

Security in Freezerworks Unlimited

Freezerworks Unlimited employs several layers of security to protect your valuable data from unauthorized access.

1. Restrict access to the software with **passwords and login security** (Standalone and Client/Server versions)
2. Within the software using **software level security** (Standalone and Client/Server versions)
3. Across your network by **encrypting Client/Server connections** (Client/Server version only)
4. Automatic software startup using a **Windows service** (Client/Server version only)
5. WAN or Web access using the **SOAP Server module** (Standalone and Client/Server versions)

Passwords and Login Security

The System Administrator may enable several options regarding password requirements, login attempts and automatic client logoff (Client/Server only).

The **password** options include:

- Expiration of the user's initial password
- Expiration of passwords after a specific number of days
- Password recycling
- Case sensitive passwords
- Mixed case passwords
- Require numbers and letters
- Require a minimum length

When **login security** is enabled, the System Administrator can track successful and unsuccessful login attempts in the Login Audit Trail. This Audit Trail will display login attempts from all login sources: Standalone Users, Client Users and SOAP Client Users. It will also display actions such as Successful Login, Invalid Password and Invalid User Name.

Automatic Client Logout prevents unauthorized access to Freezerworks Unlimited by closing a Client/Server connection after a specified time of inactivity.

Software Level Security

The Security Level System in Freezerworks Unlimited consists of three different approaches:

- User Permissions
- Sample Owner Based Security (also known as User Security)
- Freezer Security

These security levels can be used independently or in concert with one another depending on the needs of the organization.

Each of these is based on the concept of Users and Groups. At minimum, the System Administrator must create Users and assign permissions for the Users (see *User Permissions* below). In order to use either the User Security or Freezer Security option, it is also necessary to create Groups and assign individual Users to those Groups. For further information on creating Groups, please see the **Groups** section.

User Permissions

When the System Administrator creates a new User, permission to use individual menu options is given or denied. This is the first level of security, and it overrides all others. It is also mandatory. If a User is not given permission to View Samples, those menu options will not be available for that user. They will appear “grayed out.” This type of security is functionally based, which means users are granted or denied permission to perform specific functions throughout the software program. For example, a User may be given permission to View Samples, without permission to Add Samples, Modify Samples, or Delete Samples.

User Security

When a Sample is logged in, Freezerworks Unlimited records the User who created the record; this user is the sample’s Owner. User Security is based on this Ownership. Sample Ownership may be reassigned by the System Administrator if this User leaves the organization, or if samples are transferred to a different group. When creating a User account, the System Administrator assigns a Default Access Level to the Samples created by that User. Default Access Levels are: **No Access, View Only, Modify, or Modify and Delete**. This Default Access Level is the type of access *other users* will have to Samples owned by this User.

The four Access Levels work as follows:

- **No Access** – Samples will not be visible to other Users. They will not appear in View Listings, Searches, Exports, Reports, or Explore Freezers.
- **View Only** – Samples will be visible to other Users, but cannot be modified.
- **Modify** – Samples will be modifiable by other Users, but cannot be deleted.
- **Modify and Delete** – Samples can be modified and deleted by other Users.

In addition to the Default Access Level, the System Administrator may grant different levels of access to different Groups. For example, if two distinct laboratories are using the same copy of Freezerworks Unlimited, it may be beneficial to create three different groups: Laboratory1, Laboratory2, and Administrators. A User who is entering samples for use by Laboratory1 may have her Default Access Level set to **Modify**, the Access Level for Laboratory2 set to **No Access**, and the Access Level for Administrators set to **Modify and Delete**. The result would be that members of the group Laboratory1 would be able to modify samples created by this User, but not delete them. Members of the group Laboratory2 would not be able to even see samples created by this User. Members of the group Administrators would be able to modify and delete samples created by this User.

A User always has full access to all samples created by him, regardless of his group membership.

The User Security system is optional. It can be turned on or off by selecting the appropriate option located in the **System Admin** menu. The Default System Admin User has access to all samples regardless of security settings.

Freezer Security

When freezers are created, the System Administrator may restrict access to the aliquots stored in those freezers by setting each freezer's Access Level. Each freezer will have a Default Access Level that determines what type of access users will have to the freezer by default. There are four Access Levels to choose from: **No Access, View Only, Modify, Modify and Delete.**

The four Access Levels work as follows:

- **No Access** – Aliquots stored in this Freezer will not be visible to Users. They will not appear in View Listings, Searches, Exports, or Reports. The Freezer will not appear in Explore Freezers.
- **View Only** – Aliquots are visible to Users, but cannot be modified.
- **Modify** – Aliquots can be modified by Users, but cannot be deleted.
- **Modify and Delete** – Aliquots can be modified and deleted by Users.

In addition to the Default Access Level, the System Administrator may grant different levels of access to different Groups. Using the same example above, each of the two laboratories (Laboratory1 and Laboratory2) may have its own freezers. Freezers belonging to Laboratory1 could have a Default Access Level of **No Access**. The group Laboratory1 could be given an Access Level of **Modify** and the group Administrators given the Access Level of **Modify and Delete**. The effect of this would be that only Users who were members of either the group Laboratory1 or Administrators would have any access to the freezer in question. All other users of Freezerworks Unlimited would not even see the Freezer or any of the Aliquots stored in it.

The Freezer Security system is optional. It can be turned on or off by selecting the appropriate option located in **System Admin** menu. The Default System Admin User has access to all freezers regardless of security settings.

When both User Security and Freezer Security are enabled, Freezerworks Unlimited checks access levels as follows:

1. **User permissions:** Does the user have permission to use the function? If yes, continue. If no, then stop.
2. **User Security:** Is the user a member of a group that has been assigned specific access to the owner's samples? If yes, then find the least restrictive group specific access and use that. If not, then use the default access level.
3. **Freezer Security:** If the user has at least *View* access to the Samples, then continue on with determining Freezer based access. Is the user a member of a group that has been assigned specific access to the freezer(s) in which this samples' aliquots are stored? If yes, then find the least restrictive group specific access and use that. If not, then use the default access level for the freezer.

Encrypt Client/Server Connections

Freezerworks Unlimited Server contains an option to encrypt the TCP\IP connection. Its use allows you to reinforce communication security, but it will slow down the Client/Server connections. This option does not require any additional settings, and it is disabled by default.

Windows Services

Freezerworks Unlimited Server can be run as an application using the FreezerworksULServer.exe executable program, or as a service in Windows. A Windows Service is an executable object that is installed in a registry database maintained by the service control manager. The services database includes information that determines whether each installed service is started on demand or is started automatically when the system starts. The database can also contain logon and security information for a service so that a service can run even though no user is logged on. It also enables system administrators to customize security requirements for each service and thereby control access to the service.

SOAP

The Connectivity white paper and SOAP brochure explain how SOAP can be used to search and retrieve data (Read Only). The user must have a Freezerworks Unlimited User Name and Password, and must have been given permission by the administrator (in their User account) to access Freezerworks Unlimited via SOAP.