# Software Release V2.5

Quantum Orchestration® Platform (QOP)

August 2025

# Table of Contents

# I.    Affected Products

Products affected by this release include:

|   | Product | Affected | Comment |
|---|---------|----------|---------|
| 1 | OPX | No | |
| 2 | OPX+ | Yes | It is recommended to use QOP v2.5 with QUA SDK (qm-qua) version 1.2.3 or above |
| 3 | OPX1000 | No | |
| 4 | Octave | Yes | It is recommended to use QOP v2.5 with QUA SDK (qm-qua) version 1.2.3 or above |
| 5 | OPT | Yes | OPX+ add-on, clock distribution |
| 6 | OPD | Yes | OPX+ add-on, additional digital inputs |

# II.   Installation and Upgrade Process

**Note –** You can update to this version directly from any QOP version newer than 2.2.2. If you have an earlier version, please update to QOP 2.2.2 first by following the update flow as shown [here](here).

The version can be downloaded from the [qop2 page](qop2 page). Please follow these steps to upgrade:

1.  Open a web browser in a computer that can access the OPX+ system and type in its IP address to access the admin panel.

2.  In the admin panel, go to the "Versions" tab, then click on the blue "Upload" button.

3.  Upload the QOP2.5.0.tar.gz.age file by dragging and dropping it or by selecting it from the prompt.

4.  Refresh the version list using the refresh button on the right.

5.  QOP 2.5.0 should appear in the list of available versions; hover your mouse over it and click install.

6.  The installation may take up to 10 minutes. During this time, access to other clusters in the same network may be limited.

7.  Once the version is installed, click "Finish". The page might need to be refreshed by using CTRL+F5.

8.  After the update, the boot will start, and you can check its status in the "Topology" tab

**Important –** Updating to this version will set your cluster's clock setting to "Internal".

**Important –** If you are using Octave and updating from a version earlier than QOP2.4, the clock topology and configuration has changed. Please review the required topology [here](here).

**Note –** In rare cases, the system may be unable to play anything after an update. In these cases, please do a software shutdown of the system from the admin panel and then power cycle it.

**Note -** In rare cases, the update may report success when it has failed. In this case, the version at the top of the admin panel would show as **"initial."** Reinstalling the version will resolve this issue, and the version will be successfully installed.

Contact the Quantum Machines Customer Success team if you encounter any difficulties or have any questions.

# III. New Features

## 1. Separated QOPA

The "Admin panel", accessed through the web interface, has been renamed QOPA (QOP Admin) and is now released as a standalone package. When installing QOP 2.5, it will automatically install QOPA 1.3.

The new QOPA package supports both OPX1000 (QOP 3) and OPX+ (QOP 2) systems, enabling seamless management and operation of mixed-system networks.

## 2. Improved OPX+ & Octave boot sequence and health indications

The boot sequence for the OPX+ & Octave has been improved for a more reliable boot. The topology screen will now show the boot status with more details and will give more information in case any issue occurs during the boot.

# IV. Fixed Issues

As with all previous software releases, significant efforts were invested in ensuring this software is stable and reliable. Here is the list of issues fixed in the QOP 2.5 release:

## 1. Fixed in 2.5.0

1. **OPX+**

   a. Fixed switch/case giving an error message if the index was not a QUA variable.

   b. Fixed switch/case giving an internal error message in some cases.

   c. Fixed several cases in which a QM could affect the digital channels in other QMs.

2. **Octave**

   a. Improved the OPX & Octave boot sequence.

3. **QOPA**

   a. QOPA updated to 1.3.

   b. Performing an operation on an OPX1000 when connected to the admin panel from an OPX+ (or vice versa) will no longer break the system.

# V.  Timing changes

There are no timing changes in this version.

# VI.  Known Issues and Limitations

Following is the list of this release's known issues and limitations, and how to mitigate them:

1. In some rare cases, after updating, the system will indicate it booted successfully, but will timeout when opening a QM or playing a program. In these cases, please shut down the system from the admin panel and power cycle the system.

2. In cases where the Octave's clock is invalid, Octave's reported temperature is wrongly reported as cryogenic. This can be mitigated by connecting it to a valid clock and then performing a power cycle on the system.

3. When renaming a cluster, the topology page still shows the previous cluster name and is only updated after the cluster reboot.

4. If an external clock is disconnected/removed while the system is running, the system might reboot.

5. Using set_dc_offset() in QUA right after a pulse play will cause the DC offset command to be executed one cycle too early while the previous pulse was playing.

6. In rare cases, the update might report it succeeded when it has failed. In this case, the version at the top of the admin panel would show as "Initial." Reinstalling the version will fix this, and the version will be successfully installed.

7. In rare cases, some OPD channels may not work. Please report to QM if encountered.

8. If the cases in a switch/case block are non-sequential, the compilation might be very long and might time out. It is recommended that all cases be included and listed in sequential order.

9. In the event of a compilation timeout, the system might not become available again for a few minutes. It is recommended to wait until it becomes responsive again and not power cycle the system.

10. If no analog port is declared in the controller's analog output and a simulation of a digital-only pulse is attempted, the user won't get any simulated samples back.

11. When defining digital samples using a tuple (1, X) in the digital waveform configuration, the maximum possible value for X per tuple is $2^{15}$ (32,768 ns). If this value is exceeded, no error message is given, but the behavior will be unexpected.

12. Consecutive frame rotations ignore the first rotation.