

# FASTWEB LONG DISTANCE NETWORK

Fastweb Long Distance network spans over 7.600 km of fiber. It is a **long distance DWDM** integrated with **OTN technology** enabling the evolution of DWDM systems in terms of reliability and overall bandwidth growth on the transport layer.

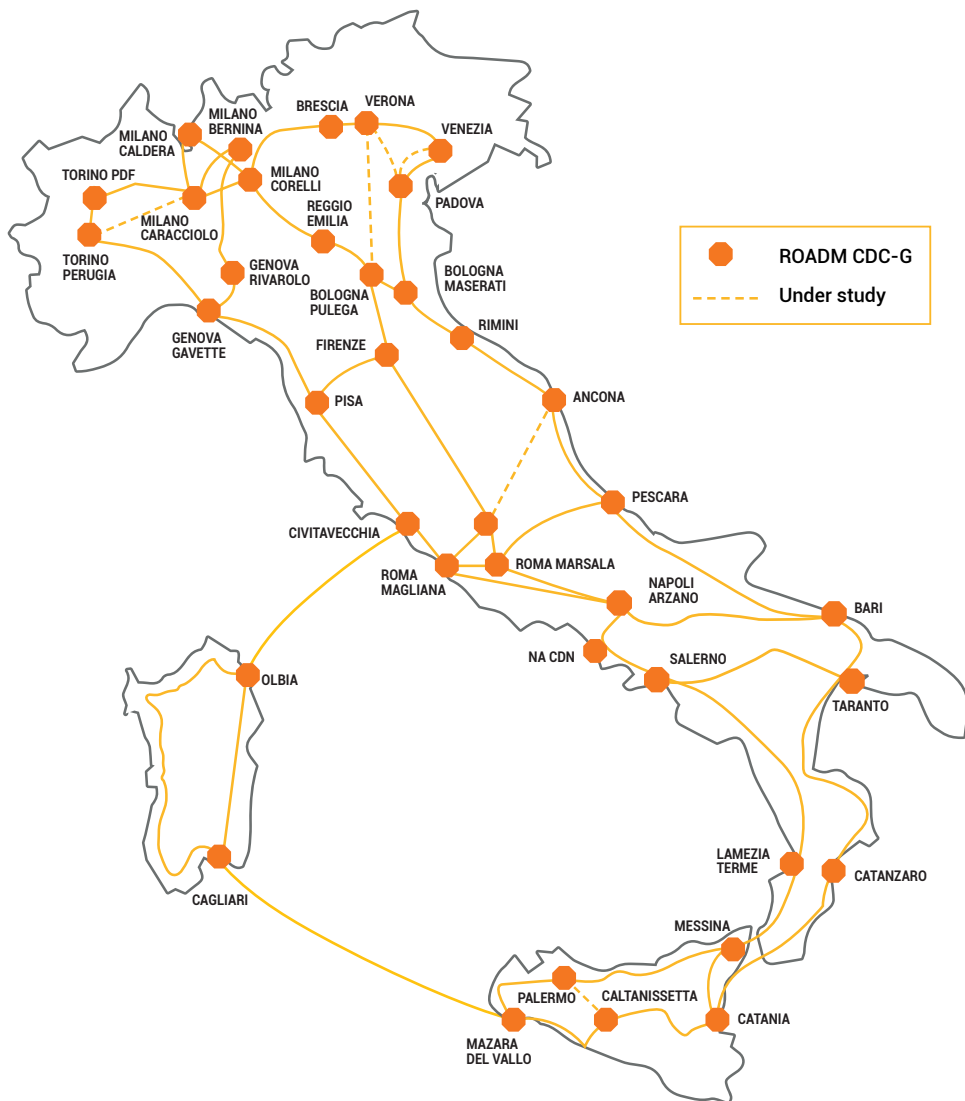
The main objective of the FON network is to interconnect the major POPs of FASTWEB, present throughout the Italian territory, through advanced techniques for **consolidating and optimizing bandwidth usage**. To this, a **high level of availability** has been achieved thanks to the introduction of **advanced protection and restoration** mechanisms, automated by an optical and electrical GMPLS Control Plane.

The introduction of optical components, based on Wavelength Switch and Select technology, and the use of OTN-based electrical arrays, governed by a unified control plan, allow **automatic traffic re-routing along the backbone** even in cases of fiber multiple cut or failure on an intermediate node. The FON network is capable of collecting GE or 10GE traffic and transporting it on 100Gb or, where possible, superior (200Gb and 400Gb) optical carriers. It also allows the delivery of native 100GE signals.

## MAIN FEATURES OF THE NETWORK:

- Long-Haul Transport of **Protected and Non-Protected Services** combined with an optimized design in terms of **intermediate regeneration stages** also in case of re-routing services due to restoration actions.
- The flexibility to configure a network node as single-shelf or multi-shelves that adds **dynamism to the node's expansibility**.
- **Full flexibility and re-sharpening of optical domains** through the use of Multi-directional Reconfigurable All Photonic Switching (ROADM) nodes. Any service on any wavelength in any direction with flexible use of spectrum (Flexigrid).
- **Multi-degree node**. Functionality that allows a network node to handle up to 8 outbound directions resulting in **increased capacity and resilience**.
- **Flexibility in grooming traffic on a single wavelength**: Multi-layer OTN, Ethernet over ODUk switching.
- **Co-existence of photonic (DWDM) and electrical dominion (OTN)** coordinated by fully integrated control, data and management planes to optimize all **network protection and resiliency** mechanisms.
- **Flexibility and scalability of capacity**: standards and technology that can support bitrates over 100G.
- **Integration** with standard feeder link technologies (DWDM Metro Services with Long Distance Crossing).
- Automation of Services and Network Optimization thanks to **T-SDN ready architecture**.

# FASTWEB DWDM LONG DISTANCE INFRASTRUCTURE (FLEXIBLE OPTICAL NETWORK)



Topology of Fastweb Long Distance Network