applications

Outdoor
Duct
Direct buried installation

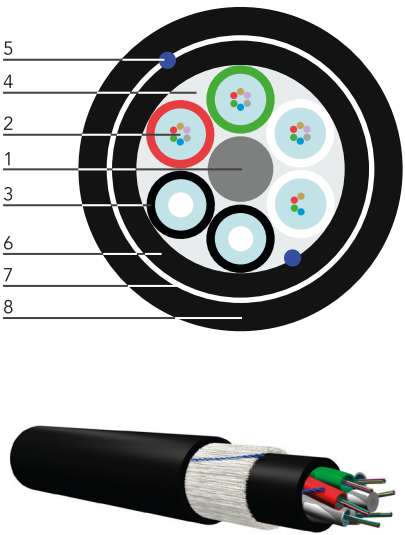
Features

Resistant
Reduced diameter
Excellent rodent protection
Corrugated steel tape (CST) armoured
Suitable for "blown air" system
Compact
Tough



6. PDP

Multitube Loose Cable (Up to 144 FO)



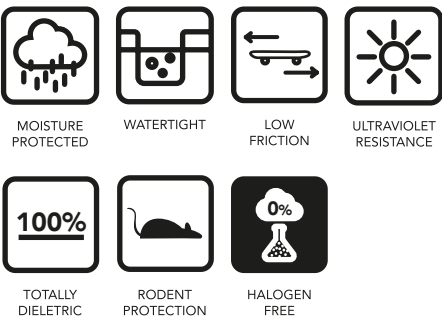
- 1. Central filler
- 2. Fibre Optics
- 3. Loose Tube (Jelly Filled)
- 4. Waterblocking Elements
- 5. Ripcords
- 6. Inner Jacket
- 7. Strength Members
- 8. Outer Jacket

Applications

Outdoor
Duct
Direct buried installation

Features

Resistant
Low friction in duct installations
Rodent protected,
Totally Dielectric
Tough





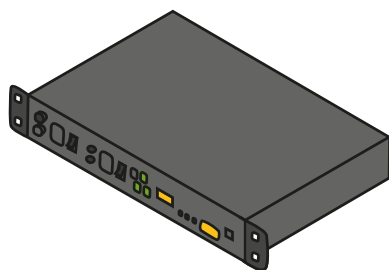
OTDR Unit Device

02

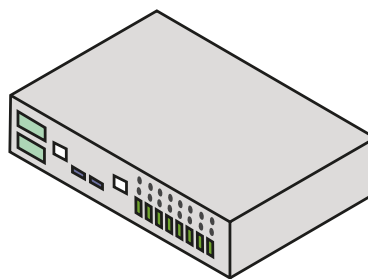
The OTDR Unit is an optical reflectometer that identifies, via a pattern or fingerprint, all the optical paths that need to be monitored. It is programmed to periodically check the registered fingerprint and generate alarms when it detects any mismatch in the layout.

The optical switch allows the control, from a single OTDR, of a certain number of fibres; it analyses them independently and adapts the parameters of each reflectometry according to the range (km), the refractive index or the light source used by each fibre.

We offer 2 different types of devices for adapting the solution to the particular needs of each client and application:



OWATCH 220 UNIT



OWATCH 130 UNIT

MONITORING

- 7x24 operation
- Up to 4 optical ports embedded switch
- Recorded reflectometry monitoring

- 7x24 operation
- Up to 16 optical ports embedded switch
- Non-intrusive monitoring independent from user traffic
- Active component at central office only

DYNAMIC RANGE

- Up to 220 km nominal reach for core applications

- Up to 130 km nominal reach for access, metro and core applications

MEASUREMENT

- Real-time information about fibre loss profile
- Alarm definition by events (break, reflection) and by threshold (reflectometry degradation)
- Event recording in Data Base
- Dark Fibre

- Real-time information about fibre loss profile
- Localization of loss points with alarm thresholds
- Ultra-fast fibre integrity verification with 3 to 6 secs. per port
- Dark & Active Fibre

REFLECTOMETRY

- Programmed reflectometry storage
- Threshold configuration: Day/night, seasons, fibre segment
- Applicable in harsh environments

- Passive device at remote site
- No power and no additional space required
- Applicable in harsh environments
- Integrated with patch cable or discrete devices

POWER & ENVIROMENT

- Redundant power supply
- Power consumption <60W
- Wide operating temperature from 0 °C to 60 °C

- Fanless operation
- Power consumption <15W
- Wide operating temperature range from -5 °C to 55 °C.
- Ultra-compact ETSI solution: up to 16 ports per 1RU chassis

MANAGEMENT

- OMonitor GIS support
- Full SNMP management
- Local Craft Terminal
- Northbound Interface

- OMonitor GIS support
- Full SNMP management
- Local Craft Terminal
- Northbound Interface
- Easy to use

03

OMONITOR Software Platform

OMONITOR is the **OPTRAL EMS*** type software for managing, viewing and monitoring faults or events detected in a fibre optic network. The platform resides in a server that collects data from the OTDR, stores it in a database that classifies information by inventory, geolocation, state of the elements in real time, alarms recorded, etc. and allows it to be managed.

It is designed with web technology and can be accessed from various browsers.



EMS (Element Management System) is an application designed to manage and monitor optical networks that allows parameters and equipment options to be configured, as well as inspect some measurement values or other available data.



Technical features:

- Real-time monitoring and consulting of event history.
- Equipment and optical cable management.
- User management.
- Registration, monitoring and organization of events and alarms.
- Registration, reproduction and monitoring of reflectometries.
- Identification of the state of elements by colour coding.
- Geolocation through Geographic Information System (GIS).
- Graphical representation of 3D Schematics: industrial plants, buildings, etc.
- Northbound interface to integrate other platforms.
- Multi-user software licence.
- Multiplatform server.
- Web browser.
- Remote equipment management through Local Craft Terminal.

Geographic Information System (GIS)

Green

Correct status of the monitored route.

Orange

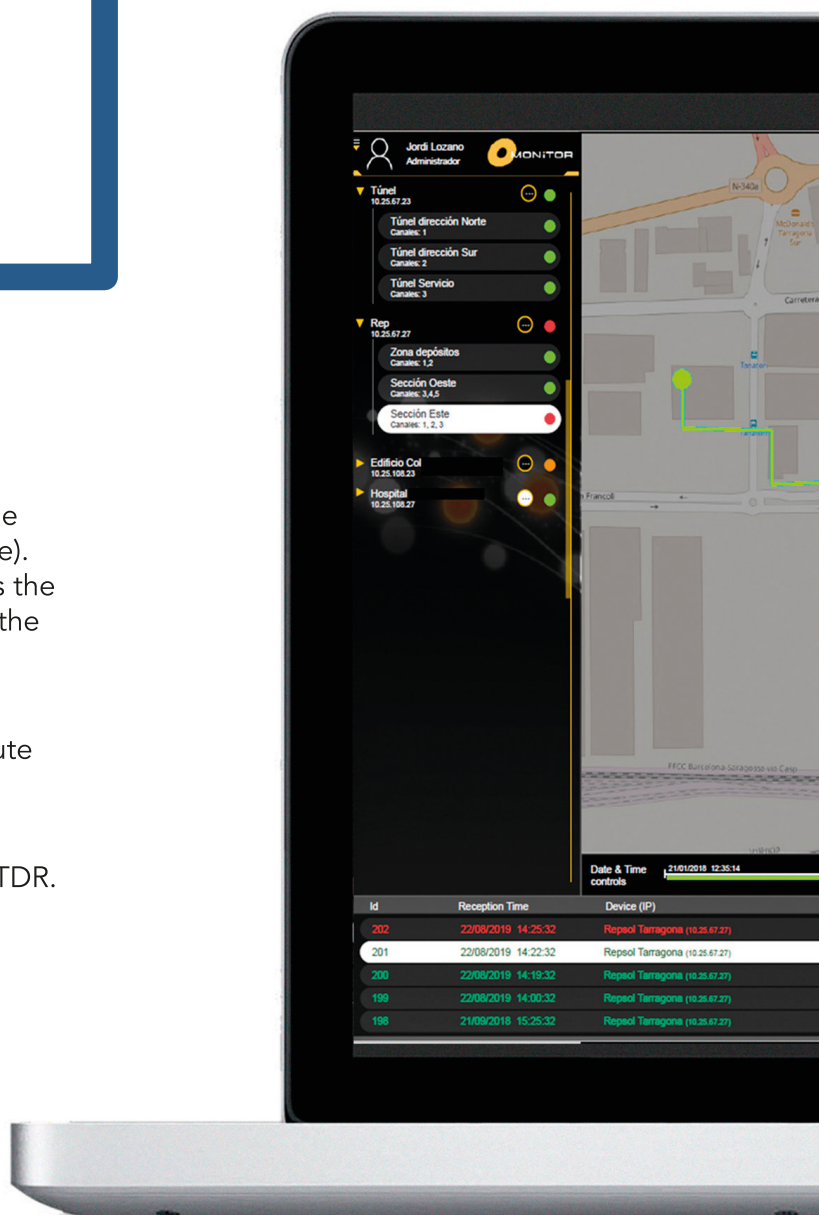
Events have been detected that were not in the mask (reflectometry for characterizing the route). The same number of icons will be displayed as the number of events that have been detected at the different kilometric points.

Red

A break has been detected in the analyzed route with an icon at the break point.

Grey

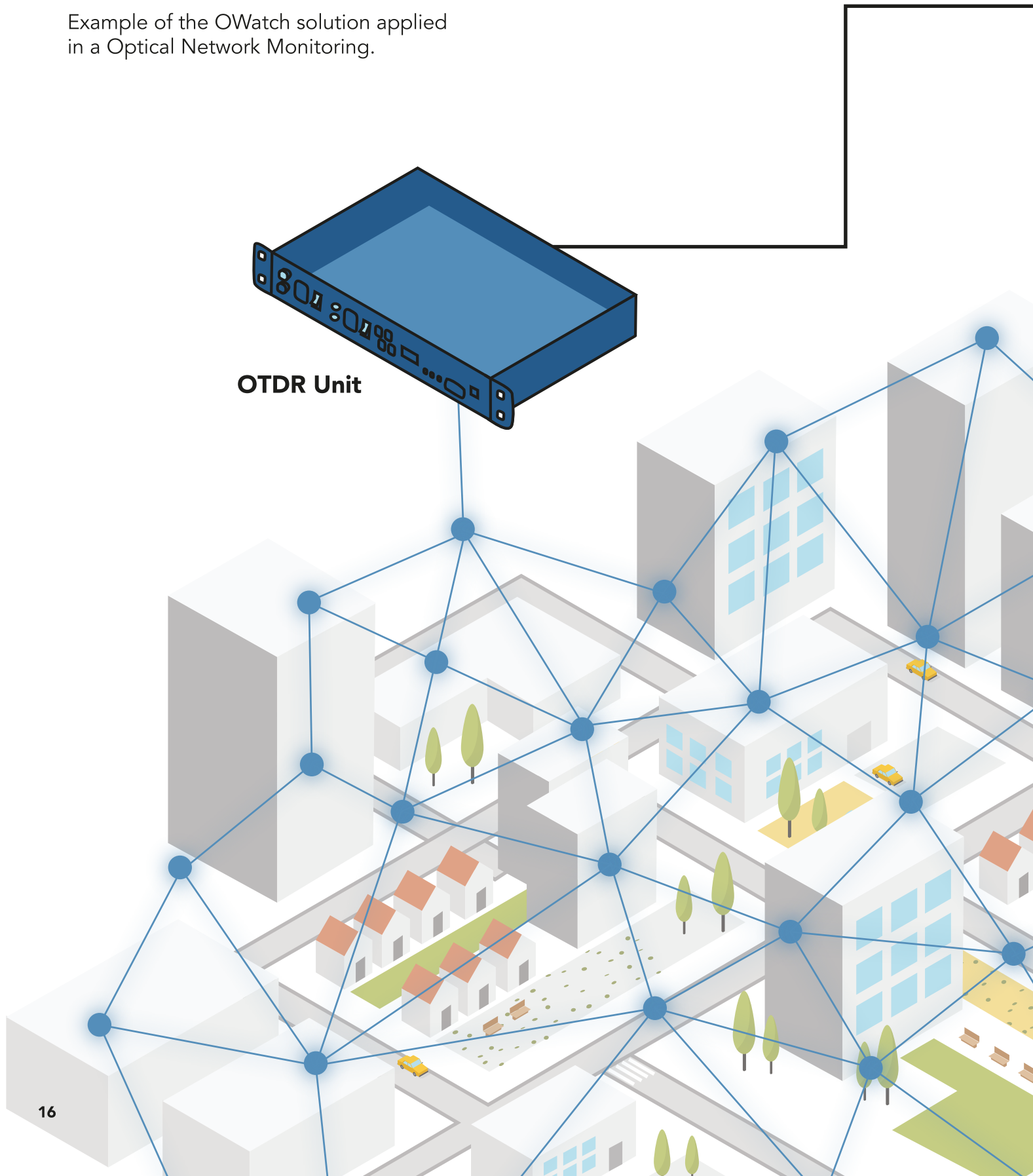
No information has been received from the OTDR.

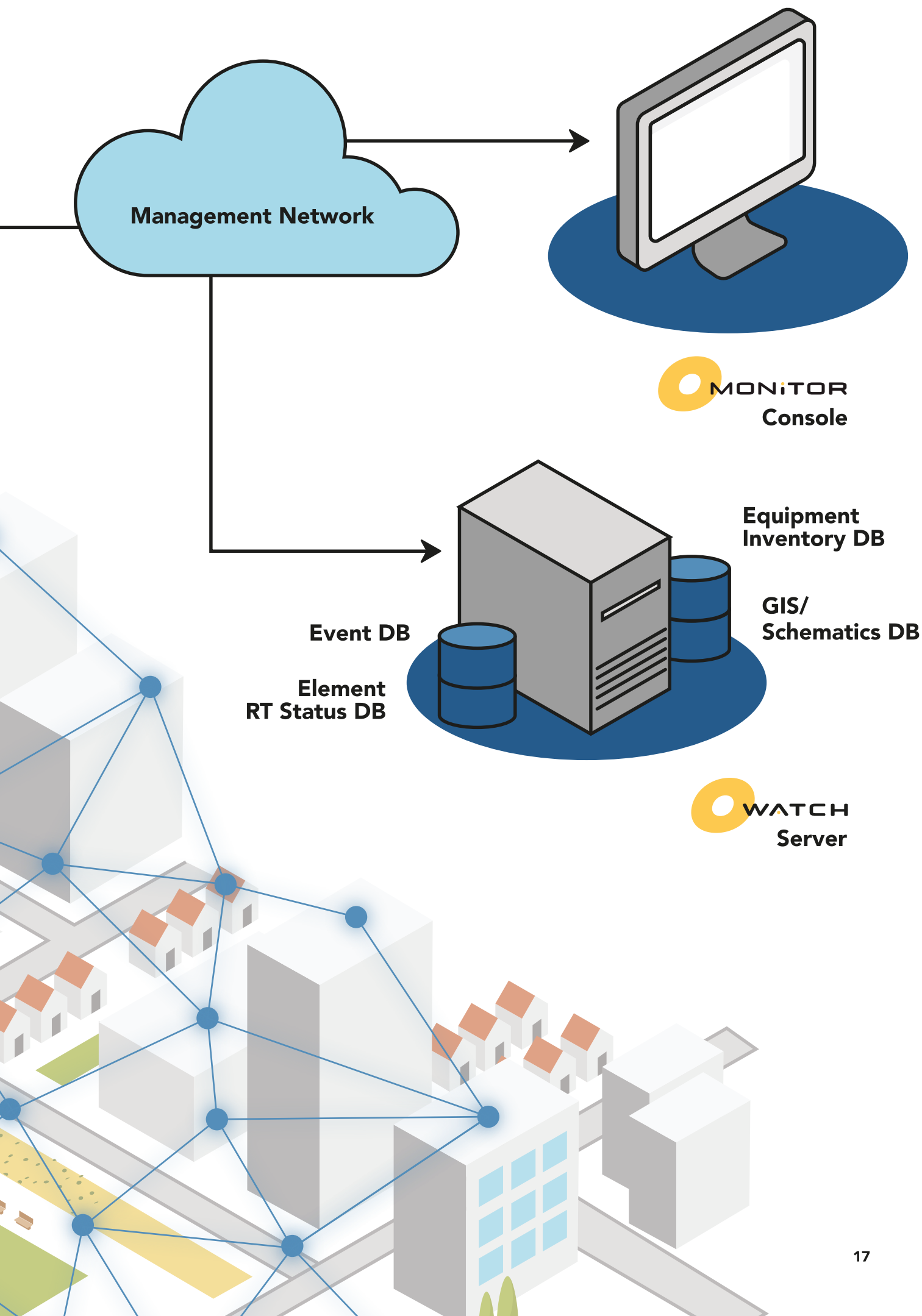




System Architecture

Example of the OWatch solution applied in a Optical Network Monitoring.





Markets and Applications

Telecommunications



- Fibre optic trunk monitoring.
- Monitoring of point-to-point high availability or mission critical links.
- Monitoring of sections that do not have backup in case of cutting of fibres.
- FTTx optical network monitoring from the Optical Line Terminal (OLT) to the last level of splitters.
- Monitoring of fibre sections that are regulated by Service Level Agreements (SLA).

Infrastructures (Utilities)



- Failure prevention in private optical communication networks or for Telecom service operators: railway companies, highways, electricity transmission and oil & natural gas transport.



HIGH PERFORMANCE
OPTICAL CABLES

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