

Claim Your Quantum Advantage

Accelerate results with hybrid quantum computing

74%

of enterprise leaders agree that those who fail to adopt quantum computing will fall behind.¹

The unparalleled performance improvements enabled by quantum technologies provide astonishing gains in the time it takes to solve highly complex problems. Teams can unlock answers to extremely complex questions in just minutes — questions that might take today's most powerful supercomputers hundreds or thousands of years to solve.

The Dell Quantum Computing Solution with IonQ is a [hybrid classical/quantum platform](#) that leverages Dell PowerEdge servers with [Qiskit Dell Runtime](#), and [IonQ Aria](#) quantum processing units (QPUs). With the platform, classical and quantum simulation workloads can execute on-premises, while quantum workloads, such as modeling larger, more complex molecules for pharmacological development, can be executed with IonQ® QPUs.

Leverage quantum on your terms

Quantum computing is one of the most disruptive technologies in human history. The potential impact is nearly limitless, with exponentially increased algorithmic processing capabilities unlocking truly revolutionary progress across a vast range of use cases.

Dell Technologies is taking the lead in hybrid quantum computing, helping you speed time to innovation and discovery. Dell Technologies has partnered with prominent quantum computing hardware vendors IonQ to offer a hybrid classical/quantum system with a constant pursuit of innovation that will help you keep pace as quantum computing evolves.

Key benefits

- **Discover: Lower the barriers to entry with learning and experimentation.**
Dell Technologies can provide guidance and documentation to enable the discovery of key concepts and provide infrastructure and compute to enable simulation for developing, porting and optimizing code for hybrid quantum computing.
- **Identify: Reduce adoption risks by exploring uses cases and benefits.**
Dell Technologies can enable research and development for applied theory and logic applications to use cases. Dell Technologies can also act as your trusted advisor for the tools, expertise and infrastructure needed for success.
- **Deploy: Choose the right execution environment and achieve real business benefits.**
Partnering with Dell Technologies and IonQ reduces the complexity of operationalizing quantum computing to recognize business benefits. It begins with choosing suitable execution environments for your workloads. We can assist you with converting your use cases into workable outputs using hybrid quantum-classical systems in a production environment. Once complete, the migration from test to production is frictionless and you can achieve ROI driven by the business outcomes.

¹ Zapata, [The First Annual Report on Enterprise Quantum Computing Adoption](#), December 2021.

Dell Technologies experts are available to help you design a solution for your specific needs. And [Dell Technologies Services](#) — ranging from consulting and education to deployment and support — are available when and where you need them.

[Dell APEX](#) gives you access to innovation as a service, unlocking the flexibility you need to adapt and thrive.

Learn More

dell.com/quantum-computing

Contact Us

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Minimum technical specifications

Qiskit Dell Runtime software enables using industry-standard PowerEdge servers and Kubernetes® container orchestration in combination with tokens for cycles on the IonQ Aria system. This enables quantum workloads to execute on-premises and other quantum workloads, such as modeling larger, more complex molecules for pharmacological development, to execute remotely on IonQ quantum processing units.

Dell Quantum Computing Solution	Simulated qubit
Small config — R750xa PowerEdge server with 1024GB RAM, 48 Core, 15TB SSD, NVIDIA® A100 40GBX2	35
Medium config — R750xa PowerEdge server with 2048GB RAM, 64 Core, 31TB SSD, NVIDIA A100 80GBX2	36
Large config — R750xa PowerEdge server with 4096GB RAM, 80 Core, 51TB SSD, NVIDIA A100 80GBX4	37
Included software integration, configuration and pre-engineered services	
Dell ProSupport Plus Next Business Day or 4 Hr Mission Critical Onsite Services, 7x24 Technical Support and Assistance 3 Years	
IonQ QPUs: IonQ Cloud Access Aria Quantum System *23 algorithmic qubits *Remote access hours: 100, 200, 1000 or IonQ Dedicated Quantum Compute System, on-premises or cloud access	
IonQ Professional Services including quantum algorithm and application development, project-based support, education and training	

Dell Technologies and IonQ

Dell Technologies and IonQ work together to build hybrid classical/quantum platforms that leverage Dell PowerEdge servers paired with IonQ simulation engine and QPUs to accelerate the journey to quantum for our joint customers. Coupling Dell Technologies' strength in classical infrastructure with IonQ's coherence time, gate fidelity and scale enables the QPU to solve more complex problems, allows for better error correction to reduce the time spent using the QPU to solve problems and allows IonQ to run their QPU at room temperature, enabling placement in established data centers without exotic cooling. These benefits can help you evaluate what approach works best for your quantum journey.

