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Quantum

teleportation

Successful quantum teleportation via metro fiber network

BRINGING QUBITS TO THE REAL WORLD

Breakthrough quantum entanglement performance in a metro fiber network marks progress towards scalable quantum services.

T-Labs, the R&D division within Deutsche Telekom, and Qunnect, the quantum networking pioneer, have successfully demonstrated quantum teleportation via a commercial network in Berlin, marking a major milestone in advancing deployable quantum technologies on existing telco infrastructure. By using new commercial technologies to overcome instabilities and interferences, T-Labs and Qunnect demonstrated how a telco operator can begin integrating quantum teleportation capabilities into operational networks.

KEY FACTS

- **More than 90% teleportation fidelity** via a 30-km field-deployed fiber
- **QT is the transfer of quantum information** between two locations
- **T-Labs team solves the complex calibration** of the whole system to transfer high-fidelity quantum state
- **Performance breakthroughs were achieved** in quantum state fidelity and transfer distance
- **QT is a key building block** for advanced, scalable quantum services
- **Paves the way for distributed quantum computing** and distributed quantum sensing

T **Connecting your world.**
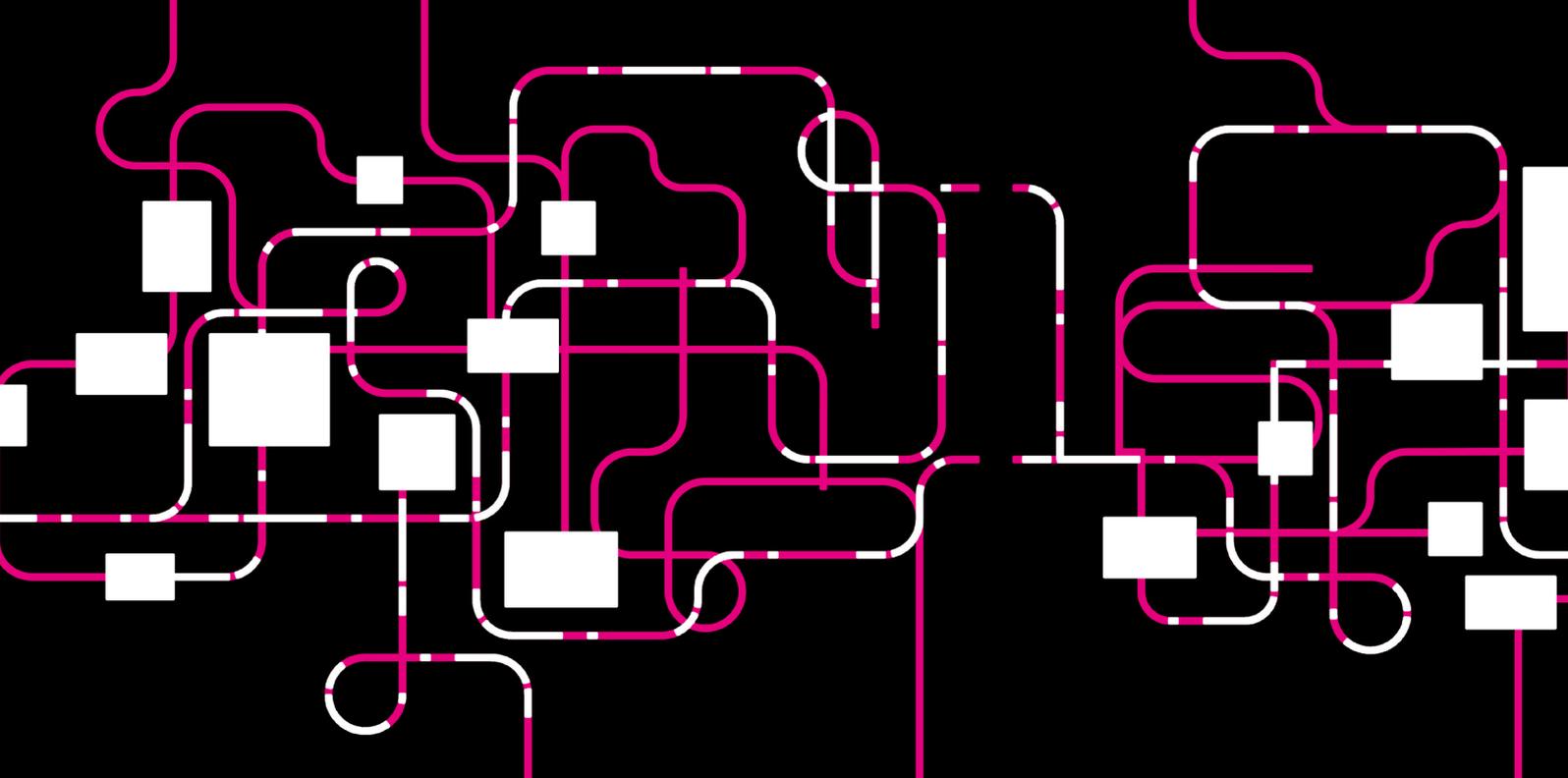
Quantum teleportation is a key building block for the future quantum internet, enabling the transfer of quantum information between distant locations. It does this by recreating an identical quantum state of a particle at the destination using pre-shared quantum entanglement rather than transmitting a physical particle.

During trials conducted in a real-world telecom environment in January 2026, the team achieved quantum teleportation over 30 km of commercial fiber cables. The experiment was performed using Qunnect's commercially available quantum entanglement distribution hardware and Deutsche Telekom's Berlin quantum infrastructure, representing the first practical test of the core components required for a future teleportation service. For this demonstration, Qunnect and T-Labs were able to perform local teleportation and then transmit the photon carrying the teleported state via commercial fiber, alongside co-propagating conventional traffic.

This type of connectivity unlocks applications for quantum networks including quantum cryptography, distributed quantum computing, secure cloud-based quantum services paving the way for quantum data centers, and networks of highly sensitive quantum sensors.

The trial teleported qubits generated by a weak coherent source over a 30-km fiber loop connecting T-Lab's Quantum Lab to a node on the Berlin fiber testbed. Qunnect's Carina platform integrates an entanglement generator that produces pairs of quantum-entangled photons for distribution via telecom fiber, along with an active polarization compensation component that counteracts environmentally induced noise in both buried and aerial fiber, enabling the high-rate, high-fidelity transportation of quantum bits between network nodes. As a result, the teams achieved teleportation fidelities of up to 95%, according to the preliminary publication of the data, with further improvements planned in upcoming demonstrations.

The achievement builds directly on a series of earlier field trials carried out by the same partners, which progressively demonstrated quantum communication via metropolitan fiber links.

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