

# What is OTN?

*Also commonly called ‘digital wrapper,’ OTN—or Optical Transport Networking—is a next-generation, industry-standard protocol that provides an efficient and globally accepted way to multiplex different services onto optical light paths.*

Telecommunications industry and service provider networks must quickly evolve to deal with an explosion of digital traffic driven by multimedia services, mobile applications, social media, VoIP, and cloud computing. Plus, there’s an ever-growing array of bandwidth-hungry applications.

Network traffic used to be all about voice calls carried over circuit-based networks in a predictable network connection between pairs of endpoints. Today, most network traffic is packet-based, generated by a multitude of services and applications in bursty, unpredictable traffic patterns, with widely varying and more stringent demands on bandwidth and data transmission performance.

OTN wraps each client payload transparently into a container for transport across optical networks, preserving the client’s native structure, timing information, and management information. The enhanced multiplexing capability of OTN allows different traffic types—including Ethernet, storage, and digital video, as well as SONET/SDH—to be carried over a single Optical Transport Unit frame.

Because OTN is a fully transparent protocol, adapting existing services is pretty straightforward.

OTN leaves current OSS/BSS solutions intact, utilizes all available tools and automation, and requires little to no retraining. OTN’s cost-effectiveness, ease of implementation, and simplicity offer companies a straightforward, painless solution to evolving network needs.

OTN-based backbones and metro cores offer significant advantages over traditional WDM transponder-based networks, including increased efficiency, reliability, and wavelength-based private services. The IP-over-OTN infrastructure also offers better management and monitoring, reduced hops, increased protection of services, and reduced costs for equipment acquisition. In addition to scaling the network to 100G and

beyond, OTN plays a key role in making the network an open and programmable platform, enabling transport to become as important as computing and storage in intelligent data center networking.

OTN is a digital wrapper that provides an efficient and globally accepted way to multiplex different services onto optical light paths.

OTN has a number of advantages, including:

- **Reduction in transport costs:** With multiple clients transported on a single wavelength, OTN provides an economical mechanism to fill optical network wavelengths.
- **Efficient use of optical spectrum:** OTN facilitates efficient use of DWDM capacity by ensuring consistent fill rates across a network using OTN switches at fiber junctions.
- **Determinism:** OTN dedicates specific and configurable bandwidth to each service, group of services, or network partition, guaranteeing network capacity and managed performance for each client and no contention between concurrent services or users.
- **Virtualized network operations:** New virtualization techniques such as Optical Virtual Private Networks (O-VPNs) provide a dedicated set of network resources to a client, independent of the rest of the network.
- **Flexibility:** OTN networks enable operators to employ the technologies they need now while enabling the adoption of new technologies as business requirements dictate.
- **Secure by design:** OTN networks ensure a high level of privacy and security through hard partitioning of traffic onto dedicated circuits.
- **Robust yet simple operations:** OTN network management data is carried on a separate channel, completely isolated from user application data, so settings are much more difficult to access and modify through a client interface port.