Current Status of Optical Cable Line Routing



Overview

TeleGeography''s comprehensive and regularly updated interactive map of the world''s major submarine cable systems and landing stations.

Key Takeaways

Global optical cable routing is active and dynamic, with over 700 submarine cables in service, ongoing upgrades, and rerouting events due to maintenance, conflicts, and latency optimization.

Submarine Cable Network Overview

The global optical cable network consists of 703 active submarine cables, connecting major hubs such as Singapore, Marseille, Oman, Egypt, Japan, and Florida, and supporting hyperscale cloud, AI, and internet traffic. Recent projects, including the completion of the 2Africa system, have expanded open-access global connectivity to 45,000 km, enhancing redundancy and resilience. New routes are emerging across the Arctic, Red Sea, Mediterranean, Pacific, and Indian Ocean, reflecting strategic investments aligned with national digital strategies and cloud infrastructure expansion.

Routing and Latency ObservationsReal-world measurements reveal that optical cable routing is not always the shortest path. For example, traffic from Almaty to Tokyo currently traverses 21,000 km of fiber via London and Singapore to reach a city only 5,400 km away, due to network topology and operational constraints. Similarly, disruptions in the Red Sea have forced traffic to reroute via satellite, highlighting the network's adaptability under conflict or maintenance conditions.

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Geo

Cables has reported 82 latency anomalies across 49 submarine cables in a 53-day period, with 16 events exceeding high-severity thresholds.

Terrestrial Fiber and Broadband Mapping

On land, optical cable routing is tracked through broadband mapping platforms such as the ITU's Geospatial Catalogue and Connectivity Planning Platform, which provide spatially referenced data for network deployment, validation, and planning. These tools support governments, regulators, and operators in optimizing terrestrial fiber networks, including last-mile connectivity and 5G infrastructure rollout. Key Trends and DevelopmentsHigh-capacity, long-haul systems are being deployed to meet hyperscale and AI-driven traffic demands.

Geographically diverse routing is prioritized to enhance resilience against disruptions. Latency monitoring and rerouting are increasingly critical, with real-time traceroutes revealing complex paths and satellite fallback routes when submarine cables are compromised. New projects like the Trans-Caspian Fiber Optic Cable are expected to improve regional connectivity and reduce dependency on single-country transit routes.

Conclusion

The optical cable network is highly dynamic, with continuous upgrades, new deployments, and active monitoring to ensure global connectivity. Both submarine and terrestrial fiber routes are optimized for capacity, redundancy, and latency, while real-world events such as conflicts or maintenance can trigger complex rerouting, sometimes involving satellite links. Interactive maps and monitoring platforms provide the most current insights into these routes and their operational status.

Article Content

Submarine Cable Map

TeleGeography''s comprehensive and regularly updated interactive map of the world''s major submarine cable systems and landing stations.

Internet Infrastructure Map (2026)

This visualization shows the growth of the undersea cable network, global internet peering capacity, and the distribution of IP addresses via BGP announcements over time.

OpenFiberMap — Global Fiber Optic Network Map

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OpenFiberMap aggregates open-licensed datasets (AfTerFibre, OFDS, PeeringDB, and others) into a single interactive globe, visualizing routes by capacity tier, operational status, and operator.

GeoCables

Interactive submarine cable map: 705 cables worldwide with live routes, real-time latency from probes worldwide, and operational status of each cable.

Knowledge-Driven Submarine Optical Cable Routing Based on RL

We propose a new paradigm for planning submarine cable routes based on engineering knowledge, in which a knowledge-driven deep neural network (KD-DNN) is used to extract

Submarine Cable Map 2024

Between 2023 and 2025, a new cable boom valued at a record $10 billion will bring an estimated 78 systems online measuring over 300,000 kilometers in length, a level of growth not seen in over 20

Fiber Map of the World 2026

Fiber maps visualize the global network of fiber optic cables, showcasing how data moves across continents and under oceans. Telecommunications providers rely on these maps to optimize routing,

Submarine Cable Map 2025

Telecom Egypt has been positioned as a leading subsea cable operator in the region. Our continued investments and leadership in connectivity have been widely recognized, with Telecom Egypt named

Invisible highways: The vast network of undersea cables powering our ...

Outages in cable connectivity may result from earthquakes, underwater landslides, and volcanic eruptions. However, statistics show that around 80 per cent of incidents are caused by

Juniper Networks, Now Part of HPE – Leading the Convergence of AI ...

Proven AI for your network. Mist, the AI-native networking platform makes every connection more reliable, measurable, and secure for businesses.

Fiber Atlantic

This interactive submarine cable map shows the global undersea fiber optic cables connecting world. Explore cable routes, landing stations and system status. Coming Soon: Data Service

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Internet Infrastructure Map (2026)

Explore the physical backbone of the internet with our interactive map of undersea fiber optic cables, peering exchange points, and more.

Submarine Cable Map 2025

Submarine Cable Map 2025 This new edition depicts 597 cable systems and 1,712 landings that are currently active or under construction. Explore the map TeleGeography

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Submarine Cable Map 2024

This trans-Egypt crossing introduces subsea cable owners to a state-of-the-art route characterized by a new level of resiliency and diversity, complementing the unmatched crossing solutions provided by

What are the most common fiber optics problems?

The cable radius of the optical fiber cable should match the manufacturer''s recommended installation bending radius. The installation route

Network Maps | Lumen

Explore our comprehensive global network, including fiber, on-net, data center and edge locations spanning 5 continents.

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