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Chapter 1: Introduction

Welcome to Freezerworks

Freezerworks is the full-featured sample tracking and management program for medium to high-volume laboratories, clinics, and biobanks. Combining the power and flexibility of a user-configurable information management system with the solid foundation of a relational database, Freezerworks efficiently tracks what is being stored, moved, and shipped to outside organizations, down to the precise location in the freezer. From initial data entry, to printing bar code labels, to viewing your data in a wide variety of ways, Freezerworks speeds the tasks of sample management while the audit trail automatically compiles the details of each event. And with the addition of the optional Testing and Billing modules, Freezerworks also expedites and tracks your testing and billing activities. Perhaps most importantly, Freezerworks protects your valuable data with a fully configurable, multi-tiered security system that offers unprecedented user and freezer security.
Chapter 2: New Features

What's New in Freezerworks 6.0.01

For this update, several program features have been modified and expanded in order to improve on the already friendlier and more flexible Freezerworks Unlimited 6.0. The parts of the program affected by the update are listed below, along with their new features which all will be thoroughly explained later in this addendum:

- QC Check Freezer
  - Redesigned User Interface
  - Freezer Box Map
  - Import option

- Login
  - Option to use LDAP/Active Directory

- List Views
  - Configure locked columns

- Testing Module
  - New View Tests option
  - Tabs added to View Batch Tests Orders
  - New fields available for Import

- Label Printing
  - Combo Labels added to the Cab EOS1 printer

- SOAP Server
  - Single Origin Policy (SOP) and Cross-Origin Resource Sharing (CORS)
Chapter 3: QC Check Freezer

QC Check Freezer has been totally revamped for the 6.0.01 update. With a new, streamlined interface, import option for flat-bed scanners, and simple, color coded results, checking your inventory will be easier than ever!

Redesigned User Interface

Found in the same place…
In previous versions selecting Freezer Position and Field to Scan was separate from the entry process, which was then separate from the review process. Now, each of these steps is included on one screen for a much simpler experience.

You have the option of selecting either a Freezer and Freezer Section or an Alias to get started. Once a valid selection is made, freezer position fields awaiting entry will appear to the right of the Freezer dropdowns:

- When only Freezer and Freezer Section are selected, the position boxes will appear blank

- When an Alias is selected, the position boxes will fill in with as much information as the alias provides:

The valid ranges will appear beneath each entry box as you select them. Use these to help find the desired location to check.
Using the New Box Map

After all the position fields have been filled in, the selected freezer's box map will appear (Much like Explore Freezers).

Before moving into the actual map itself, you will want to choose whether you’re checking the entire box (All Positions) or only the positions you enter values for (Selected Positions Only). Select the radio button that fulfills your test:

- “Check Selected Positions Only” is the new way to quickly “bingo” check your storage but takes away the ability to import values.

Next, choose from the dropdown your desired Field to Scan (Unique fields only):

Now we are ready to tackle the new box map. It operates much like the freezer pictures in Explore Freezers, Explore by Alias, and Add Aliquots (Freezer Graphic) except it is specifically designed for QC Check Freezer functions:
- Highlight the cell position on the map where you’d like to start scanning in values (Cannot highlight more than one at once).

- The current highlighted cell’s position will appear directly above the value entry field for clarification.

With a cell selected you must decide whether to Add or Import values:

**Add** – Manually enter values by keyboard or by scanner. When typing, clicking <Add> will assign the value entered to the current highlighted cell position and simultaneously move the highlight to the adjacent cell on the box map. The value field will be cleared for another entry.
When using a scanner, values will be automatically entered into the box map and cleared from the field as you scan. Some scanners are not programmed to automatically enter after a scan so you may need to click the <Add> button each time or simply press <Enter> in order to add the value to the freezer picture.

**Import** – If you previously selected the radio button “Check All Positions” then the new QC Check Import function will be available to you. It is the perfect tool to use with the large CSV files generated by a flat-bed scanner, for example.

Clicking <Import> allows you to select a CSV file from your machine containing all of the box’s values and enter them into the map all at once.

*Note: Import assigns values in a sequential order starting from the first position, no matter what cell is currently highlighted. A blank line in the CSV file leaves the corresponding cell blank.
Since flat-bed scanners frequently create CSV files with more than one column, you may be given the following message after selecting a file:

![Blank in CSV](image)

Simply type in the column number that contains the values for the field currently set in the Select Field to Scan dropdown.

If for some reason you need to change one or some of your entries, simply highlight the desired cell and type in the correct number – pressing <Add> (or scanning) will overwrite what is already there. Importing, however, will overwrite the entire box. Once all your values have been entered and are visually displayed on the new box map you may move onto actually checking your freezer.
Check Results and Reports

FUL 6.0.01 has made QC Check results much easier to understand and work with, adding a brand new color-code and picture reports!

**Color-Code**

When you are finished entering in values, clicking <Check> will perform the QC Check and immediately make the results appear on the screen.

The results appear in two different ways:

- **Color** (color key at bottom of screen)

- **Text**
*Note: All cell positions that are ‘empty’ (no aliquot) will be left uncolored and unrecorded upon clicking <Check> whether or not you select the “Check All Positions” radio button.

“Positions Not Scanned” are aliquots included in the freezer’s box that were not entered into the box map. In FUL 6.0.01, these aliquots can now be easily viewed in the program’s list view with the <View Aliquots Not Scanned> button.

Clicking the button brings up the normal list view displaying all the aliquots that were not scanned. If they are no longer in storage, you can use the **Batch Update** function to clear their Freezer Positions.

With the new color-code system, understanding and assessing the results of a QC Check will be far easier and faster.

**Reports**

After you are satisfied with a QC Check’s results, you may want to create a report of said results. Before you do so, however, you can add some personal commentary using the new “Comment for Report” field.

These comments will be included on whichever type of report you decide to print.

There are two different types of QC Check reports you can choose from in 6.0.01:
Print Report – The <Print Report> button prints a list report much like the ones from past versions of QC Check.

Print Picture – The <Print Picture> button utilizes the new box map to create a report with a picture of the box and the cells colored according to the results.

View QC Reports

Whenever you run a QC Check, its results are saved and can be reviewed using View QC Reports. Open a report and you’ll notice that the window has been given an overhaul:

Now there is much more information – status, results, and comments – provided right in the report record, while still including the option to print like in past versions of Freezerworks.

Note: The report printed from within View QC Reports will always be a list report, not a picture.
Chapter 4: Login

Login has remained largely the same through many Freezerworks releases, but FUL 6.0.01 has added the option to login using LDAP or Active Directory Authentication. Instead of having separate usernames/passwords for Freezerworks and your company's network, link this information by turning on LDAP user authentication and login with greater ease.

Turning On LDAP

In System Properties, the option to use LDAP/ Active Directory for authentication has been added to the “Security” section.

When you check on “Use LDAP for Authentication,” the new Security tab “Configure LDAP” will appear.
In order to set up LDAP Authentication, go to this tab and enter your company’s Domain Server Name, Server Address, Port, and Domain.

After entering all that info, test your network username and password to make sure everything was set correctly and that login will work properly. You’ll receive a confirmation message if the test succeeds and an error if it fails.
Note: The Test Password field does not use asterisks when typing. This is so that users can be assured they are entering the right password. Both fields will clear automatically when System Properties is closed (even after Save).

Adding LDAP to Users

When LDAP is turned on and set up, two new fields get added to the User form. Use these fields while adding and editing users in order to activate LDAP for whomever you desire:

Check on “Use LDAP for Authentication” and then type in the user name you use for your linked network in “LDAP User Name.”

As long as LDAP is activated for a user, their normal Freezerworks login will not be accepted. It will still be saved in the user record, however, so you can always turn LDAP off and return to normal login.
Chapter 5: List Views

Some of the most dramatic changes made in FUL 6.0 were made to the Freezerworks List Views, including the addition of locked columns when scrolling left to right.

Configure Locked Columns

In FUL 6.0.01 we expanded on this tool by giving users the ability to set a locked column for inventory list views during their initial configuration. Now, as you configure Samples, Aliquots, and Transactions List View forms, you can make sure a certain column will be locked any time you look at your data.
The option has been added to the bottom right of the three list view configuration forms. The dropdown will be populated with all the fields included in the “Selected Fields” box so you can decide to have any of your columns locked.

The column is always locked when the list view format is used.
Note: It is much better to lock one of the first couple columns – locking one of the last columns will make scrolling left to right almost impossible – so choose a field that is near the top of the dropdown.
Chapter 6: Testing Module

Customers who have added the Testing Module to their Freezerworks now have the following new features and modifications available in the 6.0.01 release.

New View Tests Option

In 6.0.01, the View Tests Ordered menu option from previous versions has been replaced by View Tests.

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<th>Batch Order Tests</th>
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View Tests has all the same functions as the option before, with the addition of the Test Results tab.
The tab is purely for viewing individual results quickly. When you open Test Results, the list view buttons on the left will shrink down to simply <Subset> and the new option <Delete Result>.

Double-click a test on this new tab and the normal test form will open, except with the Results tab automatically selected instead of the primary one.
Delete Test Results

In 6.0.01 we wanted to give you the ability to delete results at your discretion, since multiple results for a single test parameter or even incorrect results can quickly fill up and burden a list view.

When you highlight a test result and click <Delete Result>, a Freezerworks confirmation window will appear, as always, to ensure a correct deletion.
View Batch Order Test Tabs

View Batch Test Orders has been expanded in 6.0.01 to include the two tabs and all the options from the new View Tests option. The list view still works exactly as it did in previous versions, but you now have the ability to view and work with the individual tests and results within your Batch Orders without having to change your list view. If you use Batch Test Orders frequently, View Batch Test Orders has just become your one-stop shop.

New Fields Available for Import

The Import option within the Testing Module is a great tool for adding lots of testing data all at once. In 6.0.01 we made this tool even better by including Flagging Set and the three Testing Complete fields (Complete Date, Complete Tech, and Complete Time) in the fields available for importing.
The addition of the Complete fields was only natural since the Order and Pickup fields were already included.

Other than these four fields being added, the Testing Module Import option has remained entirely the same.
Chapter 7: Label Printing

Combo Labels for Cab EOS1

Two label formats can now be used with the Cab EOS1 printer in the FUL 6.0.01 update: Combo and Combo Freezerbondz.
Chapter 8: SOAP Server

For users who wish to use the Freezerworks SOAP Server in combination with JavaScript, it will be necessary to work around Single Origin Policy and either set up a proxy server or enter allowed CORS Origins in System Properties. Detailed instructions are below.

Single Origin Policy (SOP) and Cross-Origin Resource Sharing (CORS)

Modern web browsers implement the Single Origin Policy (SOP) as a means of preventing malicious JavaScript code on one website from executing against another website. This type of attack is known as Cross-Site Scripting (XSS) or Cross-Site Request Forgery (CSRF). XSS and CSRF allow an attacker to access data from one website (say your bank using the cookie stored in your browser) while you visit an entirely different website (the one that happens to be hosting the attack code).

SOP limits JavaScript so that it can only access data from its own origin. An origin is composed of a protocol (such as http or https), a hostname (such as www.example.com or 127.0.0.1) and a port (80 or 8080 are common). With SOP, a website running at http://www.example.com:8080 cannot access, via in-browser JavaScript, the servers running at https://www.example.com:8080 (different protocol), http://www.example2.com:8080 (different hostname), or http://www.example.com:80 (different port). Essentially, JavaScript can only communicate with the server from whence it came.

This is important for the Freezerworks SOAP server because, out of necessity, it is running on a different origin than any site created to access it. Even if the website accessing the SOAP server is running on the same physical hardware it will have at least a different port number. Since the port numbers aren't identical, we know the origins are different and SOP will prevent the hosted JavaScript code from accessing the Freezerworks SOAP server. A review of the JavaScript console in the developer tools, available in most web browsers, will show Access-control header errors as a sign of this problem.
There are two “best-practices” ways to allow JavaScript from one origin to access another origin. The first is to setup a proxy server. Because SOP only applies to in-browser JavaScript, a proxy server can communicate with any origin without restriction. The key here is that the site hosting the JavaScript must be the same origin as the proxy server. This way the in-browser JavaScript communicates with the proxy server (same origin), the proxy server communicates with the Freezerworks SOAP server (different origin, but SOP doesn’t apply out of the browser) and then the proxy communicates back to the JavaScript (same origin again). This can be done with any version of the Freezerworks SOAP server, and the proxy-to-Freezerworks communications can be in any language – not just JavaScript.

As of Freezerworks Unlimited 6.0.01, you can also turn on Cross-Origin Resource Sharing (CORS) from the SOAP Server tab of the System Properties form. CORS allows you to create a list of origins that will be allowed access to the Freezerworks SOAP server even though they are from a different origin. JavaScript running on allowed origins will have direct access to the Freezerworks SOAP server without need of a proxy server. CORS is enabled by checking the box and then entering a list of origins that are to be allowed access. The list can be composed of one or more origins and MUST be comma separated. Any spaces between origins will be removed, but can be used to aid readability. For example you might include the following list of origins to allow access to two websites you operate: http://mydomain.com, https://mydomain.com:8000

There are two special origins that are worth noting here. First, is the asterisk, *, which allows all origins access to the SOAP server. This is a quick and easy way to fix the SOP problem, but doing so might be a security concern. It is better to list the specific origins that should have access.

Second, is the null origin. When running JavaScript in a web page that isn't hosted by a web server (say you just launched the web page by double-clicking the .html file on your computer) you need to allow access for the null origin. This is typically an issue during development of a web-based tool, but might be needed in production as well if the tool is launched locally. The * origin will also allow access to the null origin.

Once an Origin header has been received by the SOAP server (it is sent automatically by the web browser during a request or pre-flight) it gets checked to see if it matches one configured for the SOAP server. If a matching origin is found, the Freezerworks SOAP server will send the Access-Control-Allow-Origin header in its response. If the * origin has been configured it will be returned. Otherwise Freezerworks echoes back the origin that was provided by the web browser (again, only if the origin is in the list of allowed origins).
The Freezerworks SOAP server also sends the Access-Control-Allow-Headers and Access-Control-Allowed-Methods headers. In each case Freezerworks echoes back the headers and methods requested by the calling browser. The GET, POST, and HEAD methods are available by default.