

• **QUANTINUUM SYSTEMS PRODUCT CHANGE NOTIFICATION**

<b>QIR &amp; Nexus Release</b>	
<b>Date of change</b>	November 4th, 2024
<b>Contact information</b>	<a href="mailto:QCsupport@quantinum.com">QCsupport@quantinum.com</a>
<b>Products impacted</b>	All Hardware, Emulator, and Syntax Checker targets
<b>Changes to Product Data Sheet(s)</b>	NO <input type="checkbox"/> YES <input checked="" type="checkbox"/>
<b>Changes to subscription contract</b>	NO <input checked="" type="checkbox"/> YES <input type="checkbox"/>
<b>Changes to interface</b>	All <input type="checkbox"/> Quantinum API <input checked="" type="checkbox"/> Microsoft <input type="checkbox"/>
<b>Purpose</b>	<p>Notify customers of the following:</p> <ol style="list-style-type: none"> <li>1) Inform customers that pytket-quantinum and Quantinum Nexus will now use QIR by default, and the entire Quantinum software stack is transitioning to QIR.</li> <li>2) Notify customers that Quantinum Nexus (<a href="https://nexus.quantinum.com/">https://nexus.quantinum.com/</a>) is slated to become the official user portal and the original User Management User Interface (UMUI) (<a href="https://um.qapi.quantinum.com/">https://um.qapi.quantinum.com/</a>) will be decommissioned.</li> </ol> <p>See additional information below for more details.</p>
<b>Reason</b>	Performance improvements
<b>Action required</b>	Continue evaluation of Quantinum Nexus and provide feedback

Additional Information:

**1) Notification of H-Series software stack update to using QIR by default**

Effective November 4<sup>th</sup>, the latest version of the pytket-quantinum package and the Quantinum Nexus platform will switch from submitting QASM to QIR to all Quantinum systems by default, including hardware, emulators, and syntax checkers. This change is being made to provide performance improvements, allow the expression of more complex conditional structures, and align with new industry standards. Please note that in-stack TKET optimization is not supported for QIR submission, and it is

recommended that these optimization passes are done prior to submission using pytket. Documentation and examples for optimization through pytket can be found [here](#).

Additionally, on December 4<sup>th</sup> Quantinuum's hardware stack will switch to processing QIR by default. Users wishing to continue to submit circuits via QASM may continue to do so; these circuits will be converted within the stack to QIR prior to compilation. When the switch goes live, we plan to support in-stack TKET optimization and will provide documentation on how to directly submit QIR upon users' request. This change will be applicable to all Quantinuum endpoints.

Quantinuum has carried out extensive testing and has confirmed that all circuits written in QIR and submitted to Quantinuum endpoints will have equivalent or better performance compared to circuits written in QASM.

## 2) Notification of Nexus Launch and UMUI sunset

On November 17<sup>th</sup> we will officially launch Quantinuum Nexus. Upon launch, all key features in the UMUI will be made available via Nexus. This change will not have any immediate impact on current users but is a notification of an official change in status for Nexus after which all new customers will be onboarded via Nexus and a subsequent marketing announcement which will follow.

All organization administrators currently beta testing Nexus are encouraged to transition their entire user base to Nexus and any current customer with remaining questions about Nexus to reach out to [nexus\\_support@quantinuum.com](mailto:nexus_support@quantinuum.com) to schedule additional onboarding sessions and demonstrations as necessary. At the customer's request this transition process can be done by the Nexus team, please reach out if this is desired.

To facilitate a smooth transition, we plan to maintain support for the original UMUI until the end of Q1 2025 at which point Quantinuum will retire this interface. Additionally, the original administrator APIs will still be supported and not be affected by this transition.