

# IonQ announces development of next-generation quantum computer

2 October 2020, by Bob Yirka



Credit: IonQ

IonQ, a College Park, Maryland-based quantum computing hardware and software company has announced that it has launched its next generation quantum computer. As part of its announcement, the company is claiming that its new machine is the most powerful quantum computer built to date based on IBM's quantum volume metric. The company has also announced that the new computer will be made available to customers soon.

Despite the headlines claiming that the age of quantum computers is upon us, they are still very much in their infancy. In most ways, conventional computers still outperform them by a wide margin. But the promise of future capabilities is fueling an ever-increasing competition between established companies like IBM, Microsoft and Google, and recent startups like IonQ.

Because the technology is still so new, quantum [computer](#) makers are working on different approaches to building them. IBM and Google, for example, are developing gate-model computers. D-Wave, on the other hand, uses annealer

technology, whereby qubits are cooled during execution of an algorithm, which allows for passively changing their value.

IonQ takes yet another approach, using ion traps. The reason for the different approaches lies with the way that qubits are created and manipulated—and perhaps more importantly, with the errors that occur when qubits are used. Some companies are gambling that the best approach to dealing with [error correction](#) is to put more qubits in a machine and then use separate systems to deal with resulting errors. Others (like IonQ) take the opposite approach—they are attempting to develop qubits that are inherently less error prone—even if it means holding down the number of qubits. The new system from IonQ has 32 qubits (compared to 50 in IBM and Google machines), but they have reduced the [error rate](#) to give their new system 99.9 percent fidelity. And plugging such a rate into the metric devised by IBM gives the system a quantum volume of over 4 million—the highest ever reported for any quantum computer. That's why IonQ is boasting that they have built the most powerful quantum computer to date.

**More information:** IonQ: [ionq.com/](https://ionq.com/)

IonQ unveils the world's most powerful quantum computer: [www.prnewswire.com/news-releases-...-puter-301143782.html](https://www.prnewswire.com/news-releases/ionq-unveils-the-worlds-most-powerful-quantum-computer-301143782.html)

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