# SQBM+ for AWS Release Notes

## Version 2.0.1

November 27, 2023

### New features

This version includes the following new solvers:

- qubo solver API: a solver corresponding to the qubo model
- qplib solver API: a solver that solves a linear constrained quadratic programming problem.
- pubo solver API: a solver that solves a problem with higher order terms up to order 4.

You can use "qubo solver" instead of "ising solver" or "autoising solver" provided in SQBM+ v1.6.2. "qubo solver" can use the same parameters and problem files that you used with "ising solver" or "autoising solver". Therefore, to use "qubo solver", you only need to change the endpoint of REST API. Note that the structure of the response messages and the default values of the query parameters are updated. The maximum number of the qubo variables has been enhanced from 100,000 to 10,000,000. The maximum number of the nonzero elements in the QUBO matrix has been enhanced from 100,000,000 to 1,000,000,000. In SQBM+ v1.6.2, "autoising solver" was provided to automatically adjust the parameters. Instead, each solver of v2.0.1 is now able to adjust its parameters automatically.

The input data for a combinatorial optimization problem can be set up in two ways:

- Setting in the request body of the HTTP request
- Specifing the problem file path as a URI in the HTTP request header

If you place a combinatorial optimization problem data file in a location accessible by the SQBM+ instance and set the file path in the HTTP header, then SQBM+ will load the file and compute the request.

# Updated features

- The range of the possible values for the query parameters "loops", "maxwait", and "maxout" has been updated.
- New query parameters "algos", "blocks" and "multishot" are now available.
- New messages about the completion conditions of the SQBM+ computation have been added.
- Added new response properties "param" and "count" in the calculation results.
- You may see new error messages regarding the billing system, "no result" and internal server errors.
- New algorithms, SB2.5 and SB3.0, are now available.
- The billing system has been changed. You will be charged based on the amount of the computation time which you use with each solver.
- In SQBM+ v1.6.2, you can only select p3.2xlarge as the EC2 instance type. In SQBM+ v2.0.1, you can select all EC2 instance type in the P3 family, g4dn.xlarge and p4d.24xlarge.
- THe health check API response has been changed. If the SQBM+ computation API is working properly, it will return "pass" message. Otherwise, "fail" will be returned.

# Deprecated or dropped features

- "QP solver" has been removed. You can use "qplib solver" instead.
- Auto shutdown function has been removed.