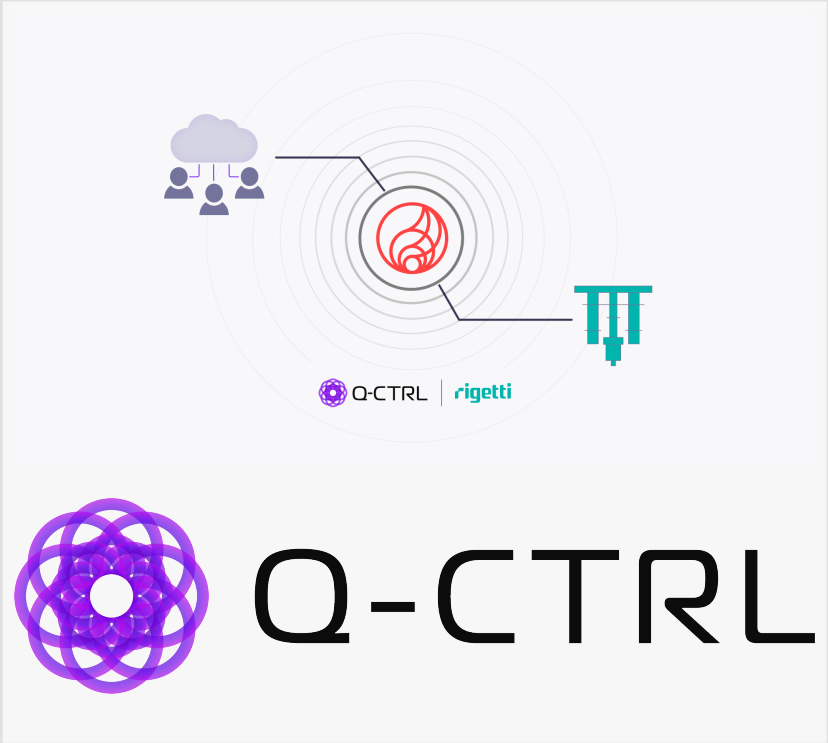
Q-CTRL Performance Management is Now Available on Rigetti's Ankaa-3 Quantum Computer

Fire Opal enhances the performance of customer use cases on Rigetti's latest 84-qubit Ankaa™-3 system through autonomous error suppression



SAN FRANCISCO, CA, UNITED STATES, June 24, 2025 /EINPresswire.com/ -- Q-CTRL, the global leader in quantum infrastructure software, today announced the availability of its software integration with Rigetti, a pioneer in superconducting quantum computing. As part of this integration, which was previewed last year, Q-CTRL's flagship quantum performance management software, Fire Opal, is now available on Ankaa™-3, Rigetti's latest 84-qubit quantum computer via the Rigetti Quantum Cloud Services platform (QCS®).

Fire Opal addresses the top challenge in quantum computing by improving the capability of quantum computers through automated error suppression. Due to their fragility, quantum computers are highly susceptible to errors, which disrupt their performance. Managing these errors at the hardware level has generally only been possible by a handful of experts globally, and is a major impediment to the commercial adoption of quantum computing.

This strategic integration enables quantum developers, researchers, and enterprise users to access Fire Opal's quantum error-suppression and performance-enhancement capabilities directly on Rigetti's highest-performing system.

Clients have already experienced the benefits of this integration for benchmark tests related to their use cases:

For example, BlueQubit was able to boost the performance of specially-developed benchmark tests related to their use case, observing the correct output in 20-qubit circuits, up from 14 qubits in the default Rigetti service configuration.

“We have seen the benefits firsthand of how Q-CTRL’s Fire Opal can improve the performance of Rigetti’s Ankaa-3 devices,” said Hayk Tepanyan, CTO of BlueQubit. “The increasing boost in signal for a peaked-circuits benchmark that Q-CTRL’s error suppression technology delivers shows the promise and progress of quantum hardware to support real-world use cases. We are excited to see Fire Opal deployed in systems like Rigetti. This will allow more users to take advantage of Q-CTRL’s exceptional error suppression techniques.”

Another use case explored in partnership with the Office of the NSW Chief Scientist & Engineer demonstrated dramatic improvements in a financial portfolio optimization using Nasdaq data – selecting assets and managing sector exposure and risk. The solution quality was improved by 32x over the default Rigetti service configuration.

Q-CTRL was a successful recipient in the NSW Government's Quantum Computing Commercialisation Fund, administered by the Office of the Chief Scientist & Engineer.

“We are delighted to support the development of quantum computing solutions for the finance sector,” said Professor Hugh Durrant-Whyte, Chief Scientist & Engineer, Office of the NSW Chief Scientist & Engineer. “Q-CTRL’s asset selection results using Rigetti’s quantum computer demonstrate the acceleration of quantum computing towards addressing challenging problems at practical scales.”

“Q-CTRL is committed to making quantum hardware truly useful for high-value applications right now and into the future,” said Michael J. Biercuk, Founder and CEO of Q-CTRL. “Bringing our world-leading AI-powered performance-management infrastructure software to Rigetti is an exciting step in broadening access to the most advanced capabilities in quantum computing, and accelerating the path to realizing quantum advantage for end users.”

"We are excited to partner with Q-CTRL to integrate their error suppression capabilities with QCS,” said Subodh Kulkarni, CEO of Rigetti. “Developing and testing customer use cases that provide enhanced performance is an important step towards reaching quantum advantage.”

Fire Opal on Ankaa-3 is accessible now through Rigetti QCS. Clients can start leveraging performance benefits today by request.

Editor’s Note
Fire Opal provides the critical error-suppression and hardware-abstraction technology to make quantum computers useful to enterprises and to enable long-term development of the field.

Today, quantum computing hardware vendors are currently focused on the integration of quantum processors into hybrid data centers, as recently highlighted by NVIDIA. Achieving this goal requires the systems to be operable by general IT specialists rather than quantum physicists. Fire Opal boosts performance and utility through autonomous software, easing integration into the data center without the need to staff performance-tuning quantum physicists as operators. End users focus exclusively on applications rather than developing specialized tools to manage hardware. This process of quantum-computer virtualization – akin to VMware's hypervisors – is uniquely enabled in production systems by Q-CTRL.

In the longer term, quantum hardware vendors are developing roadmaps to deliver large-scale "fault-tolerant" devices incorporating an algorithm known as quantum error correction (QEC). Today's systems are too small to run QEC, but still suffer from performance-limiting errors. Fire Opal delivers the maximum achievable performance from today's hardware and enables QEC to be executed more efficiently, accelerating the rollout of fault-tolerant machines with enabling software. As hardware systems grow, future releases of Fire Opal will include native QEC execution, building on recent world-first Q-CTRL demonstrations of quantum-computer enhancement with QEC primitives.

About Q-CTRL
Q-CTRL is a key player in the global quantum technology industry as a category-defining business for AI-powered quantum infrastructure software. Leading quantum computing hardware providers integrate its performance-management software with their superconducting and silicon-based platforms to deliver unprecedented capabilities to end users. The company's global leadership in quantum sensing for defense and dual-use was featured in The New York Times. Q-CTRL also developed Black Opal, an award-winning edtech program that enables users to learn quantum computing quickly.
Founded by Michael J. Biercuk in November 2017, Q-CTRL has assembled the world's foremost team of expert quantum-control engineers, providing solutions to global quantum technology leaders, including Fortune 500 companies, startups, national research labs, and academic institutions. The company has international headquarters in Sydney, Los Angeles, San Francisco, Berlin, and Oxford.

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