The Quantum Computing Company™

Administration Guide

USER MANUAL

2021-09-27

Overview

This document is intended for project administrators only and describes how to invite users and manage their access to projects in the Leap quantum cloud service, view the status of problems submitted to solvers, troubleshoot submission issues, and generate solver usage reports.

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CHAPTER 1

LEAP ADMINISTRATION OVERVIEW

Leap Admin is an easy-to-use cloud-based administration tool. You use Leap Admin to invite users and manage their access to projects in the Leap quantum cloud service, view the status of problems submitted to solvers, troubleshoot submission issues, and generate solver usage reports.

Users submit problems to solvers, which are either quantum processing units (QPUs) or hybrid; hybrid solvers use a combination of quantum and classical resources. A project is a way of managing a logical or organizational grouping of solvers and users. A customer contract defines each project, including the solvers that are available, the amount of access time that is available each month to run problems on solvers, and the domains and subdomains (or individual email addresses) of the users who can be invited. In addition, users can have an individual amount of solver access time allocated to them.

For information about D-Wave quantum computers, problems, and solvers, go to the *Getting Started with D-Wave Solvers* guide.

If you have access to Leap Admin, then you have been designated as a project administrator to manage one or more projects that have been created by D-Wave in accordance with your customer contract.

To get started quickly, go to *Quick Start*.

1.1 Leap Admin Project Page

When you open Leap Admin, the project page is displayed as shown in Figure 1.1.

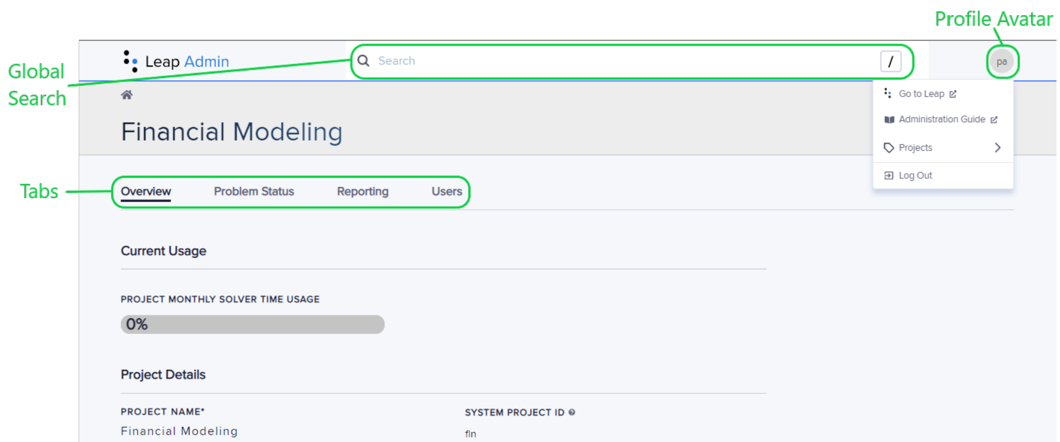


Figure 1.1: Leap Admin: Project Page

The project page consists of the following components:

- Global search

  Search for a project by name and for a user in any of your projects.
- Profile avatar

  Select your profile avatar and one of the following menu items:
  - **Go to Leap**

    Go to the Leap **Dashboard**.
  - **Administration Guide**

    Go to this *Administration Guide*.
  - **Projects**

    Select a project to open.
  - **Log Out**

    Log out of Leap Admin.
- Tabs that organize tasks into logical groups as follows:
  - **Overview**

    Displays information about the project and enables you to change the default solver access time for project members.
  - **Problem Status**

    A table summary of the statuses of all submitted problems. In the table, you can click a problem ID to drill down to the problem's parameters and resulting sample set.
  - **Reporting**

Generate CSV or Excel reports on solver usage statistics.

– **Users**

View a list of users and information about them. To display more information about specific users, click their user names.

1.2 Administration Tasks

- *Manage projects*

  You can set the default for any single member's solver access time and view project information such as project members, the solvers available in the project, and the project status.

- *Add and manage users*

  To add users, you must first invite them to join your project. You can also set per-user limits on solver access time that override the project default.

- *View and manage problems submitted to solvers in the projects*

  You can view and filter a list of problem submissions, access the details of any problem, and cancel pending submissions.

- *Generate and export usage reports*

  You can generate usage reports and export them to *XLSX* and *CSV* files.

1.3 Terminology and Conventions

- Leap user

  Someone who has registered in Leap.

- Member (also known as a *project member*)

  A Leap user who has joined a project.

- Project administrator

  A project member who has the Project Admin role.

- Role

  A role gives a user privileges to perform specific actions in a project. A role can be either *Project Admin* or *User*. The *Project Admin* role is intended for people who administer a project. Only users with the *Project Admin* role can access Leap Admin. The *User* role is intended for people whose main activity is submitting problems. For more information, see *User Roles and Privileges*.

- Solver access-time monthly renewal date

  The amount of solver-access time that is available to project members is renewed every month on the day of the month specified in the **Solver Access Start Date** field. This date is determined by the customer contract.

- For sequential steps in the user interface, variables are indicated in italics; for example, **Leap Admin** > *project_name*.

CHAPTER 2

QUICK START

The goal of this quick start is to configure the default solver-access time for project members and invite users to the project so that they can submit problems to the project's solvers.

To log in to Leap Admin, you must have received an email to join a project as a project administrator. A project administrator for a project is a user who has the *Project Admin* role in that project.

Note: If your invitation has expired or if you did not receive one, contact D-Wave Customer Support.

To invite users to a project and configure their solver access time, perform the following tasks:

- *Logging in to Leap Admin*
- *Configuring the Default Solver-Access Time for Users*
- *Inviting Users to a Project*

2.1 Logging in to Leap Admin

1. Log in to Leap at https://cloud.dwavesys.com/leap/login/.
2. In the upper right corner of the Leap **Dashboard**, select *your_profile_avatar* > **Leap Admin** as shown in Figure 2.1.

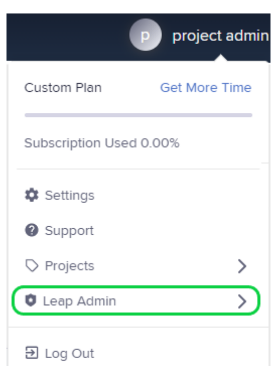


Figure 2.1: Leap Admin: Login Menu

Note: If you are a project administrator for multiple projects, select *your_profile_avatar* > **Leap Admin** > *project_name*.

2.2 Configuring the Default Solver-Access Time for Users

On the project page, specify the default solver-access time for all users in **Overview** tab > **Solver Access Time Configuration** section > **Project Member Default Solver Access Time** field.

Note: Only users who are added subsequent to this change are set to the updated default solver access time. So that existing users are not negatively impacted, they retain their existing default solver access time.

Tip:

- In the invitation, you can override this default for a specific user.
- To set the default to be the same as the project's monthly maximum, select the **Set Default to Unlimited Access** option.

2.3 Inviting Users to a Project

1. Click **Invite** > *role*.

   A *role* gives a user privileges to perform specific actions in a project. For more information, see *User Roles and Privileges*.

   Tip: As a best practice, invite a secondary project administrator.

2. Specify the email addresses of the users to add to the project.

   Tip: If an error occurs when specifying an email address, then make sure the email address is specified (individually or by pattern) in the **Allowed Email Settings** section.

   If the email address is not specified in the **Allowed Email Settings** section, contact D-Wave Customer Support.

3. To set the user's monthly maximum amount of solver time, either select the **Set Solver Access Time Allocation** field or leave it deselected:

- Deselected

  (Default) This field is set to the amount of time in the **Project Member Default Solver Access Time** field.

- Selected

  Enter an amount of time in the **Solver Access Time** field.

  This amount of time must be less than or equal to the project's **Monthly Solver Access Time** field.

For more information, see *Inviting Users to Join a Project*.

CHAPTER 3

MANAGING PROJECTS

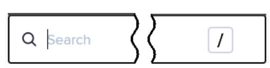
You manage projects by viewing the available solvers, viewing project information, and setting the default solver-access time for each project member

Note: To create another project, contact D-Wave Customer Support.

Tip: To go to another project, select *your_profile_avatar* > **Projects** > *project_name*.

3.1 Searching for Projects and Users

To search for a project that you administrator or for a user in a project that you administer, do the following:

1. Click in the global search field 

(at the top of the page) and enter the text to search for.

   The text matches any part of a project or user name (including an email address). The matching projects and user names are displayed in a dropdown list.

   Tip: The global search shortcut key is / (forward slash).

   Limitations

   - The search is case-insensitive.
   - Only the Latin-1 character set is supported.
   - The minimum number of characters required to display matches is 3.
   - The maximum number of characters is 254.

2. If one of the specific users or projects in the dropdown list is what you are searching for, then select it; otherwise, narrow your search by selecting one of the following options from the dropdown list:

   - **Show all results for** *search_text*

Displays a list of all matching project and user names.

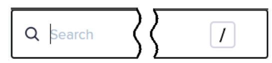
- **Users (** *number_of_results* **) — Show All**

  Displays a list of all matching user names.

- **Projects (** *number_of_results* **) — Show All**

  Displays a list of all matching project names.

Tip:

- Use the *Up* and *Down* arrow keys to select an item in the results list and press *Enter* to go to the selection.
- To go back to the complete search results, click **Search Results**.
- To try a new search, replace the text in the global search field 
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3.2 Viewing Project Information

You view project information in the following sections on the project's **Overview** tab:

Table 3.1: Current Usage Section

Project Monthly Solver Time Usage	The percent of time used for all solvers in the project for the current month.

Table 3.2: Project Details Section

Project Name	The name of the project.
System Project ID	Unique identifier for a project. It is used for internal purposes, such as a prefix for the project's API token.
Customer Reference ID	You provide this ID, which can be used for your specific internal processes.

Table 3.3: Solver Access Time Configuration Section

Solver Access Start Date	The date that access is provided to solvers. This date is determined by the customer contract.
Solver Access End Date	The date that access to solvers ends. This date is determined by the customer contract.
Renewal Date	The beginning and end dates for your project and the date on which solver access time is renewed. For more information, see *Setting the Default Solver-Access Time for Each Project Member*.
Monthly Solver Access Time	The amount of solver access time available for each month.
Project Member Default Solver Access Time	Sets the default solver access time for members in the project. For more information, see *Setting the Default Solver-Access Time for Each Project Member*.

- **Allowed Email Settings**

  This section is read-only and was populated with the appropriate email addresses (or patterns) when your project was created. The **Permitted Emails** field displays the individual email addresses or the patterns—via the wildcard (`*` (asterisk)) symbol—for the email addresses that you can add to your project. Patterns typically map to domains or subdomains. For example, `*@mycompany.com` allows all email addresses at `mycompany.com`. To add other email addresses or patterns, contact D-Wave Customer Support.

3.3 Viewing the Available Solvers

You view a list of solvers that are available in the project in the **Overview** > **Solvers Available in Project** section. The status of solvers is displayed in the **Status** column.

The solvers that are available in a project is determined by the customer contract. To make changes to the solvers in your project, contact D-Wave Customer Support.

To view a solver's properties and parameters, click its name in the **Solver Name** column. For more information on solver properties and parameters, see the *Solver Properties and Parameters Reference* guide.

3.4 Setting the Default Solver-Access Time for Each Project Member

The amount of solver-access time that is available to project members is renewed every month on the day of the month specified in the **Solver Access Start Date** field. Solvers have different usage rates. For more information, see the Operation and Timing section of the *QPU Solver Datasheet*.

Note: If the day of the month for renewal (as specified in the **Solver Access Start Date** field) is greater than the last day of any subsequent month, then the renewal date is simply the last day of that subsequent month. For example, if August 31 is specified in the **Solver Access Start Date** field, then the subsequent month's renewal date is September 30.

You set the default solver access time for all project members in **Overview** tab > **Solver Access Time Configuration** section > **Project Member Default Solver Access Time** field.

By default, the **Set Default to Unlimited Access** option is selected, which allows any project member to use the full monthly solver access time allocated to the project. If you want to keep project members from using up all of the project's monthly solver access time allocation, deselect this option and enter a specific amount in the **Project Member Default Solver Access Time** field. For example, 30 minutes of monthly solver-access time is specified in the **Monthly Solver Access Time** field. If you want to keep any one of your project members from using up all of this time and limit them to 5 minutes each per month, then you specify 5 minutes in the **Project Member Default Solver Access Time** field.

To override this default and specify a different amount of solver access time for an individual member, see *Modifying a User's Solver Access Time*.

3.5 Viewing Project Status

A project's status is the state of the project in the project life cycle as follows:

Table 3.4: Project Status

New	The project has been created, but its `Start Date` has not been reached. You can specify the users to be invited, but the invitations themselves are not sent until the `Start Date` has been reached.
Active	The project has started as determined by its `Start Date`. **Note:** Invitations that have been scheduled are sent on the `Start Date`.
Suspended	The project cannot be used. **Note:** This is an exception state. If you believe your project should not have been suspended, contact D-Wave Customer Support.
Expired	The `End Date` for the project's solver access time has been reached. Project members can still log in to the project, but cannot run problems on the solvers.

Project status is displayed next to the project name on the project's page.

CHAPTER 4

MANAGING USERS

You manage users by inviting them to join a project and managing the invitation process such as sending them reminders to accept the invitation or revoking an invitation. You can also change a user's role, remove them from a project, and modify their solver access time.

4.1 Inviting Users to Join a Project

You invite Leap users to join a project by sending them an email invitation. To join the project, the user must accept the invitation by clicking the link and performing one of the following tasks:

- New Leap users create a Leap account and join the project.
- Existing Leap users simply join the project (such users are already in at least one other project).

Note: If you sent multiple invitations to the same user, then they can accept only the most recent one.

Access to Leap is only supported from certain regions. For more information, see From What Countries Can I Access Leap.

During account creation or login, the user might be required to accept the D-Wave terms and conditions. The customer contract determines whether or not this is required for users joining the project.

Note: To change whether accepting terms and conditions is required or not, contact D-Wave Customer Support.

4.1.1 Procedure

1. To invite Leap users to join a project, click **Invite** > **User** or **Project Admin**.

   User and **Project Admin** are the project member roles to assign to users. For more information, see *User Roles and Privileges*.

2. In the invitation dialog box, specify the following fields:

Table 4.1: Invitation Dialog Box

Project	(Read-only) Name of the project to which you are inviting the users.
Email	Email addresses or member names (if they already exist in Leap) of the people you want to add to the project. **Tip:** You can copy and paste multiple email addresses from a semicolon-, space-, or comma-delimited list (for example, a CSV file). **Note:** The email addresses to be added must be either specified individually in or match a pattern in the **Overview** tab > **Allowed Email Settings** section. For more information, see *Viewing Project Information*.
Set solver access time allocation	The maximum amount of solver access time per month for a specified user. The default is the project's **Project Member Default Solver Access Time** field.

Once users join a project, they have the privileges associated with their role as described in *User Roles and Privileges*; for example, access to the project's solvers.

4.2 Viewing the Status of an Invitation

To view the status of an invitation, go to the **Users** tab and look at the **Membership Status** column.

Table 4.2: Membership Status Column

Invited	The user has been invited to the project, but has not accepted. You can send a reminder.
Active	The user has accepted the invitation.
Invitation Revoked	The invitation has been revoked.
Invitation Expired	The invitation to the user has expired. An invitation expires after 7 days. You can send a reminder.
Inactive	The user is not a member of the project. However, the user's statistics such as the problems they submitted and problem access time used is still displayed in the project. **Note:** This status is displayed for historical purposes.

4.3 Sending a Reminder

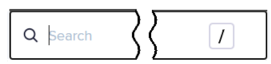
To send an invitation reminder for a user, click ●●● > **Send invitation reminder** in the table on the **Users** tab.

Tip: The ●●● context menu is displayed in a user's row on the far right when you hover the pointer over the row.

4.4 Revoking the Invitation

To revoke the invitation for a user, click ●●● > **Revoke invitation** in the table on the **Users** tab.

4.5 Searching for Users

To find a user in any project, use the global search field 

at the top of the page. For more information, see *Searching for Projects and Users*.

4.6 Viewing User Information

A list of users is displayed on the **Users** tab as follows:

Table 4.3: Users Tab

User	Name and email address of the user. Click the name to display information. **Note:** If the user has not created their Leap account, then you cannot display information about them.
Role	A role allows a user gives a user certain privileges. For more information, see *User Roles and Privileges*.
Project Usage for Month	Displays the amount of solver access time that a user has consumed for all solvers during the monthly renewal period. Solvers have different usage rates. For more information, see the Operation and Timing section of the *QPU Solver Datasheet*.
Project Allocation(s)	Displays the amount of solver access time that is allocated to a user.
Membership Status	The status of the user in the project. For more information, see *Viewing the Status of an Invitation*.

To display information on a specific user, click the **Users** tab > *user_name*. The following information is displayed:

Table 4.4: Users Tab

User Profile	Basic information about the user.
Problem Status	The status of the problems that the user submitted to the solvers in a project. For more information, see *Viewing the Status of Problem Submissions*.
Reporting	Reports on the user's solver usage. For more information, see *Generating Solver Usage Reports*.

4.6.1 Filtering and Sorting the Columns

In the table headings, clicking the various icons performs the following actions:

Table 4.5: Columns: Filtering and Sorting

	Filters the rows by matching a part of the member name.
	Filters the rows by a combination of user status, role, and part of a member name.
	Sorts in ascending or descending order.
	Sets the filters for a column.
	Specifies the unit of time for the column.

4.7 Modifying a User's Solver Access Time

1. On the **Users** tab, click ••• for a user in the table and modify the value in the **Modify Solver Access Time** field.
2. Specify the amount of solver access time in the **Monthly solver access time** field.

Note: This value can be greater than the project's **Project Member Default Solver Access Time** field, but it must be less than or equal to the project's **Monthly Solver Access Time** field.

4.8 Changing a User's Role

On the **Users** tab, click ●●● for a user in the table and select one of the following:

- **Remove Project Admin Role**

  Changes the user's role to User.

- **Assign project admin**

  Changes the user's role to Project Admin.

4.9 Removing Users From a Project

On the **Users** tab, click ●●● for a user and select **Remove from project**.

The user's status changes to *Inactive* for the project. The user can no longer use the solvers in the project. The user's usage statistics are preserved for historical purposes.

Tip:

- To remove multiple users, on the **Users** tab, select the checkbox for each user and click **Remove Selected from Project**.
- To remove all users from the project, click the checkbox in the header row (next to **User**) and click **Remove Selected from Project**.

Note: You can only remove users whose membership status is *Active*.

If you want the user to rejoin the project, then send an invitation as described in *Inviting Users to Join a Project*.

4.10 User Roles and Privileges

A user has one of the following roles and associated privileges.

Table 4.6: User Roles and Privileges

User	Allows users to do the following in their projects: • Manage and submit their problems to solvers. • Manage their own profile settings. • Reset their API token. **Note:** Users that have the *User* role cannot access Leap Admin.
Project Admin	In addition to *User* privileges, the user with the *Project Admin* role in a project has the following privileges in that project: • Manage invitations. • View limited project-level user information. • Remove users from a project. • Change a user's solver access time. • Manage problems. **Note:** • A project administrator for a project is a user who has the *Project Admin* role in that project. • A project administrator receives a notification when the project's solver access time reaches 80%.

CHAPTER 5

MANAGING PROBLEM SUBMISSIONS

You manage problem submissions by viewing the status and details of problem submissions and cancelling problem submissions.

5.1 Viewing the Status of Problem Submissions

To view the status of problems submitted to a project's solvers, go to the **Problem Status** tab.

The following information is displayed:

Table 5.1: Problem Status Tab

Problem ID/Problem Label	The problem's ID or label. The ID is system-generated.
User	The member name and email address of the person who submitted the problem.
Submitted On (UTC)	When the problem was submitted. Includes the date and time in UTC.
Ended (UTC)	When processing of the problem ended. Includes the date and time in UTC.
Solver	The name of the solver to which the problem was submitted.
Problem Status	The status of the submitted problem. For more information, see *Problem Submission Statuses*.

Note: Every time you open the **Problem Status** tab, it is refreshed.

Tip:

- To display the most up-to-date status, click **Refresh Table**.
- To copy a problem ID to the clipboard, hover over the problem ID and click the copy icon that is displayed.

5.1.1 Problem Submission Statuses

In the **Problem Status** column, the status of each problem submission can be one of the following:

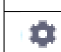
Table 5.2: Problem Status Column

Pending	The problem was submitted, but the solver has not started working on a solution.
In-Progress	The problem was submitted and the solver is working on a solution.
Completed	The solver has successfully completed its work on the problem.
Cancelled	Work on the problem has been cancelled. Cancelled problems do not use any solver access time.
Failed	Work on the problem did not successfully complete. Failed problems do not use any solver access time.

5.1.2 Filtering and Sorting the Columns

Clicking the icons in the table headings or selecting the fields above the table performs the following actions:

Table 5.3: Columns: Filtering and Sorting

	Filters the rows by matching a part of the problem ID or label.
	Filters the rows by a combination of a part of a member name or email address, problem status, solver, and submission beginning and ending dates and times.
	Sorts in ascending or descending order.
	Filters on the status in the **Problem Status** column.
	Displays either problem IDs or problem labels in the column.

5.2 Viewing Problem Submission Details

To view a problem's details, click a problem ID or problem label on the **Problem Status** tab. The following information is displayed:

Table 5.4: Problem Status Tab

Problem Parameters	Displays the problem's parameters, ID, solver, problem type, status, and embedded problem data. For more information, see the *Solver Properties and Parameters Reference* guide.
Solution	Displays the resulting sample set, which you can export along with a sample set visualization.
Timing	Displays timing parameters for the problem. For more information, see the *QPU Solver Datasheet* guide.

5.3 Cancelling Problem Submissions

To cancel a pending or in-progress problem, click the **X** in the problem's **Problem Status** column.

To cancel multiple pending or in-progress problems, select the checkbox for each problem and click **Cancel Problems** > **Cancel Selected**. Cancelled problems do not use any solver access time.

Tip:

- Before cancelling problem submissions, display the most up-to-date status by clicking **Refresh Table**.
- If you run scripts to continuously submit problems, refresh the table after cancelling problem submissions to confirm that the cancellation attempts succeeded.

CHAPTER 6

GENERATING SOLVER USAGE REPORTS

Reports on solver usage contain statistics that characterize how your projects and individuals use solver time in a project over a period of time. These statistics are organized into the following categories:

- Information about the users who submitted problems
- Number of submitted problems
- Solver times; they are further described as follows:
  - Solver category: QPU, hybrid, or custom
  - Solver names
  - Totals and subtotals of solver-access times
  - The unit of time scale (for example, daily, monthly, and so forth) as displayed in the **Aggregate Time Scale** field.

The statistics are exported as either an *XLSX* and *CSV* file. See the spreadsheet column headings for the exact statistics. On the **Reporting** tab, you specify filters for the statistics.

To configure and generate solver usage reports, go to the **Reporting** tab and specify the following filter fields:

Table 6.1: Reporting tab

Projects	(Read-only) The project to be included in the report.
Users	The users whose solver usage is to be included in the report.
Date Range	• **Preset Range —** A set of common ranges (UTC). • **Custom Range —** A date range (UTC) that you specify.
Solvers	The solvers for which their usage is to be included in the report.
Format	• **Export File Format** The file format of the exported report. **Note:** The *XLSX* format contains formulas for totals and subtotals whereas the *CSV* format contain data only. • **Usage Time Units** The unit of time in which solver usage is to be expressed. • **Aggregate Time Scale** The scale, expressed as a unit of time, for solver usage in the date range. For example, if **Daily** is selected, then solver usage is expressed as separate daily totals within the date range.

Tip:

- To reset the filter fields to their default values, click **Reset Template**.
- To get all values for a field, leave it blank. For example, to generate statistics for all users, leave the **Users** field blank.
