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## Perspectives on the current state of quantum computing systems capability

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### Abstract

I would like to share IBM's perspective on the current state of quantum computing capabilities and the future direction of quantum computing. As individual metrics, we can now observe two qubit gate fidelities are approaching 99.9% and quantum systems can process circuits at the speed of 15,000 CLOPS(1). With improved quantum computing performance metrics, IBM can provide nearly 20 quantum computing systems being on service 24/7 with more than 95% uptime. In this environment, we can start pursuing the utility of quantum computing to tackle non-trivial problems that can be challenging for classical computing. I will summarize the recent advancement of quantum computing utility with quantum circuits of ~ 100 qubits by depth ~ 50 with ~ 1000 gates and how IBM envisions quantum computing should evolve-to a quantum-centric supercomputing.

(1) A. Wack et al. <https://arxiv.org/abs/2110.14108>