QuREKA Interfaces

Understanding QuREKA System Structure

All information and resources on the QuREKA platform are managed based on the **Workspace**.

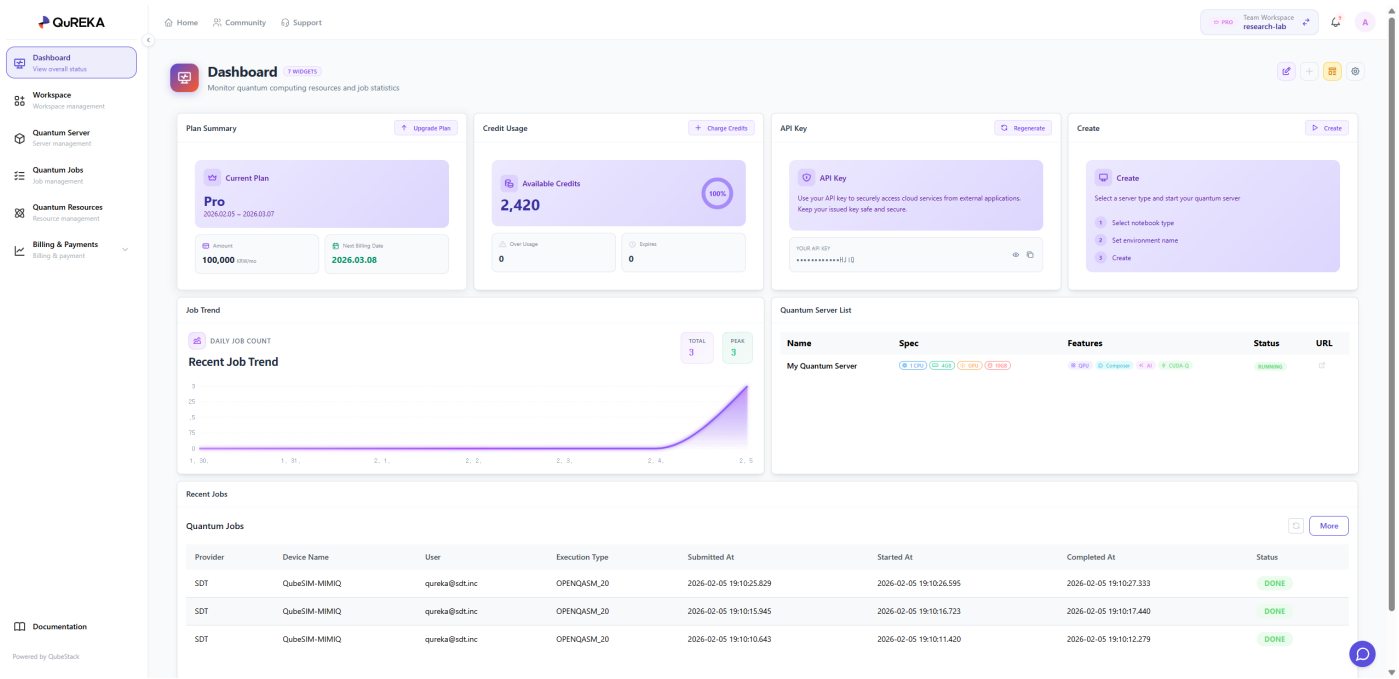
- **Workspace-Based Information:** All menus in the left sidebar—including Dashboard, Quantum Server, and Quantum Jobs—display data specific to the currently selected workspace.
- **Resource Isolation:** Each workspace maintains its own independent API keys, credits, and quantum servers. When collaborating on different projects or with different teams, please ensure you switch to the appropriate workspace using the workspace switcher icon in the upper right corner before proceeding with your work.

- Dashboard
- Workspace
- Quantum Server
- Quantum Jobs
- Quantum Resources
- Billing & Payments

Dashboard

The Dashboard is the central hub of QuREKA, where you can manage Quantum Servers, handle subscription plans, and monitor job trends and lists at a glance.

By using the configuration button on the upper right, users can customize the dashboard with their preferred components (widgets). Each item’s position and size can be freely adjusted to create an optimized layout tailored to the user's needs.



Key Dashboard Components

Plan Summary

- View and manage the current subscription plan of the workspace.
- For security and billing management, only the Workspace Owner has the authority to change the subscription plan.

Credits Usage

- Monitor the remaining credits and current usage status of the workspace in real-time to manage your budget effectively.

API Key Management

- Manage the unique API key assigned to each individual within the workspace.
- This key is mandatory for user authentication when submitting quantum jobs. Reissuance features are provided for security in case of key exposure.

Quantum Server

- Manage dedicated computational resources for quantum algorithm development.
- You can immediately create a Quantum Server via the **[Create]** button. Once created, you can start developing in the following environments:
  - **Notebook**: A code-based development environment powered by JupyterLab.
  - **Composer**: A GUI-based environment for designing quantum circuits using drag-and-drop functionality.
  - **No-code**: A simplified development environment that requires no coding (scheduled for a future update).
    Note: The available types and specifications (vCPU, RAM, GPU, etc.) of Quantum Servers depend on your current **Subscription Plan**.

Job Trend

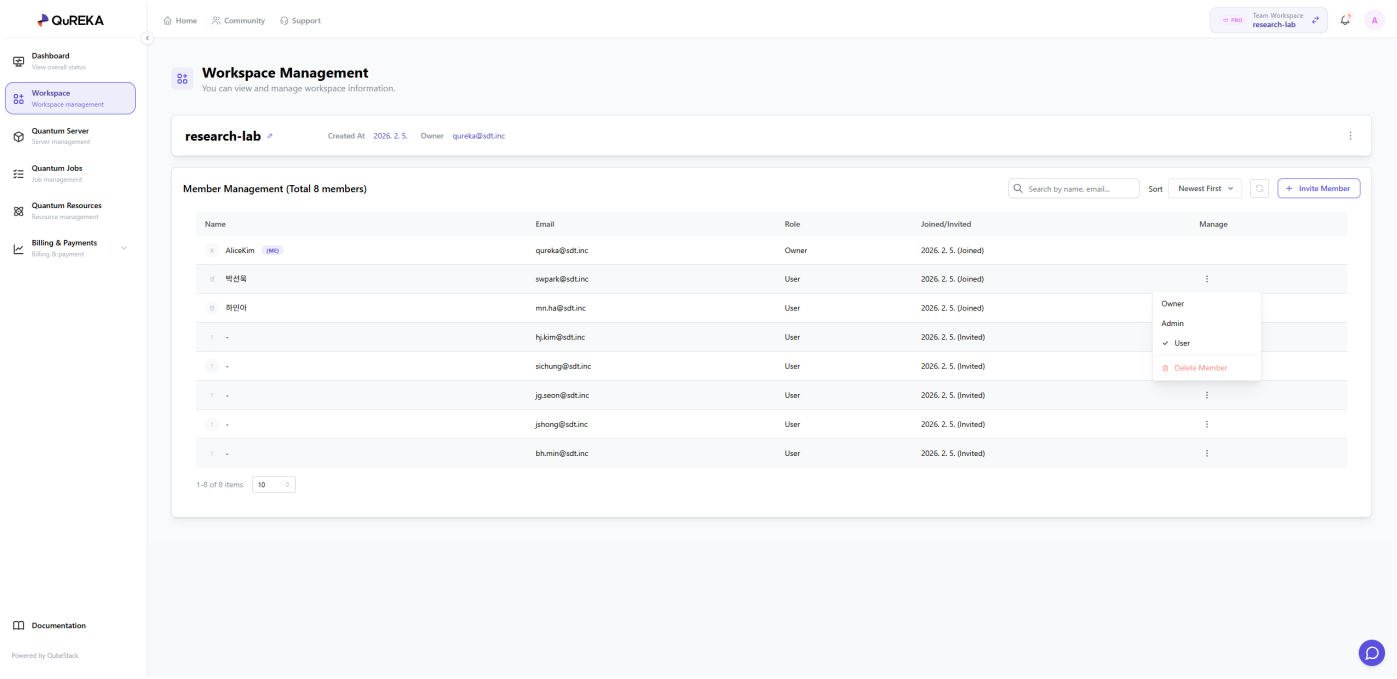
- Provides a visual representation of the daily trend for quantum jobs executed within the workspace, helping users understand their usage patterns.

Recent Jobs

- Quickly check the list and status of the most recent jobs in the workspace.
- Click the **[More]** button to navigate to the **Quantum Jobs** tab for a detailed history of all tasks.

Workspace

A Workspace is the fundamental unit for team collaboration and resource management. On the Workspace Management page, you can control basic information about the current workspace and manage participating members.



Workspace Information

This section provides essential details about the workspace. You can check the workspace name, creation date, and the current Owner.

Member Management

This feature allows for the systematic management of users within the workspace. Administrators can freely adjust the member composition and permissions according to the nature of the project.

- **Inviting and Verifying Members:** You can invite new team members to collaborate by entering their email addresses. Through the invitation menu, you can check the list of

sent invitations and monitor the real-time status of members pending acceptance.

- **User Permission Management:** You can set or change permissions for each member belonging to the workspace. This allows you to control the scope of resource access according to each member's specific role.

- **Member Removal:** You can remove members with whom collaboration is no longer required. Upon removal, all access rights to the resources within that workspace are immediately revoked.

Quantum Server

The Quantum Server page allows you to manage dedicated computational resources for developing and simulating quantum algorithms. You can create servers, control their operational status, and access the development environment here.

1. Creating a Quantum Server

To establish a new development environment, you must first create a Quantum Server.

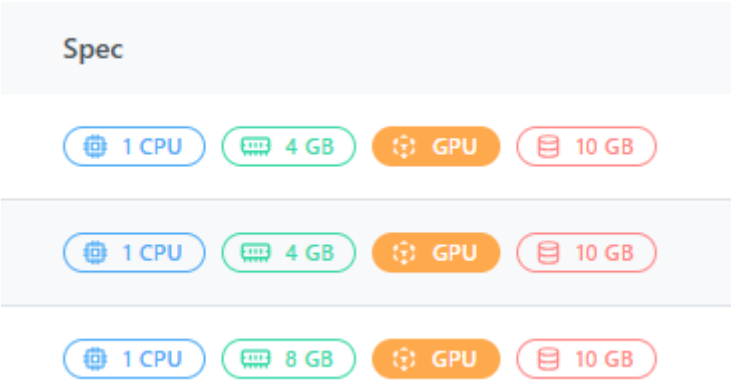
- **Creation Method**: Click the **[+ Create]** button at the upper right of the page.
- **Select Specifications (SPEC)**: First, select the server specifications (SPEC) you wish to use.
  - **Note**: The available server types vary depending on your current Subscription Plan.
- **Enter Name**: Input a name for the server you are creating.
- **Credit Pre-deduction**: Upon accessing the Quantum Server after it starts, **credits will be pre-deducted** based on the server specifications. You can preview the amount of credits to be deducted on the screen during the creation process.

2. Quantum Server List

Displays a list of all created Quantum Servers along with their detailed information.

SPEC (Server Specifications)

Hardware resource information based on the selected plan.

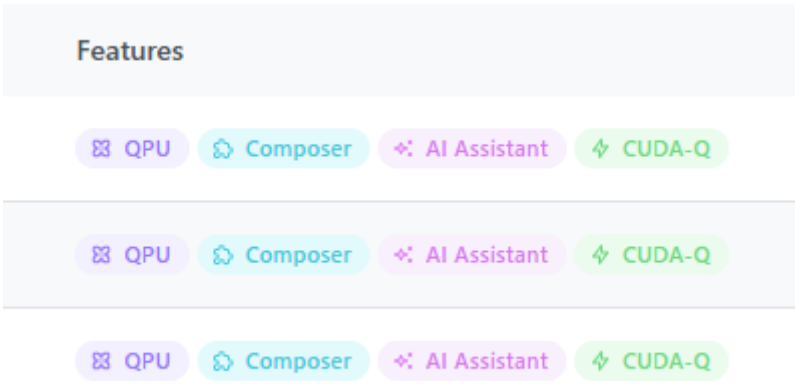


- **CPU**: The Central Processing Unit that handles classical computations and system processes for quantum circuits.

- **RAM**: Memory space required for storing data during simulations. Higher qubit counts require larger RAM capacity.
- **GPU**: Enables GPU resources for high-performance simulations. It significantly accelerates computational speed via platforms like CUDA-Q.
- **Storage**: Physical storage space for saving code files, datasets, and job results.

Features

Core features and technology stacks supported by the server.



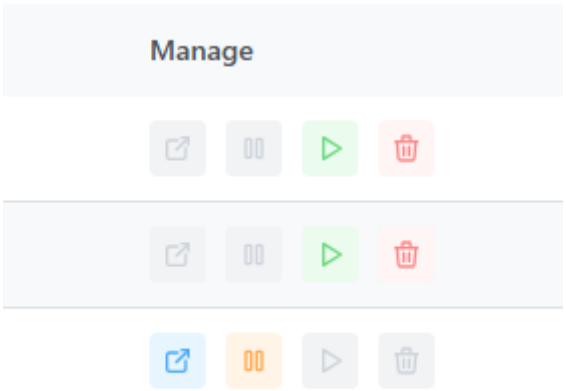
- **QPU**: Supports connectivity to submit and execute jobs on actual Quantum Processing Units.
- **Composer**: Provides a GUI-based environment for designing quantum circuits using drag-and-drop functionality.
- **AI Assistant**: Grants access to AI-powered assistance for code writing and algorithm development.
- **CUDA-Q**: Features NVIDIA’s high-performance quantum computing platform pre-installed for an optimized environment.

Status

- **RUNNING**: The server is currently active, and the development environment is accessible.
- **STOPPED**: The server operation is temporarily paused.

Manage

Control the server using the icons on the right side of the list.

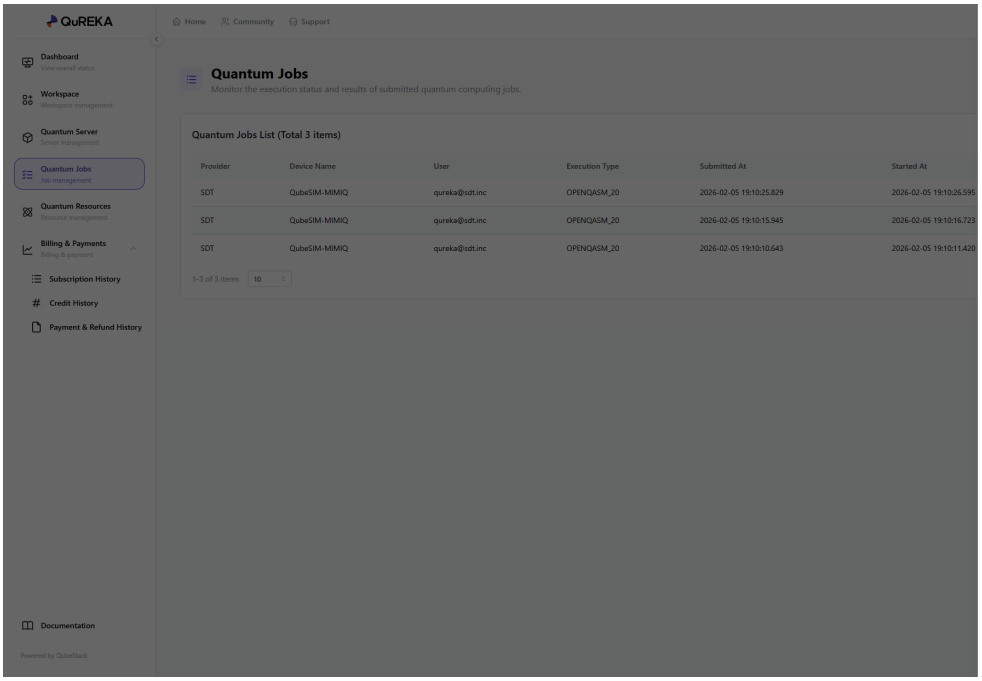


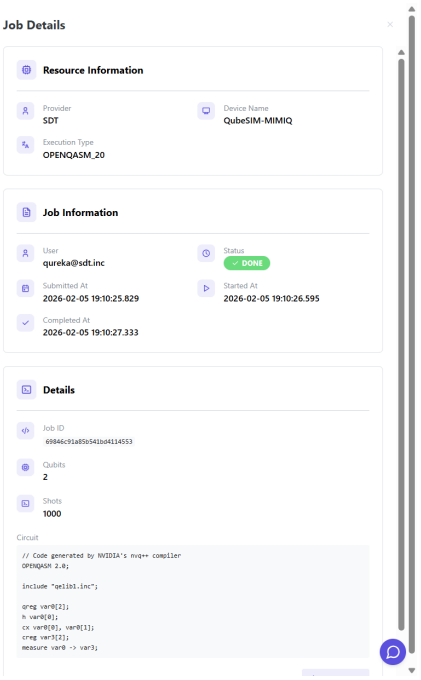
- **Open**: Launches and accesses the QubePad development environment.
- **Stop**: Stops the running server. This is recommended when not in use to prevent unnecessary resource consumption.
- **Restart**: Resumes a stopped server and switches it back to the running state.
- **Delete**: Removes the server. Please proceed with caution, as all data within the server will be permanently lost upon deletion.

Quantum Jobs

Here is the English translation for the **Quantum Jobs** section:

The Quantum Jobs page is where you can monitor the quantum jobs executed within your workspace. It allows you to track the progress of all submitted tasks and conduct a detailed analysis of the results for completed jobs.





1. Quantum Jobs List

Quantum jobs executed in the workspace are identified and distinguished by the following information:

- **Provider**: The provider of the quantum resources.
- **Device Name**: The name of the hardware or simulator used to execute the job.
- **User**: The user who submitted the job.
- **Execution Type**: The specific execution type of the job.
- **Submitted At**: The date and time the job was submitted.
- **Started At**: The date and time the job execution began.

2. Job Details

By selecting a specific job from the list, you can view more in-depth information via the details panel on the right:

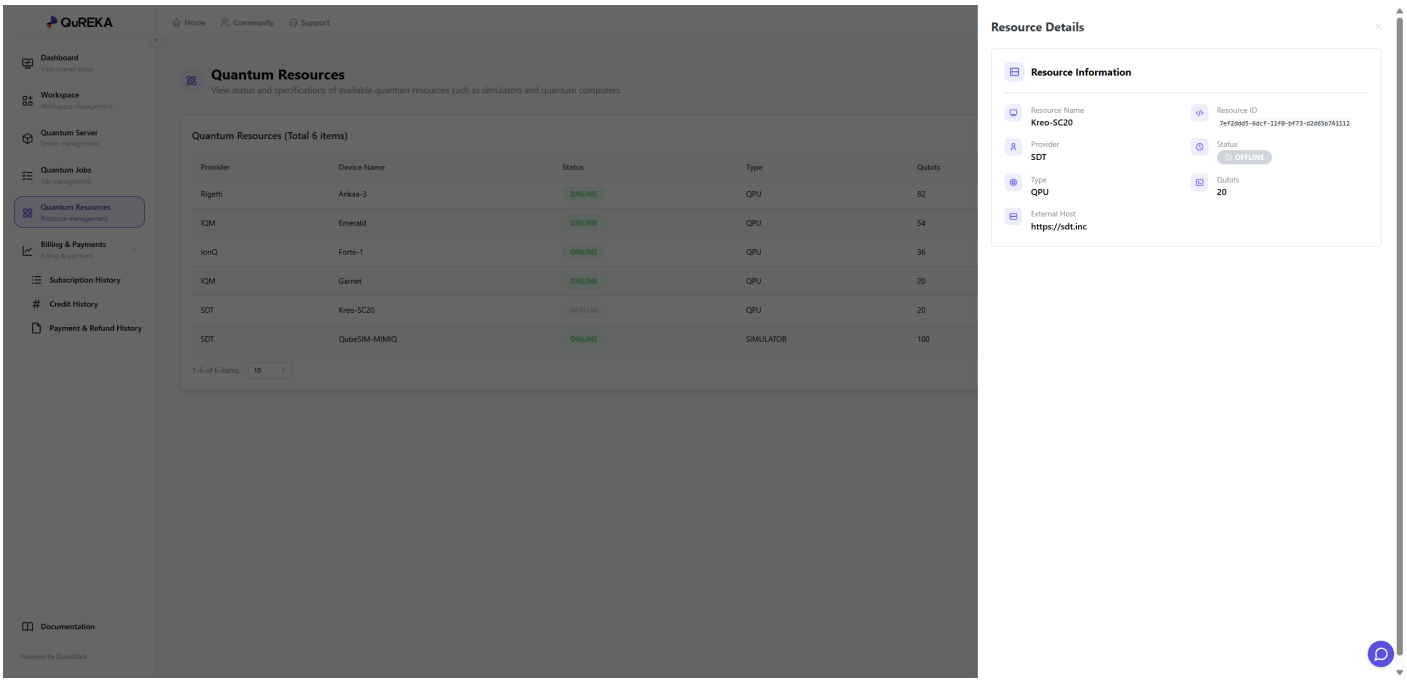
- **Status**: Displays the current status of the job (e.g., **DONE**, **RUNNING**, **PENDING**, **FAILED**).
- **Completed At**: The date and time the job was finally completed.
- **Job ID**: The unique identification number for the task.
- **Qubits**: The number of qubits utilized in the circuit.
- **Shots**: The number of times the circuit was repeatedly executed.
- **Circuit**: Allows you to directly review the submitted quantum circuit code.

3. Result Verification and Download

Users can review the results of completed (**DONE**) jobs on the details screen and download the data if necessary.

Quantum Resources

The Quantum Resources page is where you can check the real-time status and detailed specifications of various quantum computers (QPUs) and simulators provided by QuREKA, as well as manage access permissions for each member.



1. Quantum Resources List

Key information for all currently available quantum resources is displayed in a list format:

- **Provider**: The supplier providing the quantum resources (e.g., Rigetti, IQM, IonQ, SDT, etc.).
- **Device Name**: The unique name of the specific device.
- **Status**: Indicates the current connection status of the resource.
  - **ONLINE**: The resource is in a normal state, allowing for job submission and execution.
  - **OFFLINE**: The resource is currently unavailable due to maintenance or other reasons.
- **Type**: Distinguishes the type of resource.
  - **QPU**: Actual quantum hardware that performs computations using physical quantum elements.
  - **SIMULATOR**: A virtual execution environment that uses high-performance computing (HPC) resources to mathematically calculate the results of quantum algorithms instead of using an actual quantum computer.

- **Qubits**: The total number of qubits available on the device.
- **Permission**: Shows the current access permission status set for the resource.

2. Resource Management

Administrators (Admins) can directly control the resource access permissions visible to workspace members. These can be configured via the More (⋮) icon on the right side of the list:

- **Admin Only**: Only users with administrator privileges can view the resource and submit jobs.
- **User Accessible**: General workspace members can also view the resource in the list and use it to execute their jobs.

3. Resource Details

By clicking on a specific resource, a details panel appears on the right where you can find more in-depth technical information:

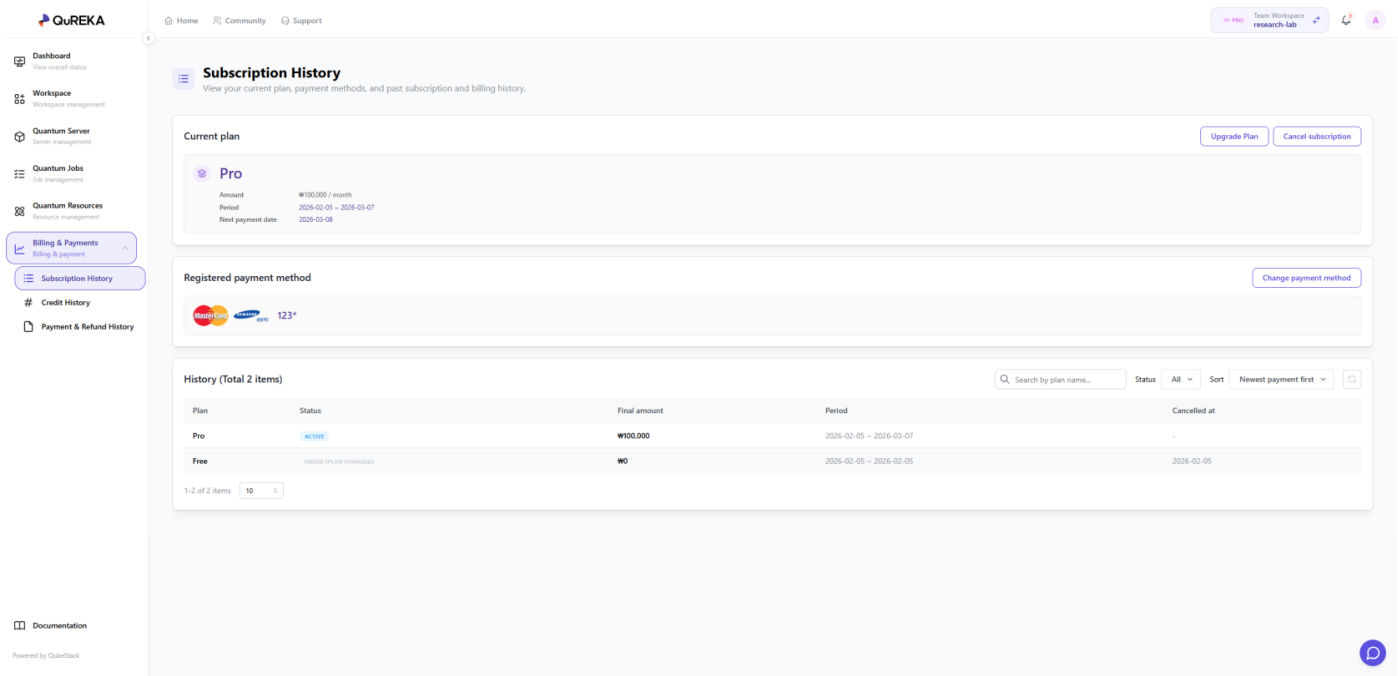
- **Resource ID**: A unique ID used to identify the resource within the system.
- **Status**: Provides a detailed view of the resource's current operational status.
- **External Host**: Information regarding the external address where the resource is hosted.

Billing & Payments

This section is for managing the workspace's subscription plans, credits, and payment methods. All payment-related information is strictly managed for security.

1. Subscription History

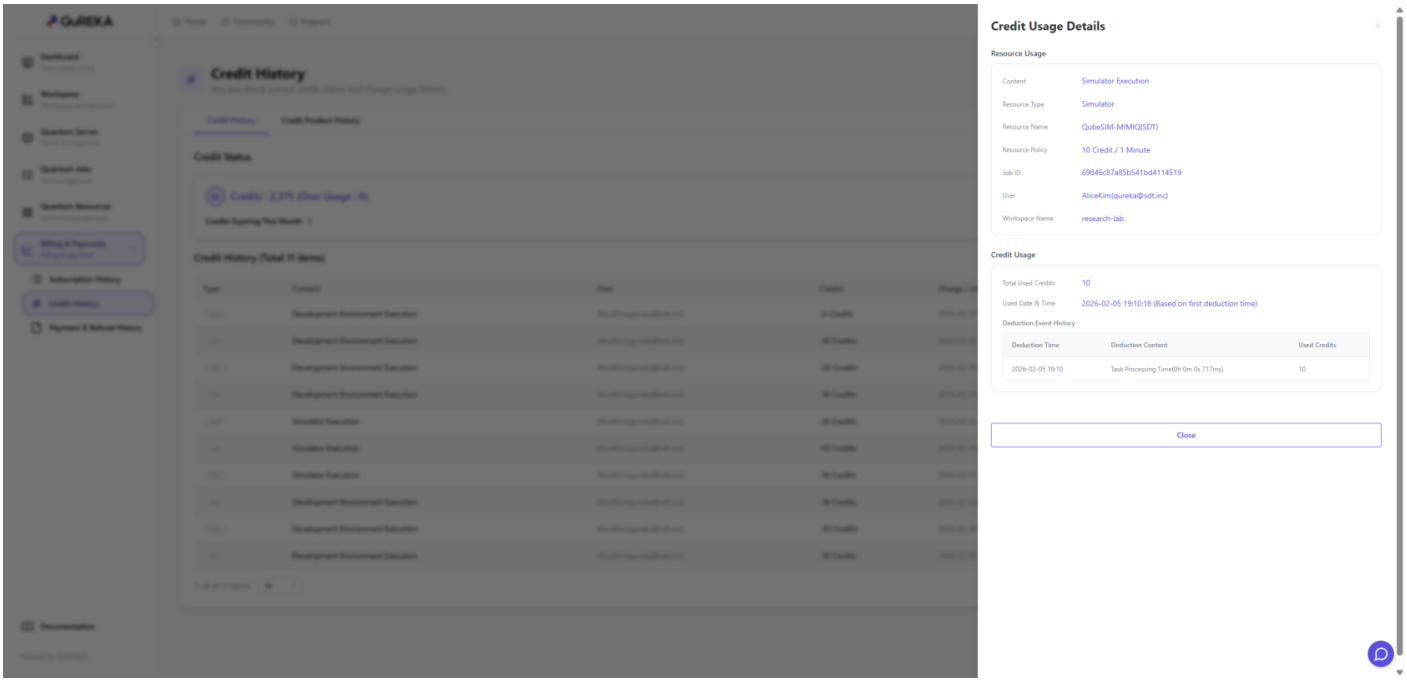
A menu to check and manage the current subscription status of the workspace.



- **Current Plan**: You can check the subscription plan currently in use and, if necessary, upgrade to a higher plan or cancel the current subscription.
- **Registered Payment Method**: You can register a payment method for recurring subscription payments.
  - **Security Notice**: Only the **Workspace Owner** can register or change payment methods; this area is not visible to other members.
- **History**: You can review the past subscription payment history of the workspace. Subscriptions are automatically renewed every **30 days** by default.

2. Credit History

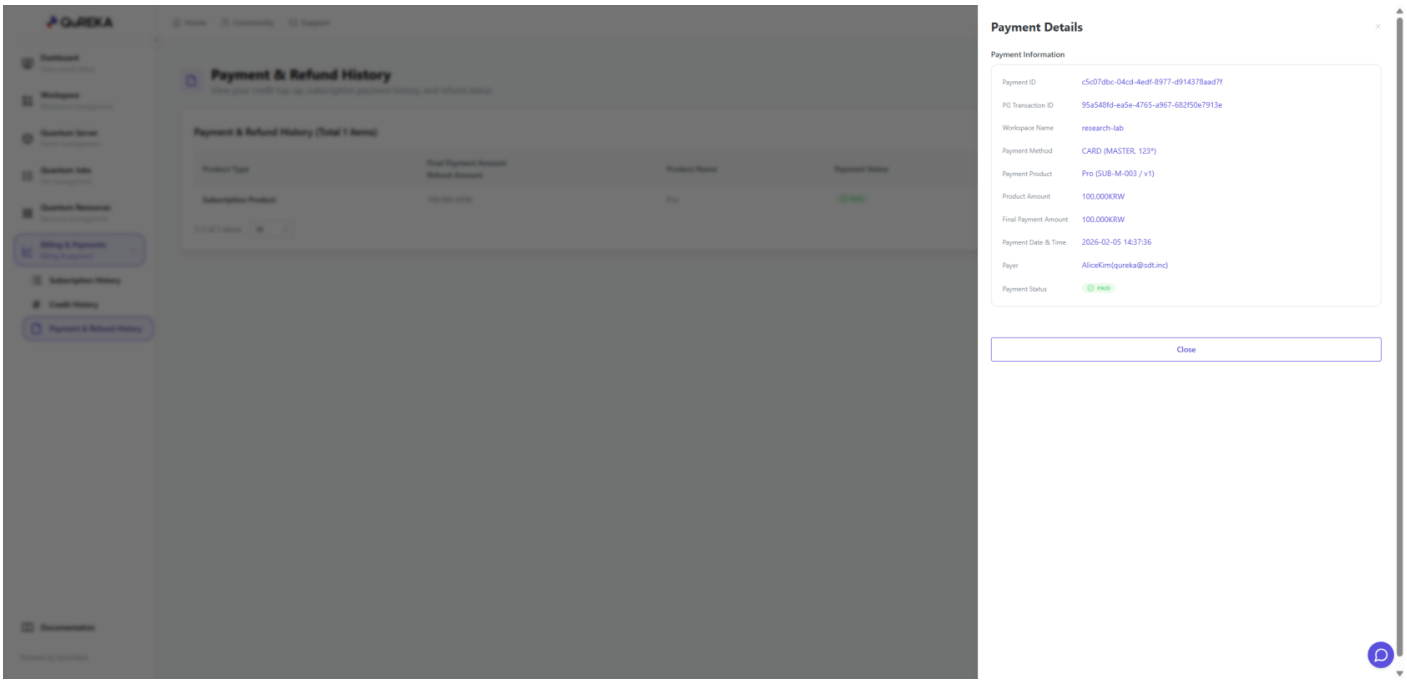
Manage the status of credits used for quantum jobs and server usage within the workspace and track the consumption flow within the organization.



- **Credit Status**: Check the remaining credit balance in real-time. If credits are insufficient, you can purchase additional credits via the **[Purchase]** button.
- **Credit History**: You can view all records of credit recharges (purchases) and usage (deductions).
  - **Organization Consumption Monitoring**: It provides detailed logs of **how all members within the workspace have consumed credits** (e.g., quantum server usage, quantum job submissions), allowing for transparent cost management and tracking at the organizational level.

3. Payment & Refund History

Monitor all financial transaction records that occurred within the workspace.



- You can collectively view all **Purchase History**, such as subscription payments and credit recharges, as well as **Refund History** resulting from cancellations.