Qiskit.jl

A wrapper for the Qiskit C API

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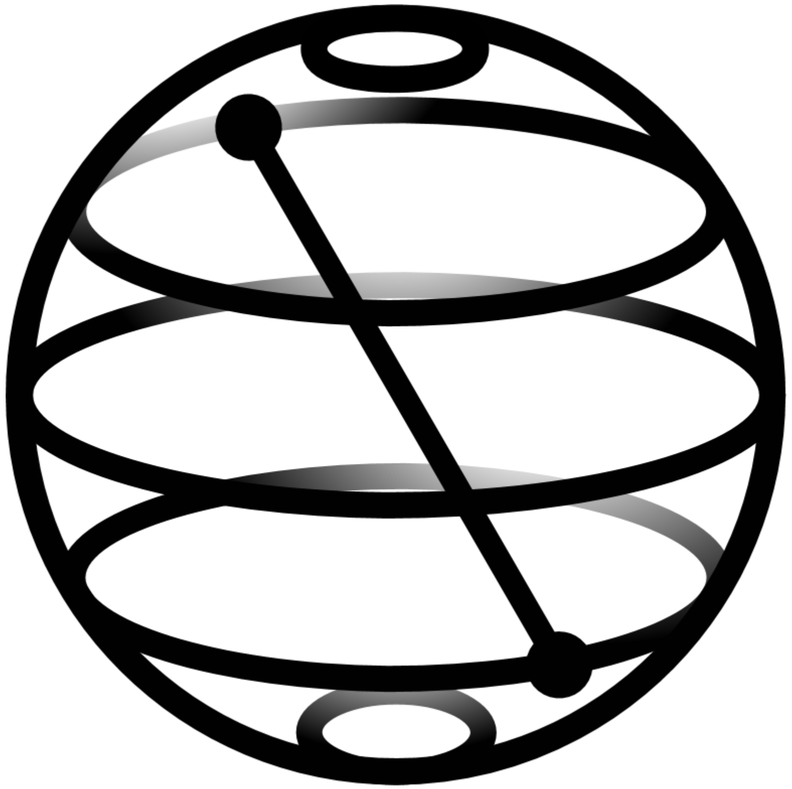
What is Qiskit?

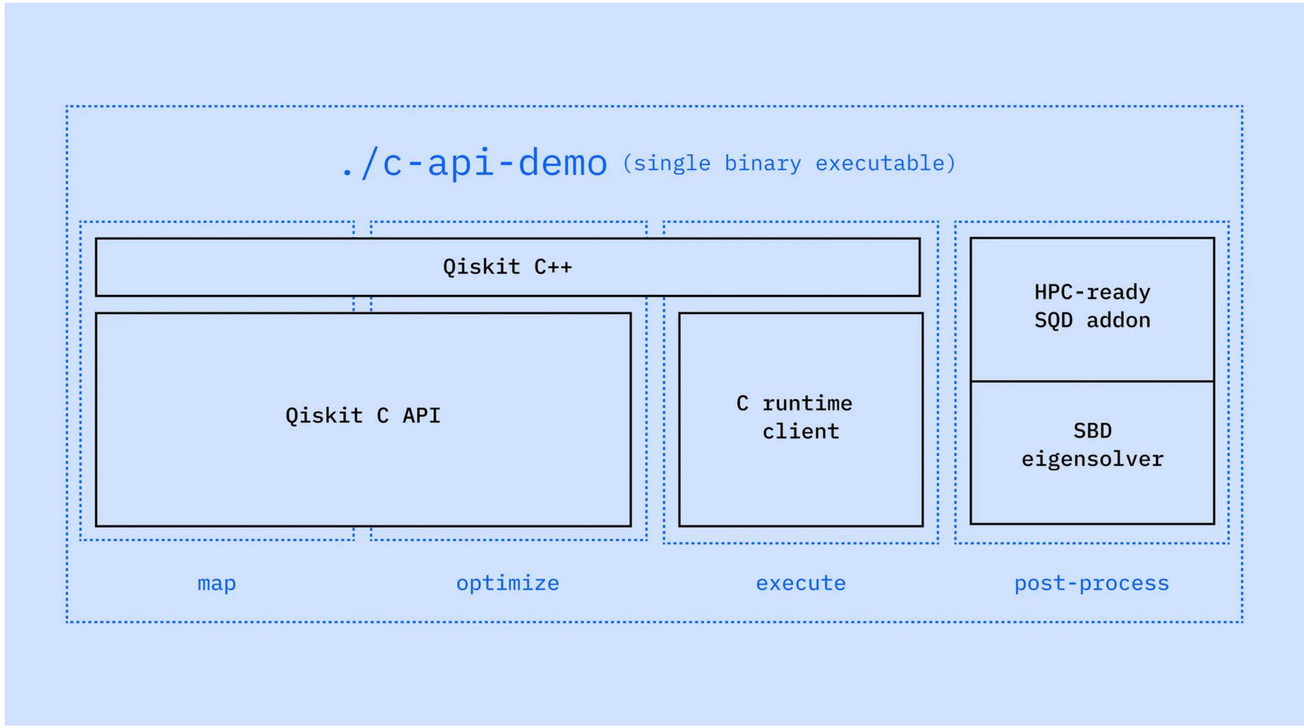
- Open source SDK for quantum computing
- Apache 2.0 Licensed
- Developed on GitHub: https://github.com/Qiskit/qiskit
- Project started in 2017 after launch of IBM quantum experience to provide Python interface to platform
- Vendor agnostic
- Provides an interface for programming a quantum computer, a quantum circuit compiler, and interfaces for running circuits on quantum hardware.
- Written in Python and Rust and provides a Python API and now a C API



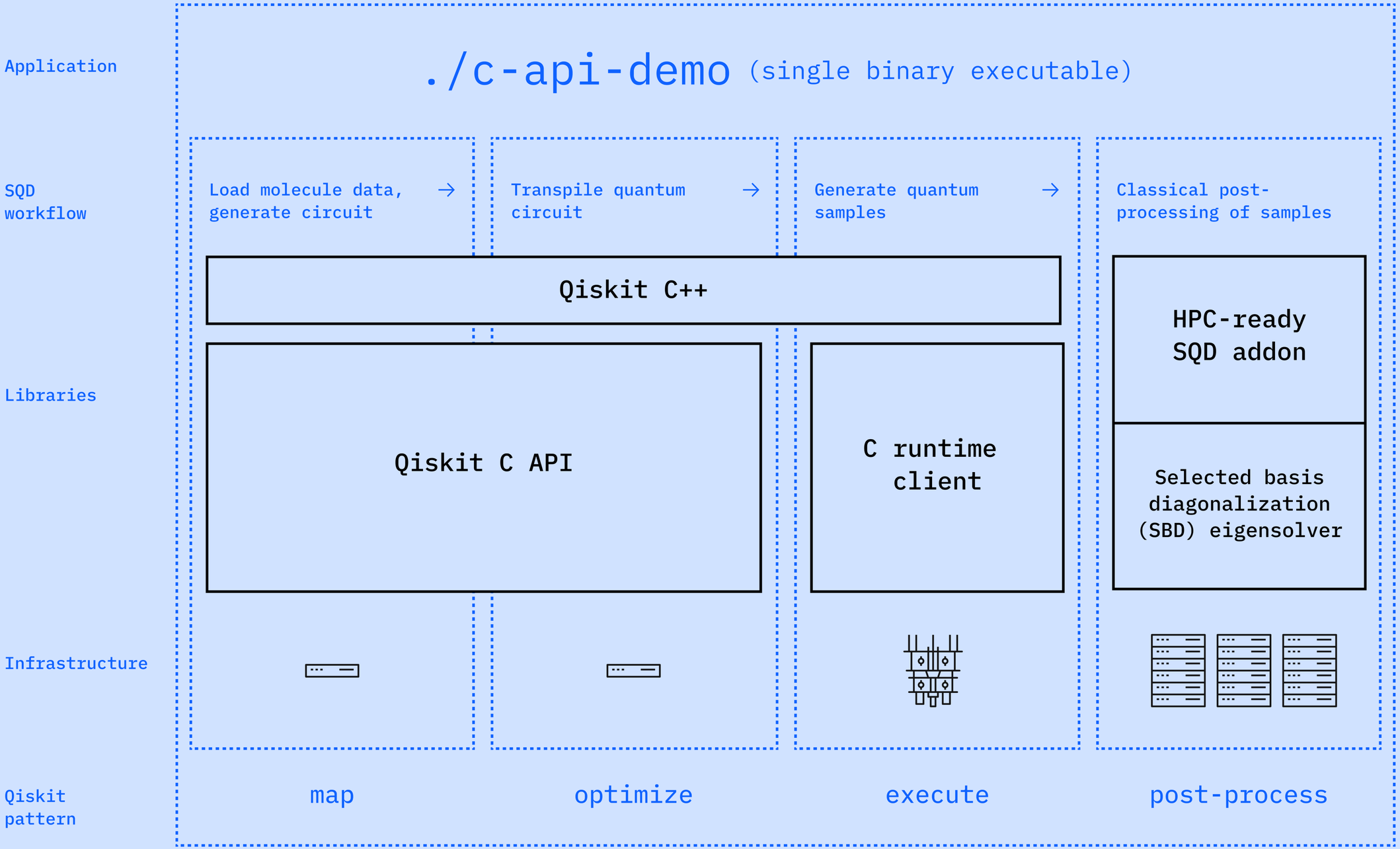
Qiskit C API enables new end-to-end quantum + HPC workflows

Qiskit SDK v2.2 delivers a key ingredient needed to realize end-to-end quantum-centric supercomputing workflows as a single application written natively in popular HPC programming languages like C++. Explore this capability today with our new HPC workflow demo.

20 Oct 2025



www.ibm.com/quantum/blog/c-api-enables-end-to-end-hpc-demo


Application
./c-api-demo (single binary executable)
SQD workflow
Load molecule data, generate circuit
Transpile quantum circuit
Generate quantum samples
Classical post-processing of samples
Libraries
Qiskit C++
Qiskit C API
C runtime client
HPC-ready SQD addon
Selected basis diagonalization (SBD) eigensolver
Infrastructure
Qiskit pattern
map
optimize
execute
post-process

Current status

- Qiskit_jll and qiskit_ibm_runtime_jll are packaged in Yggdrasil and available in the general package registry
- There is a nice Julia wrapper of Qiskit at github.com/Qiskit/Qiskit.jl, also available in the general package registry
- A wrapper of qiskit-ibm-runtime-c is in development

Looking forward

Caveats

- The C IBM Runtime client is in its infancy; it currently only supports the Sampler primitive.
- Most of the Qiskit ecosystem is written in Python. But, there is a qk_circuit_to_python function that may help with mixed-language workflows.
- No support for Windows (yet).
- The C API is growing and is not yet stable. Breaking changes are possible with each minor release (every three months).

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Call to action

- Please check out the repository: github.com/Qiskit/Qiskit.jl
- Install by typing “using Qiskit” at the Julia REPL
- Sign up for the Open Plan offered by IBM Quantum (10 minutes/month of QPU time)
- Pull requests/community engagement are welcome

Thank you!