



NEWS RELEASE

Cisco Introduces Universal Quantum Switch, Advancing the Path to a Quantum Network

2026-04-23

A working research prototype designed to connect quantum systems from different vendors, in all major encoding modalities, at room temperature, over standard telecom fiber

News Summary:

- *The Cisco Universal Quantum Switch is designed to route quantum information between systems while preserving it, with a Cisco-patented conversion engine that translates between all encoding and entanglement modalities at input and output.*
- *In proof-of-concept experiments, the switch preserved quantum information with less than 4% degradation in encoding and entanglement fidelity. The complete findings are expected to be published in an upcoming research paper on ArXiv.*

SAN JOSE, Calif., April 23, 2026 /PRNewswire/ -- Cisco (NASDAQ: CSCO) today announced the Cisco Universal Quantum Switch, a critical milestone in quantum networking that addresses one of the most fundamental barriers to building a quantum network. As a working research prototype, it is the latest proof point in Cisco's accelerating full-stack quantum networking program, built on years of foundational research, real-world demonstrations, and a growing ecosystem of strategic collaborations.

Quantum computers encode information in different ways, and until now, no switch could accept and translate between all major encoding modalities without destroying the quantum information in the process. The Cisco Universal Quantum Switch is designed to address this challenge for the first time, routing quantum information while preserving it at room temperature, on existing telecom fiber, with a Cisco-patented conversion engine that translates between encoding modalities at input and output.

"Reaching this milestone is a pivotal moment for our quantum program and a testament to the transformative potential of quantum networking," said Vijoy Pandey, SVP/GM of Outshift, Cisco's Emerging Technologies and Incubation Group. "We've long recognized that connecting quantum

systems is the key to achieving true scalability, and now we've taken a critical step toward making that vision a reality. While this is a significant achievement, it's just the beginning. The road ahead is long, yet the impact of what we are building—and what is still to come—will be nothing short of profound."

Cisco Is Building the Network Layer for the Quantum Era

Today's quantum computers are powerful but limited, operating at hundreds of qubits when real-world applications in healthcare, financial services, and aerospace will need millions to achieve unheard of speeds and technological breakthroughs. Cisco believes networking and connectivity are central to bridging that gap. The quantum future will not be built by any one company or any one technology. It will be built by connecting them all.

Imagine connecting billions of people and tens of billions of devices with direct cables. It would be unmanageable. The internet became possible because classical switches could connect all of those endpoints through a shared, scalable network. The Cisco Universal Quantum Switch does the same thing for quantum. When two quantum computers need to share information, it accepts the signal in whatever modality it arrives, translates it into a common language for routing, and delivers it in the format the receiving system needs, without losing any quantum information along the way.

This is made possible by a Cisco-patented conversion engine at the heart of the quantum switch. The output modality can match the input or be an entirely different one, enabling the quantum switch to connect and translate between quantum systems that were never designed to talk to each other, a critical capability for building quantum networks that work across different vendors and technologies.

The quantum switch is designed to support all major quantum encoding modalities used to carry information:

- Polarization (the orientation of light waves)
- Time-Bin (the timing of light pulses)
- Frequency-Bin (the color or frequency of light)
- Path (the physical or spatial path)

To date, the quantum switch has been experimentally validated with polarization encoding. Support for time-bin and frequency-bin is built into the design and represents the next step in Cisco's ongoing validation process.

Proof-of-Concept Experiments and Results

The Cisco Universal Quantum Switch was tested by Cisco researchers using Cisco's own entanglement source and single-photon detectors. In these experiments, the switch demonstrated that quantum information can be routed and converted across systems quickly, accurately, and efficiently, without destroying it in the process.

Key findings include:

- Quantum information preserved through conversion: Less than 4% degradation in quantum state fidelity and entanglement, maintaining the coherence that quantum networks require to function.
- Switching at the speed quantum networks demand: Sub nano-second electro-optic switching, reconfiguring connections in as little as 1 nanosecond
- Energy efficient: Consumes less than 1 milliwatt of power

Powering the Quantum Network of the Future

Quantum networking is in a nascent state. There is no established infrastructure connecting quantum systems, and most can only communicate with other systems that encode information the same way

they do.

The Cisco Universal Quantum Switch is an entirely new approach:

- **Unique in its nature:** Current switch technology is limited to one encoding type. The Cisco Universal Quantum Switch is designed to support all major modalities, with a built-in conversion capability that is Cisco-patented and available in no other product on the market today.
- **Room-temperature operation:** Unlike many quantum hardware components that require cryogenic cooling, Cisco's Universal Quantum Switch operates at room temperature. This eliminates the need for specialized cooling infrastructure, reducing both deployment complexity and cost.
- **Works with existing infrastructure:** It operates at standard telecom frequencies over the same fiber that carries internet traffic today, requiring no specialized equipment.
- **Connects systems that could not previously communicate:** Organizations are no longer locked into a single vendor ecosystem. It enables quantum devices from different manufacturers to interoperate, protecting existing investments and enabling best-of-breed quantum environments.
- **Designed for the full stack:** The Cisco Universal Quantum Switch is built as part of Cisco's evolving end-to-end architecture for a distributed quantum network, spanning hardware, software, and application layers.

Cisco's Vision for What Comes Next

For more than four decades, Cisco has built infrastructure that connects the world. The Cisco Universal Quantum Switch is the latest milestone in that journey, reflecting Cisco's conviction that the road to practical quantum computing will be built via a distributed network of interconnected quantum devices in a matter of years, not decades.

The Cisco Universal Quantum Switch is one part of a broader quantum networking portfolio that includes Cisco's [quantum network entanglement chip](#), which generates the entangled photons that quantum networks rely on to transmit information, and Cisco's industry-first [network-aware Quantum Compiler](#), which orchestrates how quantum algorithms are distributed and executed across multiple quantum processors. All three were developed from the ground up at Cisco's dedicated [quantum labs in Santa Monica](#). Together, along with applications like Quantum Sync and Quantum Alert, these innovations contribute to Cisco's vision for a full quantum network stack, from the hardware that generates and routes quantum information, to the software that manages it, to the applications that put it to work. Cisco is also advancing this vision through strategic collaborations with [IBM](#), [Qunnect](#), [Atom Computing](#) and more.

Additional Resources:

- [The switch that quantum networking has been waiting for](#)
- [Quantum Networking: How Cisco is Accelerating Practical Quantum Computing](#)
- [Cisco Quantum, Cisco Research & Quantum Research](#)
- [Register for upcoming Cisco Universal Quantum Switch webinar](#)

About Cisco

Cisco (NASDAQ: CSCO) is the worldwide technology leader that is revolutionizing the way organizations connect and protect in the AI era. For more than 40 years, Cisco has securely connected the world. With its industry leading AI-powered solutions and services, Cisco enables its customers, partners and communities to unlock innovation, enhance productivity, and strengthen digital resilience. With purpose at its core, Cisco remains committed to creating a more connected and inclusive future for all. Discover more on The Newsroom and follow us on X at @Cisco.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. A listing of Cisco's trademarks can be found at <http://www.cisco.com/go/trademarks>. Third-party trademarks mentioned are the property of their respective owners. The use of the word 'partner' does not imply a partnership relationship between Cisco and any other company.

View original content to download multimedia:<https://www.prnewswire.com/news-releases/cisco-introduces-universal-quantum-switch-advancing-the-path-to-a-quantum-network-302750701.html>

SOURCE Cisco Systems, Inc.